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Criteria 3

Research, Innovations and Extension

Key Indicator – 3.3 Research Publication and Awards

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

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© December 2023| IJIRT | Volume 10 Issue 7 | ISSN: 2349-6002

Design of Sewage Treatment Plant for Peri Education

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Abstract— One of the most important and valuable land resources for humans and all other living things on the planet is water. Regretfully, pollution and contamination are spreading quickly. This was primarily caused by industries disposing of waste untreated into adjacent bodies of water, such as lakes, ponds, and rivers. Every educational institution needs a suitable treatment facility to handle the sewage that is produced there. Thus, a sewage treatment plant with enough capacity to process the sewage must be built for the PERI EDUCATION. Prior to designing the sewage treatment plant, a study on the characteristics of the wastewater will be conducted. The pH value, total solids, total suspended particles, hardness, alkalinity, fluoride, iron, ammonia, nitrate, and phosphate are all analyzed as part of this research study. A sewage treatment plant is quite necessary to receive the hostels, college and canteen waste water and removes the materials which pose harm for general public environment. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer). The main purpose of Sewage treatment process is to remove the various constituents of the polluting load: solids, organic carbon, nutrients, inorganic salts, metals, pathogens etc. Effective wastewater collection and treatment are of great importance from the standpoint of both; environmental and public health. Sewage/Wastewater treatment operations are done by various methods in order to reduce its water and organic content, and the ultimate goal of wastewater management is the protection of the environment in a manner commensurate with public health and socioeconomic concerns. This project deals with the proper design of a complete treatment of sewage and its major components such as storage tank, screen chamber, primary sedimentation tank, ASP (activated sludge process), secondary sedimentation tank.

Index Terms- sewage, BOD, Solids, ASP, public health. Sewage

I. INTRODUCTION

Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash-water and industrial wastes. The growing environmental pollution needs for decontaminating waste water result in the study of characterization of waste water, especially domestic sewage. In the past, domestic waste water treatment was mainly confined to organic carbon removal. Recently, increasing pollution in the waste water leads to developing and implementing new treatment techniques to control nitrogen and other priority pollutants.

Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage water quality and compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to re-use sewage effluent for drinking water.

1.1 DEFINITIONS

Sewerage: the system by which waste matter is carried away in sewers and made harmless.

1. Sewage: waste matter such as faeces or dirty water from homes and factories, which flows away through sewers.
2. Storm water: water that comes from precipitation and ice/snow melt – it either soaks into exposed soil or remains on top of impervious surfaces, like pavement or rooftops.
3. Activated sludge: the type of wastewater treatment process for treating sewage or industrial wastewaters using aeration and a biological floc composed of bacteria and protozoa.

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World Journal of Advanced Engineering Technology and Sciences

eISSN: 2582-8266

Cross Ref DOI: 10.30574/wjaets

Journal homepage: https://wjaets.com/

WJAETS

World Journal of Advanced Engineering Technology and Sciences

(RESEARCH ARTICLE)

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Hydrogen production from industrial wastes by photo catalysis

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World Journal of Advanced Engineering Technology and Sciences, 2023, 08(01), 201–207

Publication history: Received on 22 December 2022; revised on 31 January 2023; accepted on 03 February 2023

Article DOI: https://doi.org/10.30574/wjaets.2023.8.1.0034

Abstract

This review focuses on our research findings about efficiency of different nano materials synthesized by us for photocatalytic hydrogen production from industrial wastes. Lab-scale photocatalytic reactors were fabricated for hydrogen production from liquid phase alkaline waste streams and gaseous phase hydrogen sulfide. The effects of operating parameters namely pH, flow rate, light intensity, liquid depth, sulfide and sulphite concentration were investigated for for 7 photocatalysts viz., CuGa2-xFe_xO_4/RuO_2, Fe_2O_3-CdS/ZnS, Pd-Cr_2O_3/CdS, Ce-TiO_2, CdS-ZnS/TiO_2, CdS/ZnS, Ti-Cr-MCM-48. Among the photocatalysts used, CdS/ZnS nanosized photocatalyts have a much greater surface area and thus give a better hydrogen yield.

Keywords: Solar Photocatalysis; Liquid Phase; Gas Phase Photocatalysts; Hydrogen Production

1. Introduction

Hydrogen sulfide (H_2S) is a toxic gas harmful to human beings and the environment. It was generated due to various industrial activities and sewage treatment plants (STPs) (Supriya and Subrahmanyam 1997 and Linkous et al 2004). If the pH is less than 6, then H_2S is mainly in the gaseous form. When pH increases to 6 – 8, part of H_2S converts into hydrosulfide ion (HS^-). At pH 6 – 8, there is a mixture of H_2S and HS^-. For a pH of 8 – 12, the main ion is HS^- but there is still some H_2S. The sulfide ions are present in appreciable concentrations above pH 10.

H_2S is abundant in natural gas and petroleum. Natural sources include crude oil, natural gas, salt marshes, sulfur springs, and swamps. Sewers with low velocities encourage the growth of anaerobic bacteria in a slime layer coating the sewer. These bacteria reduce sulfur compounds such as sulfate, thereby producing sulfides. These compounds occur naturally in domestic wastewater but also can bc concentrated in industrial waste streams (Priya, 2011 and Kalairasi, 2012). With the increasing consumption of crude oil, the amount of H_2S released from petroleum refining has gradually increased. H_2S is also contained in most natural gas wells. Caustic scrubbing is commonly applied for the removal of H_2S from biogas in STPs and acid gases in petroleum refineries. During this process, alkaline sulfide wastewater is generated. Sulfide wastewater is also generated from leather and pulp and paper industries. Of all the industries given, Refineries and Petrochemical industries were been regarded as a most important producer of sulfide waste stream in high concentration as well as in quantity (Priya and Kanmani, 2011 and Balamurugan and Kanmani, 2013).

The erratic nature and toxicity of sulfide depends upon the pII, refining processes, percentage of sulfur in crude oil. The impacts of the sulfide were been categorized as Aesthetic and Health, Mechanical and Environmental. Higher concentration effects range from choking to coma or death. High content of sulfur compounds in lubricating oils seems to lower resistance to oxidation and increases the deposition of solids as sludge in engines. Under alkaline conditions,

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A TECHNICAL REVIEW ON RECENT USAGE OF USED TYRE WASTE IN CONCRETE

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ABSTRACT: *This review paper provides an overview of the effectiveness of using waste tires in concrete. With the increasing amount of waste tires generated globally, their disposal has become a major environmental concern. Incorporating waste tires in concrete can provide a sustainable solution to this issue, while also improving the performance and properties of concrete. The paper discusses the various methods of incorporating waste tires in concrete, such as using shredded tires as aggregates, adding rubber powder as a partial replacement for cement, and using crumb rubber as a filler material. It reviews the mechanical properties, durability, and environmental impact of the resulting concrete, including compressive strength, flexural strength, abrasion resistance, water absorption, and chloride ion penetration. The review highlights the potential benefits of using waste tires in concrete, including reduced energy consumption and greenhouse gas emissions, improved durability, and reduced material costs. However, it also acknowledges some challenges associated with this approach, such as the need for proper tire shredding and processing, and potential negative effects on workability and fresh concrete properties. Overall, the review concludes that using waste tires in concrete can provide a sustainable and effective solution for both waste tire disposal and concrete performance improvement. However, further research is needed to fully understand the long-term effects of using waste tires in concrete and to optimize the incorporation methods and ratios for different applications*

Keywords: *Waste Tyre Rubber, Crumb rubber concrete, light weight concrete, Flexible Concrete*

1. INTRODUCTION

The disposal of waste tyre rubber has been a major environmental concern worldwide due to its non-biodegradable nature and potential health hazards. One way to address this issue is by incorporating waste tyre rubber in construction materials, such as concrete. The usage of waste tyre rubber in concrete has attracted significant attention in recent years due to its potential

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Design of Flexible Pavement using Plastic Waste Materials

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Abstract — **Plastic is a non-biodegradable substance and its disposal pose a significant environmental risk. The creation of flexible pavements is one example of such repurposing. The use of plastic trash in bituminous mixes improves the characteristics and strength of the mixture. This effective technology aids pavement resistance to higher temperatures by reducing crack formation and rainwater intrusion. Plastic garbage that has been separated and cleaned is sliced so that it can pass through a sieve with a size of 2mm - 3mm using a shredding machine. The application of this innovation will help to improve not only road development but also road life expectancy and environmental conditions. Plastic roads would be beneficial given India's hot and humid climate, where temperatures regularly exceed 50°C and downpours wreak havoc, leaving a huge percentage of the asphalt with massive potholes. In our investigation, we conducted a thorough evaluation of the process of utilising waste plastic in bitumen and aggregates, displaying the results of several tests performed on bitumen and aggregates with increases in percentages of plastics of 10%, 20%, 30%, and 40%. This waste plastic modified bitumen blend has improved constraining properties, strength, thickness, and water resistance. Because the vast majority of India's streets are of the adaptable variety, the use of such tactics is easily adaptable on a large scale. The addition of plastic waste to bitumen expands softening point, specific gravity, penetration value, and ductility, according to the investigations of properties of the plastic waste-mixed bitumen. Bitumen and aggregates were coated with plastic, which improved the essential qualities of both aggregates and bitumen. The current review will result in fewer road repairs and the usage of non-biodegradable wastes instead of plastic garbage.**

Keywords— **Aggregates, Bitumen, Modifiers, Plastics.**

I. INTRODUCTION

A. General

Plastic is a substance that comprises one or more organic polymers of significant molecular weight, is solid in its completed state, and can be moulded by its flow at some point during manufacture or processing into finished objects. Plastics are long-lasting and disintegrate slowly; the chemical connections that make plastic so strong also make it resistant to natural decomposition processes. Thermoses and thermoplastics are the two major kinds of plastics. When heated, a thermoset solidifies or "sets" irreversibly. They are widely employed in vehicles and construction applications because of their durability and strength. Polyethylene, polypropylene, polyamide, polyoxymethylene, polytetrafluorethylene, and polyethylene terephthalate are the plastics in question. When subjected to heat, a thermoplastic softens and returns to its original state at room temperature. Milk bottles, floor coverings, credit cards, and carpet fibres are all examples of thermoplastic items that may be easily moulded and moulded. Phenolic, melamine, unsaturated polyester, epoxy resin, silicone, and polyurethane are some of the plastic varieties available. According to recent studies, plastics can last for up to 4500 years on Earth. As the world population grows, so does the demand for food and other necessities, resulting in an increase in the amount of waste generated daily by each home. Plastic, in various forms, accounts for over 5% of municipal solid waste, which is harmful by nature. Empty plastic bags and other types of plastic packaging material polluting the roads and drains is a typical sight in both urban and rural locations. Because of its biodegradability, it causes water stagnation and associated hygienic issues.

To address this issue, studies were conducted to see if this waste plastic might be utilised productively. Experiments at numerous institutes revealed that when waste plastic is added to heated aggregate, it forms a fine coat of plastic over the aggregate, and that this aggregate, when mixed with the binder, provides greater strength, water resistance, and long-term performance. Road surfacing can be done with waste plastic such as carry bags, disposable cups, and laminated pouches like chips, pan masala, aluminium foil, and packaging material used for biscuits, chocolates, milk, and supermarket items. The use of plastic in conjunction with bitumen in road building not only extends the life and smoothness of the road, but also makes it more cost-effective and environmentally friendly. To improve some of the qualities of bitumen, plastic waste is utilised as a modifier. Plastic Roads are roads that are made out of plastic waste and have been found to perform better than roads made out of traditional bitumen.

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Photocatalytic Hydrogen Production using PD doped CDS

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Abstract **- We report on the photocatalytic hydrogen production of Pd/CdS photocatalyst using an unconventional batch process with passive mixing. The catalyst has been characterized using X-ray diffraction and Scanning electron microscope. The result reveals that particle size 3.7 µm. The feasibility studies were carried out by varying the treatability parameters and it was found that maximum hydrogen production occurs at their respective optimum values. The highest volume of hydrogen produced after optimization is 80 mL at 250 W/m2 light intensity, 0.2 M sulphide concentration, 0.2 M sulphite concentration, 10 pH, 300 mL photolyte volume, 0.5g catalyst dosage and 30mL/hr recycle flow rate. Close investigation revealed that this high production is due to the optimization of parameters coupled with batch process with passive mixing. The catalyst also has proved to be photo stable for up to 5 trials**

Index Terms **- Batch process, Photocatalyst, Passive mixing, Photostable.**

I.INTRODUCTION

Hydrogen has gained importance as a clean fuel in the energy economy recently. The idea is to obtain a renewable solution to supply this fuel in sufficient quantities and photocatalytic splitting of hydrogen sulphide waste stream have been garnering attention in this area. H_2, as an energy carrier with a high calorific value of 122 kJ g^{-1} (2.75 times greater than hydrocarbon fuels) is clean and renewable [1]. Photocatalysis was carried out using Pd-Cr_2O_3 nanocomposite cocatalyst which has been reported earlier in achieving high photocatalytic efficiencies greatly due to the doping of CdS with Pd and Cr [2]. The rate of hydrogen production depends on the type of reactor used as its main purpose is to facilitate photocatalysis using a catalyst. Batch process with passive mixing was found out to have good photocatalytic hydrogen production [3]. This method of batch process with passive mixing omits the need for a magnetic stirrer to circulate the catalyst that have settled at the bottom in conventional batch processes. There is no formation of dead zones where some amount of the catalyst settles down and remains stagnant.

II.MATERIALS AND METHOD

2.1 Preparation of photocatalyst

For the synthesis of the photocatalyst Palladium chloride ($PdCl_2$, 99.99% purity), Chromium nitrate ($Cr(NO_3)_3.9H_2O$, 98% purity), Sodium borohydride ($NaBH_4$,98%) and Cadmium sulphide (CdS) were obtained from Merck. All chemicals were used as received without further purification. Then a calculated amount of CdS was added based on the experimental requirements and the solution is stirred vigorously for 20 minutes.

2.2 Photocatalytic reaction

For carrying out the reaction in a batch process with passive mixing, an airtight reactor made out of Borosilicate© glass was fabricated with a volume capacity of 500 mL(Fig. 1). The reactor has three openings, one for photolyte entry, photolyte exit and gas exit respectively. The photolyte exit is placed at the bottom of the reactor which is tapered so that the photocatalyst loaded into the reactor will also exit along with the photolyte and go into passive circulation. All of the openings have a valve attached and circulation is achieved using a peristaltic pump [3]. The gas is collected in an inverted water displacement apparatus where there is a septum through which the gas can be sampled. Gas chromatography analysis was carried out to test the presence of hydrogen in the gas sample.

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International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 8 Issue 5 Ser. I || 2020 || PP. 25-36

Identification of Groundwater Recharge Zones in Thirumanimuthuar Sub-Basin in Parts of Salem and Namakkal District, Tamilnadu, India

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Abstract: *The main objective of the study is to identify groundwater potential zones in Thirumanimuthar basin with an integrated approach using Remote Sensing and geographical information system (GIS). FCC Image of Landsat TM 30 m resolution data and topographic maps has been used to generate thematic maps like geology, geomorphology, lineament and lineament density, drainage, drainage density, and slope map of the study area. A number of geomorphic units such as Denudational hills, structural hills, Bajadas, Colluvial plain, Pediplain, Deep Pediment and Alluvial plains have been observed. A composite groundwater potential map has been generated as very high, high, medium, low and very low based on the groundwater availability area. The upper, middle and downstream of the basins have been identified as potential zones for groundwater exploration. The regions of lineaments and intersecting lineaments proved for groundwater potential zones. The data generated was validated with field checks and observed to be in conformity with the same.*

Keywords: *ArcGIS Software; Drainage; Drainage Density; Geographical Information System; Geology; Geomorphology; Lineaments; Lineament Density; Lithology; Prospect Map; Remote Sensing; Slope.*

Date of Submission: 25-05-2020 Date of acceptance: 11-06-2020

I. INTRODUCTION

1.1 General

Groundwater is an important natural resource in present day, but of limited use due to frequent failures in monsoon, undependable surface water, and rapid urbanization and industrialization have created a major threat to this valuable resource. A groundwater development program needs a large volume of multidisciplinary data from various sources. In order to ensure a judicious use of groundwater, its proper evaluation is required for optimal utilization. With groundwater occurrence being a subsurface phenomenon, its identification and location are based on indirect analysis of some direct observable terrain features like geology, geomorphology and their hydrologic characters. In the last few decades, Remote Sensing (RS) and Geographical Information System (GIS) techniques have been used in different field of sciences in which it provides an opportunity for better observation and more systematic analysis of various identification and demarcation of groundwater resources.

1.2 Remote Sesning and GIS

RS and GIS are playing a rapidly increasing role in the field of hydrology and water resource development. In developing accurate hydro-geomorphological analysis, monitoring, ability to generate information in spatial and temporal domain and delineation of land features are crucial for successful analysis and prediction of groundwater resources. However, the use of RS and GIS in handling large amount of spatial data provides to gain accurate information for delineating the geological and geomorphological characteristics and allied significance, which are considered as a controlling factor for the occurrence and movement of groundwater used IRS LISS II data on 1: 50000 scale along with topographic maps in various parts of India to develop integrated groundwater potential zones by qualitative analysis in terms (i.e., good to very good, moderate to good and poor), used GIS for the analysis of lineament data derived from SPOT imagery for groundwater potential mapping. For the assessment of groundwater resources of Northwest Florida, we took the advantage of GIS for spatial analysis and data visualization. Developed a GIS-based model for delineating groundwater potential zones of Marvdaiyar basin, Tamil Nadu, India, by integrating different thematic layers derived from remote-sensing data. Water resources in India are very unevenly distributed both spatially and

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

AN EXPERIMENTAL STUDY ON CONCRETE PARTIALLY REPLACEMENT OF CEMENT BY ZEOLITE

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ABSTRACT:

The main aim of this study is the use of admixtures that can be incorporated into concrete for new added benefits in order to gain understanding into the characterization of their influence and specific behavior in linear structures. With the use of special admixtures the number of benefits of concrete during its useful life increases, both in terms mechanical properties and durability. Zeolite is a popular type of natural pozzolanic material which has been widely utilized in constructions since ancient times and zeolite is the largest group of silica minerals. It is widely used in producing blended. The use of Zeolites in mixture designs, both mortar and concrete. The present study is carried out in mix of M_{30} grade concrete with partial replacement of cement by 0%, 5%, 10%, and 15% Zeolite is carried out to determine the optimum percentage of replacement and hardened concrete properties such as compressive strength, flexure strength, split tensile strength test of the concrete on 7, 14 & 28 days is achieved. The presence of silicon dioxide in natural zeolite will expected to increase the concrete strength through reaction with the calcium hydroxide from the hydration of OPC (Ordinary Portland Cement).Test results indicate the use of combination of Zeolite in partial replacement of cement in the concrete has improved the mechanical properties

***Keywords*: Zeolite, mechanical properties, M30, optimum percentage, test on concrete.**

1. INTRODUCTION

Today concrete is the most used man-made material in the world due to its competitive price and desirable properties. However cement production is estimated to produce about 5% to 7% of total greenhouse gas emission each year. This has a significant impact on the environment and construction industries. The high carbon footprint of cement production urges the industry to look for more sustainable, durable and low energy product.

Nowadays, supplementary cementing materials (SCM) have been widely used to reduce the consumption of Portland cement in order to improve the sustainability of our environment. Materials are usually added to concrete to reduce permeability, increase strength or to provide a sustainable solution where a large amount of binder required.

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Experimental Study on the Behaviour of Glass Fiber Laminates in RCC Beams

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Abstract—This study is based on the behaviour of Fiber Reinforced Polymer (FRP) laminates on Reinforced Cement Concrete (RCC) by bonding through retrofitting process. This retrofitting process is the modification of existing structure, to make them more resistant to seismic activity, ground motion etc.,. By bonding with this process, we can extend the life time of building structure from failures. Retrofitting process is bonding the FRP laminates to the weakest part of the structure. Fiber laminates are bonded to the concrete by using the resin (Unsaturated Polyester Resin (UPR)). This resin is used to provide a strong bond to the concrete and the fiber in the construction sites. Many of the existing reinforced concrete structure throughout the world are in urgent need of rehabilitation, repair or reconstruction because of deterioration due to various factors like corrosion, lack of detailing, failures of bonding between beam-column. In this study an experimental investigation is carried out to study the behaviour of Glass fiber reinforced polymer laminates to the concrete. The experimental study consists of prism (beam) dimensions of (750 × 150 × 150) mm. The FRP laminates are bounded to the bottom of the beam in three different layers of widths 150 mm, 100 mm and 75 mm respectively. The study is based on flexure analysis obtained by bonding the glass fibers to the prism.

Keywords—**Fiber Reinforced Polymer, Flexure strength, Glass Fiber, Reinforced Cement Concrete, Retrofitting, Unsaturated Polyester Resin.**

I. INTRODUCTION

A. General

1) Fiber Reinforced Polymer (FRP): In recent years, the widespread use of Fiber Reinforced Polymers (FRPs) for infrastructure rehabilitation has been extensively studied. FRP are increasingly used as an external reinforcement of existing concrete structures. FRPs have been accepted as a reliable structural material for new construction and for strengthening and rehabilitation of existing structures. Most uses of FRP are strengthening of Reinforced Concrete (RC) and Pre-Stressed Concrete (PSC), strengthening of unreinforced wall, rehabilitation of columns to improve their seismic resistance.

Mainly three types of fibers, namely glass, aramid, and carbon are used. Aramid FRP and glass FRP composites are much more ductile than carbon FRP. FRP materials have been used primarily in aerospace and defense, rather than in the civil infrastructure area, mainly due to high cost of the raw material and manufacturing processes. FRP materials have mechanical property and physical properties superior to those of steel, particularly with respect to tensile and fatigue strength. Due to their lightweight, and ease to install on irregular surfaces, the use of FRP systems for the repair and strengthening of reinforced concrete structures has become an accepted practice within civil engineering community.

FRP reinforcement may be performed laminates or flexible sheets. The laminates are stiff plates or shells that are pre curved and installed by bonding them to the concrete surface with a thermosetting resin. The sheets are either dry or pre impregnated with resin known as pre - preg and cured after installation on to the concrete surface. This installation technique is known as wet lay - up. The properties of FRP composites and their versatility have resulted in significant saving in construction cost and reduction in shut down time of facilities as compared to conventional strengthened methods such as section enlargement, external post tensioning and bonded steel plates.

2) Reinforced Cement Concrete (RCC) Beam: Plain concrete does not easily withstand tensile and shear stresses caused by wind, earthquakes, vibrations, and other forces and are therefore unsuitable in most structural applications. In reinforced concrete, the tensile strength of steel and the compressive strength of concrete work together to allow the member to sustain these stresses over considerable spans. The invention of reinforced concrete in the 19th century revolutionized the construction industry and concrete became one of the world's most common building materials. Reinforcing schemes are generally designed to resist tensile stresses in particular regions of the concrete that might cause unacceptable cracking and structural failure. Modern reinforced concrete can contain varied reinforcing materials made of steel, polymers or alternate composite material in conjunction with rebar or not. Reinforced concrete may also be permanently stressed (in compression), so as to improve the behaviour of the final structure under working loads. The repair and rehabilitation of structural member, is perhaps one of the crucial problem in civil engineering applications. Moreover, a large number of structures constructed in the past using the older design codes in different part of the world are structurally unsafe according to the new design codes. Since replacement of such deficient elements of structures incurs a huge amount of public money and time. The strengthened of concrete members has become the acceptable way of improving their load carrying capacity and stiffness of the structures.

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IJEP 43 (12) : 1107-1113 (2023) (ISSN : 0253-7141)

Preparation and Characterization of Multiwalled Carbon Nanotubes Doped With Titanium Dioxide

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Air pollution and global warming are a major threat to the environment because of use of fossil fuels in transportations. To overcome the above problem, hydrogen can be used as an alternate fuel since it does not release any toxic pollutants and it prevents air-borne diseases. Utilization of catalyst for water splitting results in production of environment-friendly hydrogen generations. Hydrogen has been noted as the high-efficient and clean renewable fuel source. However, the usage of high-cost catalyst gives efficiency in hydrogen production but causes the economic burden for commercial applications. Therefore, the development of cost-effective catalyst which has the catalytic activity for the hydrogen evolution reaction should be used for large-scale production. In the present study, multiwalled carbon nanotubes (MWCNT) were doped with synthesised titanium dioxide (TiO_2) to produce catalyst. Multiwalled carbon nanotubes doped titanium dioxide were prepared by a sol–gel method and it was characterized by particle size, morphology, elemental composition and bandgap energy analysis. Therefore, MWCNT doped TiO_2 is a potential photocatalyst for effective generation of hydrogen when exposed to visible light at room temperature or in direct sunlight.

KEYWORDS

Multiwalled carbon nanotubes/titanium dioxide composite, Sol-gel method, Photocatalysis, Characterization of catalysts

1. INTRODUCTION

For the past decades, humans have been suffering with the energy crisis, to overcome that, fossil fuel had become the major part of their life. But increased usage of fossil fuel had created many major problems to the environment and the human beings with the release of toxic pollutants which causes many air-borne diseases, like bronchitis, lung disease and breathing problems in living organisms. Air pollution has increased by release of toxic pollutants in the environment by burning fossil fuels, fumes from vehicles and industries, open burning of garbage waste which results in global warming, climatic changes, transmission of infectious diseases, causing acid rain [1]. And major climatic changes also take place which affects the agriculture and living organisms in food chain. In order to overcome this problem, clean fuels have become the solution. Clean energy attracted increasing interests as the alternate for the fossil fuels because of environmental impact and energy depletion [2]. Many renewable resources are available all over the world. Among all the renewable resources, hydrogen is considered as the clean energy because of its high efficiency and zero emission of secondary toxic pollutants while using it as a fuel.

In the developing technologies, there are various methods that can be used for H_2 production, like photocatalytic process, electrocatalytic water splitting process and photochemical methods [3-7]. Among several methods, photocatalytic methods can be used as effective method for high efficiency [8]. Until this date, photocatalytic method is said to be the best process for hydrogen production, CO_2 reduction and for the treatment of various water. Hydrogen can be produced from different types of water, like seawater, pure water, industrial wastewater, domestic wastewater and greywater. But considering complex structures and other chemical contents in water, high-cost catalysts and high efficient equipment and instruments are required. Thus, low-cost catalyst are prepared for high production of hydrogen and to avoid production of secondary pollutants. For this we have prepared a crystalline and porous catalyst for the increased H_2 production. This prepared catalyst can be used in photocatalytic water splitting process which is the major emerging process in current scenario. The porous materials not only meet

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World Journal of Advanced Engineering Technology and Sciences

eISSN: 2582-8266

Cross Ref DOI: 10.30574/wjaets

Journal homepage: https://wjaets.com/

WJAETS

(RESEARCH ARTICLE)

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Hydrogen production from industrial wastes by photo catalysis

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World Journal of Advanced Engineering Technology and Sciences, 2023, 08(01), 201–207

Publication history: Received on 22 December 2022; revised on 31 January 2023; accepted on 03 February 2023

Article DOI: https://doi.org/10.30574/wjaets.2023.8.1.0034

Abstract

This review focuses on our research findings about efficiency of different nano materials synthesized by us for photocatalytic hydrogen production from industrial wastes. Lab-scale photocatalytic reactors were fabricated for hydrogen production from liquid phase alkaline waste streams and gaseous phase hydrogen sulfide. The effects of operating parameters namely pH, flow rate, light intensity, liquid depth, sulfide and sulphite concentration were investigated for for 7 photocatalysts viz., CuGa2-xFe_xO_4/RuO_2, Fe_2O_3-CdS/ZnS, Pd-Cr_2O_3/CdS, Ce-TiO_2, CdS-ZnS/TiO_2, CdS/ZnS, Ti-Cr-MCM-48. Among the photocatalysts used, CdS/ZnS nanosized photocatalyts have a much greater surface area and thus give a better hydrogen yield.

Keywords: Solar Photocatalysis; Liquid Phase; Gas Phase Photocatalysts; Hydrogen Production

1. Introduction

Hydrogen sulfide (H_2S) is a toxic gas harmful to human beings and the environment. It was generated due to various industrial activities and sewage treatment plants (STPs) (Supriya and Subrahmanyam 1997 and Linkous et al 2004). If the pH is less than 6, then H_2S is mainly in the gaseous form. When pH increases to 6 – 8, part of H_2S converts into hydrosulfide ion (HS^-). At pH 6 – 8, there is a mixture of H_2S and HS^-. For a pH of 8 – 12, the main ion is HS^- but there is still some H_2S. The sulfide ions are present in appreciable concentrations above pH 10.

H_2S is abundant in natural gas and petroleum. Natural sources include crude oil, natural gas, salt marshes, sulfur springs, and swamps. Sewers with low velocities encourage the growth of anaerobic bacteria in a slime layer coating the sewer. These bacteria reduce sulfur compounds such as sulfate, thereby producing sulfides. These compounds occur naturally in domestic wastewater but also can bc concentrated in industrial waste streams (Priya, 2011 and Kalairasi, 2012). With the increasing consumption of crude oil, the amount of H_2S released from petroleum refining has gradually increased. H_2S is also contained in most natural gas wells. Caustic scrubbing is commonly applied for the removal of H_2S from biogas in STPs and acid gases in petroleum refineries. During this process, alkaline sulfide wastewater is generated. Sulfide wastewater is also generated from leather and pulp and paper industries. Of all the industries given, Refineries and Petrochemical industries were been regarded as a most important producer of sulfide waste stream in high concentration as well as in quantity (Priya and Kanmani, 2011 and Balamurugan and Kanmani, 2013).

The erratic nature and toxicity of sulfide depends upon the pII, refining processes, percentage of sulfur in crude oil. The impacts of the sulfide were been categorized as Aesthetic and Health, Mechanical and Environmental. Higher concentration effects range from choking to coma or death. High content of sulfur compounds in lubricating oils seems to lower resistance to oxidation and increases the deposition of solids as sludge in engines. Under alkaline conditions,

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Biomass Conversion and Biorefinery
https://doi.org/10.1007/s13399-023-04643-6

ORIGINAL ARTICLE

Effect of biomass waste Limonia acidissima biochar on eco-friendly photocatalysis leachate water treatment system: an experimental investigation

N Thangam[1,2] · S. Suriya[3]

Received: 10 May 2023 / Revised: 1 July 2023 / Accepted: 15 July 2023
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Abstract
In this present research, an attempt has been made to develop a photocatalysis-based leachate purifying setup using photo reactive nanoparticle and Limonia acidissima biomass converted biochar with UV light. The primary aim of this study was to establish a novel photo reactor with TiO_2 and novel biochar for purifying the leachate water from municipal wastes. The TiO_2 nanoparticles were synthesized via sol-gel process whereas the biochar was prepared via pyrolysis. The chemical oxygen demand (COD) and color removal of leachate are studied with respect to values of pH, catalyst dosage, and light intensity. Results revealed that the increase in the intensity enhances degradation process under optimal conditions (pH 4, catalyst dosage 5wt.% of TiO_2 with 3wt.% biochar and UV + visible lamp source at 4 h of contact time) up to 70% of COD and 84% of color are degraded compared to solar light intensity. Compared to existing chemical and physical method, the biochar-enhanced photocatalysis has received attention as a promising method for the degradation of leachate water contaminants. It indicated that the UV-visible TiO_2 and biomass derived biochar nanoparticles are low-cost, recyclable, efficient and environmentally friendly. This high-performance solid waste removal system could be implemented in industries, hospitals, household, and transportation sectors.

Keywords Pollutatnts · Water · Photocatlytic · Sol-gel · Biomass

1 Introduction

Solid wastes are garbage, refuse, trash, and different discarded solid materials, that were generated from human activities, particularly from residential, industrial, institutions (e.g., restaurants, banks), establishments (e.g., hospitals, schools), and representatively wastes area unit managed by municipal authorities [1]. In developing countries, large quantities of municipal solid waste (MSW) are formed because of the growing urbanization and manufacturers [2]. In India, about 115000 MT (approximately) per day of municipal solid wastes are produced daily [3]. This solid waste has a high amount of moisture content, volatile solid, ash content, CHNSO (total nitrogen, carbon, nitrogen, sulfur, and oxygen) contents, calorific value, and heavy metal. Thus, these solid wastes are hard to remove because of their structure and the way they are associated [4].

The use of land for the ultimate disposal of solid waste material is adopted across the globe. Since it is also an opportunity for recycle and reuse [5]. On the result of long run, leachate is produced. This produced leachate perolates into the ground thereby polluting water bodies. Leachate has waste material or substance with a high level of pH, chemical oxygen demand (COD), biologicaloxygen demand (BOD), inorganic salts, heavy metals, and toxicity [6]. The amount of Leachate produced is influenced by the amount of precipitation and sudden outburst water run-on and run-off, the degree of land-water coming into the waste-containing zone, the wet content, and adsorbent capability of the waste material or substance. Characteristics of landfill leachate vary from one another, due to the area of land used and duration of operation are not same in all unsanitary landfill

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Published online: 22 July 2023

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Photocatalytic Hydrogen Production using PD doped CDS

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Abstract **- We report on the photocatalytic hydrogen production of Pd/CdS photocatalyst using an unconventional batch process with passive mixing. The catalyst has been characterized using X-ray diffraction and Scanning electron microscope. The result reveals that particle size 3.7 µm. The feasibility studies were carried out by varying the treatability parameters and it was found that maximum hydrogen production occurs at their respective optimum values. The highest volume of hydrogen produced after optimization is 80 mL at 250 W/m2 light intensity, 0.2 M sulphide concentration, 0.2 M sulphite concentration, 10 pH, 300 mL photolyte volume, 0.5g catalyst dosage and 30mL/hr recycle flow rate. Close investigation revealed that this high production is due to the optimization of parameters coupled with batch process with passive mixing. The catalyst also has proved to be photo stable for up to 5 trials**

Index Terms **- Batch process, Photocatalyst, Passive mixing, Photostable.**

I.INTRODUCTION

Hydrogen has gained importance as a clean fuel in the energy economy recently. The idea is to obtain a renewable solution to supply this fuel in sufficient quantities and photocatalytic splitting of hydrogen sulphide waste stream have been garnering attention in this area. H_2, as an energy carrier with a high calorific value of 122 kJ g^{-1} (2.75 times greater than hydrocarbon fuels) is clean and renewable [1]. Photocatalysis was carried out using Pd-Cr_2O_3 nanocomposite cocatalyst which has been reported earlier in achieving high photocatalytic efficiencies greatly due to the doping of CdS with Pd and Cr [2]. The rate of hydrogen production depends on the type of reactor used as its main purpose is to facilitate photocatalysis using a catalyst. Batch process with passive mixing was found out to have good photocatalytic hydrogen production [3]. This method of batch process with passive mixing omits the need for a magnetic stirrer to circulate the catalyst that have settled at the bottom in conventional batch processes. There is no formation of dead zones where some amount of the catalyst settles down and remains stagnant.

II.MATERIALS AND METHOD

2.1 Preparation of photocatalyst

For the synthesis of the photocatalyst Palladium chloride ($PdCl_2$, 99.99% purity), Chromium nitrate ($Cr(NO_3)_3.9H_2O$, 98% purity), Sodium borohydride ($NaBH_4$,98%) and Cadmium sulphide (CdS) were obtained from Merck. All chemicals were used as received without further purification. Then a calculated amount of CdS was added based on the experimental requirements and the solution is stirred vigorously for 20 minutes.

2.2 Photocatalytic reaction

For carrying out the reaction in a batch process with passive mixing, an airtight reactor made out of Borosilicate© glass was fabricated with a volume capacity of 500 mL(Fig. 1). The reactor has three openings, one for photolyte entry, photolyte exit and gas exit respectively. The photolyte exit is placed at the bottom of the reactor which is tapered so that the photocatalyst loaded into the reactor will also exit along with the photolyte and go into passive circulation. All of the openings have a valve attached and circulation is achieved using a peristaltic pump [3]. The gas is collected in an inverted water displacement apparatus where there is a septum through which the gas can be sampled. Gas chromatography analysis was carried out to test the presence of hydrogen in the gas sample.

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International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

H_2 PRODUCTION FROM SULFIDE WASTEWATER USING ZnO DOPED TIO_2 PHOTOCATALYSIS

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Abstract - *ZnO-TiO_2 powder synthesized with by sol-gel method was used for production of hydrogen from sulfide wastewater. SEM, XRD, UV-DRS, FT-IR were used for characterization of the product. SEM shows that agglomeration of particles was due to cerium. XRD pattern indicates that crystal is tetragonal, body centred cubic lattice in anatase phase with particle size of 34.06 nm. The band gap energy of 1.7 eV and threshold wavelength of 700 nm were found using UV-DRS. Also, the surface adsorption was determined using FTIR. The photocatalytic properties for the production of H_2 from simulated sulfide water were studied using ZnO -TiO_2 a tubular photocatalytic reactor. The results show that 0.1 g suspended in 500 ml of simulated wastewater (10000 mg/L) irradiated at 150W visible lamp produced maximum H_2 of 5189 µmol h^{-1} by converting sulfide (200 mg/L). The comparison of performance also reveals that ZnO-TiO_2 was better than Nano TiO_2 and TiO_2.*

***Key Words*: ZnO-TiO_2, Band gap, Sulfide, Hydrogen, Photocatalysis, Sol-gel method.**

1.INTRODUCTION *(Size 11 , cambria font)*

During the past few decades, refining crude oil by refiners have siginificantly reduced sulfur dioxide emissions in the transportation sector. The sulfur present in the crude oil is removed and it generates sulfide rich wastewater which is the biting issue in the industrial sectors. The presence of sulfide in the wastewater exerts a high biological oxygen demand of 2mol O_2/L mol S^{2-} which remains a threat to living organisms in water (Poulton *et al.*, 2002). Hence, if released to the water bodies without treatment can cause serious environmental effects causing adverse threat to the aquatic life and mass fish mortality (Altas and Buyukgungor, 2008). Considering the impacts, the treatment of sulfide from wastewater is often attempted through various treatment processes like adsorption, coagulation, chemical oxidation, wet air oxidation, membrane technologies, and biological processes to avoid the related environmental concerns but all of them are either expensive or not friendly to environment (El Naas *et al.*, 2009, Demirci *et al.*, 1997, Abdelwahab *et al.*, 2009, Sun *et al.*, 2008, Rahman and Al Malack, 2006). Furthermore, refineries are also in need of large quantities of hydrogen to purify sulfur rich crude oils (World diesel, 2003). To resolve both the problems by framing a suitable strategy, solar photocatalysis is the best and beneficial treatment process which has a high oxidation potential (estimated to be +2.8V) to mineralize all the organic pollutants and the catalyst itself is non-toxic, cost effective and readily available (Al-Rasheed., 2005, Laoufi *et al.*, 2008,

Gaya and Abdullah, 2008). Among the semiconducting materials, more attention is given to TiO_2 because of its high photocatalytic activity, resistance to photocorrosion, photostability, low cost and non toxicity. Nevertheless, Titania has a large band gap (3.2 eV for anatase TiO_2) and therefore small fraction of solar light, about 2-3 % in the UV region can be utilized so that they cannot be installed in refineries to solve the problem. Hence, continuous improvement of photoreaction rate and the solar efficiency via adjusting the band structure of TiO_2 is a promising phenomenon at this stage.

To achieve this goal, metal doped titania is given more focus, testing their efficiency by comparison with pristine TiO_2 (Sampath *et al.*, 1994 and Ranjit *et al.*, 1997). So far, this technology is yet to be commercialized because of the low photocatalytic rate degradation efficiency on the surface of TiO_2 particles, which is due to the fast recombination rate of photogenerated electron-hole pairs. In order to slow

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

TREATMENT OF LEACHATE WATER USING PHOTOCATALYST (TiO2) UNDER UV LIGHT

Thangam. N[1*] and Suriya. S[2]

1. Research scholar, Anna University & Assistant Professor, PERI Institute of Technology, Chennai
2. Associate Professor, Jerusalem College of Engineering, Chennai – 600 100, Tamilnadu, India.

ABSTRACT

A trend of significant increase in the municipal solid waste generation has been recorded worldwide. This has been found due to over population growth rate, industrialization, urbanization and economic growth. Most of the countries have adopted sanitary landfilling as the best method for disposal of their Municipal Solid Waste (MSW). Municipal Solid Waste(MSW) is dumped at specified locations in a city. They are mostly open sources, generating foul smell. One such location is the Perungudi Garbage yard. The perungudi dump site is located towards the northern limit of a large topographic depression termed as the pallikaranai Depression covers an area of 228 acres. Daily waste disposed of in perungudi garbage yard is around 2400 tons to 2600 MT. With such huge amounts of waste being dumped, it also generates a huge amount of leachate, which requires treatment before being discharged to the environment. The landfill leachate polluter potential is 10 to 100 times greater than sewage. Leachate is generated as water percolates through a landfill and comes into contact with the waste. Physical (particulate), chemical, and microbial pollutants transfer into the water forming what is termed 'leachate'. This paper deals with the treatment of leachate using the photocatalytic process. In this study we used TiO_2 for the treatment of leachate from landfills.The result of this study seems promising and might be applied for futher treatment process of lanfills leachate and polluted water.

Keywords: Groundwater, Landfill, Photocatalytic

INTRODUCTION

Solid wastes are garbage, refuse, trash and different discarded solid materials that were generated from human activities, particularly from residential, industrial institutions (e.g., Restaurants, banks), establishment (e.g., hospitals, schools) and typically wastes area unit managed by municipal authorities. In developing countries, large quantities of municipal solid waste (MSW) are formed because of the growing urbanization and manufacturers. In India, it's calculated that concerning 115000 MT of municipal solid waste is generated daily within the country [1, 2]. This solid waste has the high volume and numerous qualities; moreover these compounds are persistent and extremely stable because of the formation of their organic matter [3].

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

THE PHOTOCATALYTIC ACTIVITY OF PD-CR2O3/CDS ALONG WITH BATCH PROCESS WITH PASSIVE MIXING

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ABSTRACT

We report on the photocatalytic hydrogen production of Pd-Cr2O3/CdS photocatalyst using an unconventional batch process with passive mixing. The catalyst has been characterized using X-ray diffraction and Scanning electron microscope to reveal a colloidal solution of CdS aggregates with particle size 3.7 µm. The feasibility studies were carried out by varying the treatability parameters and it was found that maximum hydrogen production occurs at their respective optimum values. The highest volume of hydrogen produced after optimization is 40.1 mL at 220 W/m² light intensity, 0.2M sulphide concentration, 0.2M sulphite concentration, 10 pH, 300mL photolyte volume, 0.5g catalyst dosage and 30mL/hr recycle flow rate. Close investigation revealed that this high production is due to the optimization of parameters coupled with batch process with passive mixing. The catalyst also has proved to be photo stable for up to 5 trials.

Keywords: *Photocatalyst; Hydrogen production; photocatalytic activity; batch process*

1. Introduction

Hydrogen has gained importance as a clean fuel in the energy economy recently. The idea is to obtain a renewable solution to supply this fuel in sufficient quantities and photocatalytic splitting of hydrogen sulphide waste stream have been garnering attention in this area. H2, as an energy carrier with a high calorific value of 122 kJ g^{-1} (2.75 times greater than hydrocarbon fuels) is clean and renewable[1]. Photocatalysis was carried out using Pd-Cr2O3 nanocomposite cocatalyst which has been reported earlier in achieving high photocatalytic efficiencies greatly due to the doping of CdS with Pd and Cr [2]. The rate of hydrogen production depends on the type of reactor used as its main purpose is to facilitate photocatalysis using a catalyst. Batch process with passive mixing was found out to have good photocatalytic hydrogen production [3]. This method of batch process with passive mixing omits the need for a magnetic stirrer to circulate the catalyst that have settled at the bottom in conventional batch processes. There is no formation of dead zones where some amount of the catalyst settles down and remains stagnant.

2. Materials and methods

Preparation of photocatalyst

For the synthesis of the photocatalyst Palladium chloride (PdCl2, 99.99% purity), Chromium nitrate (Cr (NO3)3.9H2O, 98% purity), Sodium borohydride

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© December 2023| IJIRT | Volume 10 Issue 7 | ISSN: 2349-6002

Design of Sewage Treatment Plant for Peri Education

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Abstract— One of the most important and valuable land resources for humans and all other living things on the planet is water. Regretfully, pollution and contamination are spreading quickly. This was primarily caused by industries disposing of waste untreated into adjacent bodies of water, such as lakes, ponds, and rivers. Every educational institution needs a suitable treatment facility to handle the sewage that is produced there. Thus, a sewage treatment plant with enough capacity to process the sewage must be built for the PERI EDUCATION. Prior to designing the sewage treatment plant, a study on the characteristics of the wastewater will be conducted. The pH value, total solids, total suspended particles, hardness, alkalinity, fluoride, iron, ammonia, nitrate, and phosphate are all analyzed as part of this research study. A sewage treatment plant is quite necessary to receive the hostels, college and canteen waste water and removes the materials which pose harm for general public environment. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer). The main purpose of Sewage treatment process is to remove the various constituents of the polluting load: solids, organic carbon, nutrients, inorganic salts, metals, pathogens etc. Effective wastewater collection and treatment are of great importance from the standpoint of both; environmental and public health. Sewage/Wastewater treatment operations are done by various methods in order to reduce its water and organic content, and the ultimate goal of wastewater management is the protection of the environment in a manner commensurate with public health and socioeconomic concerns. This project deals with the proper design of a complete treatment of sewage and its major components such as storage tank, screen chamber, primary sedimentation tank, ASP (activated sludge process), secondary sedimentation tank.

Index Terms- sewage, BOD, Solids, ASP, public health. Sewage

I. INTRODUCTION

Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash-water and industrial wastes. The growing environmental pollution needs for decontaminating waste water result in the study of characterization of waste water, especially domestic sewage. In the past, domestic waste water treatment was mainly confined to organic carbon removal. Recently, increasing pollution in the waste water leads to developing and implementing new treatment techniques to control nitrogen and other priority pollutants.

Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage water quality and compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to re-use sewage effluent for drinking water.

1.1 DEFINITIONS

Sewerage: the system by which waste matter is carried away in sewers and made harmless.

1. Sewage: waste matter such as faeces or dirty water from homes and factories, which flows away through sewers.
2. Storm water: water that comes from precipitation and ice/snow melt – it either soaks into exposed soil or remains on top of impervious surfaces, like pavement or rooftops.
3. Activated sludge: the type of wastewater treatment process for treating sewage or industrial wastewaters using aeration and a biological floc composed of bacteria and protozoa.

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International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

H_2 PRODUCTION FROM SULFIDE WASTEWATER USING ZnO DOPED TIO_2 PHOTOCATALYSIS

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***Key Words*: ZnO-TiO_2, Band gap, Sulfide, Hydrogen, Photocatalysis, Sol-gel method.**

1.INTRODUCTION *(Size 11 , cambria font)*

During the past few decades, refining crude oil by refiners have siginificantly reduced sulfur dioxide emissions in the transportation sector. The sulfur present in the crude oil is removed and it generates sulfide rich wastewater which is the biting issue in the industrial sectors. The presence of sulfide in the wastewater exerts a high biological oxygen demand of 2mol O_2/L mol S^{2-} which remains a threat to living organisms in water (Poulton *et al.*, 2002). Hence, if released to the water bodies without treatment can cause serious environmental effects causing adverse threat to the aquatic life and mass fish mortality (Altas and Buyukgungor, 2008). Considering the impacts, the treatment of sulfide from wastewater is often attempted through various treatment processes like adsorption, coagulation, chemical oxidation, wet air oxidation, membrane technologies, and biological processes to avoid the related environmental concerns but all of them are either expensive or not friendly to environment (El Naas *et al.*, 2009, Demirci *et al.*, 1997, Abdelwahab *et al.*, 2009, Sun *et al.*, 2008, Rahman and Al Malack, 2006). Furthermore, refineries are also in need of large quantities of hydrogen to purify sulfur rich crude oils (World diesel, 2003). To resolve both the problems by framing a suitable strategy, solar photocatalysis is the best and beneficial treatment process which has a high oxidation potential (estimated to be +2.8V) to mineralize all the organic pollutants and the catalyst itself is non-toxic, cost effective and readily available (Al-Rasheed., 2005, Laoufi *et al.*, 2008,

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To achieve this goal, metal doped titania is given more focus, testing their efficiency by comparison with pristine TiO_2 (Sampath *et al.*, 1994 and Ranjit *et al.*, 1997). So far, this technology is yet to be commercialized because of the low photocatalytic rate degradation efficiency on the surface of TiO_2 particles, which is due to the fast recombination rate of photogenerated electron-hole pairs. In order to slow

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© December 2023| IJIRT | Volume 10 Issue 7 | ISSN: 2349-6002

Design of Sewage Treatment Plant for Peri Education

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Abstract— One of the most important and valuable land resources for humans and all other living things on the planet is water. Regretfully, pollution and contamination are spreading quickly. This was primarily caused by industries disposing of waste untreated into adjacent bodies of water, such as lakes, ponds, and rivers. Every educational institution needs a suitable treatment facility to handle the sewage that is produced there. Thus, a sewage treatment plant with enough capacity to process the sewage must be built for the PERI EDUCATION. Prior to designing the sewage treatment plant, a study on the characteristics of the wastewater will be conducted. The pH value, total solids, total suspended particles, hardness, alkalinity, fluoride, iron, ammonia, nitrate, and phosphate are all analyzed as part of this research study. A sewage treatment plant is quite necessary to receive the hostels, college and canteen waste water and removes the materials which pose harm for general public environment. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer). The main purpose of Sewage treatment process is to remove the various constituents of the polluting load: solids, organic carbon, nutrients, inorganic salts, metals, pathogens etc. Effective wastewater collection and treatment are of great importance from the standpoint of both; environmental and public health. Sewage/Wastewater treatment operations are done by various methods in order to reduce its water and organic content, and the ultimate goal of wastewater management is the protection of the environment in a manner commensurate with public health and socioeconomic concerns. This project deals with the proper design of a complete treatment of sewage and its major components such as storage tank, screen chamber, primary sedimentation tank, ASP (activated sludge process), secondary sedimentation tank.

Index Terms- sewage, BOD, Solids, ASP, public health. Sewage

I. INTRODUCTION

Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash-water and industrial wastes. The growing environmental pollution needs for decontaminating waste water result in the study of characterization of waste water, especially domestic sewage. In the past, domestic waste water treatment was mainly confined to organic carbon removal. Recently, increasing pollution in the waste water leads to developing and implementing new treatment techniques to control nitrogen and other priority pollutants.

Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage water quality and compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to re-use sewage effluent for drinking water.

1.1 DEFINITIONS

Sewerage: the system by which waste matter is carried away in sewers and made harmless.

1. Sewage: waste matter such as faeces or dirty water from homes and factories, which flows away through sewers.
2. Storm water: water that comes from precipitation and ice/snow melt – it either soaks into exposed soil or remains on top of impervious surfaces, like pavement or rooftops.
3. Activated sludge: the type of wastewater treatment process for treating sewage or industrial wastewaters using aeration and a biological floc composed of bacteria and protozoa.

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DURABILITY PROPERTIES OF SIFCON BY USING SILICAFUME AND STEEL FIBRES

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ABSTRACT--- **Slurry infiltrated fibrous concrete (SIFCON) is one of the starting late made movement material that can be considered as interesting kind of high performance fiber reinforced concrete (HPFRC) with higher fiber content. In this examination on SIFCON normal port land concrete is displaced by 15% by weight of Silica Fume (SF) and five explicit steel fiber volumes of Plain Mild Steel Fiber (PMSF) 0%, 5%, 15%, 25%, and 35% are used. The silica fume substitution is proceeded with persistent 15% by weight of concrete on the mechanical properties of SIFCON have been gotten some information about. As showed up by the results extending of fiber volumes makes apex weight. The compressive quality for PMSF35 at 28 days is 42.08MPa, the split inflexible nature for PMSF35 fiber of at 28 days is 5.7MPa, the brief versatility for PMSF35 at 28 days is 4.06MPa and ultrasonic heartbeat speed an assistance for 3D square for PMSF35 at 28day is 4.4 km/s and for PMSF35 fibered chamber at 28 days quality is 4.9km/s uninhibitedly. Key words: SIFCON; Fiber reinforced materials; Silica fume; Admixtures; Mechanical properties; Composite; Steel fiber; Composites**

CHAPTER 1

INTRODUCTION

1.1 Slurry Infiltrated Fibrous Concrete

Slurry Infiltrated Fibrous Concrete (SIFCON), which flows under its own weight and does not require any external vibration for compaction, has revolutionized concrete placement. SIFCON was first introduced in the late 1979's by USA researchers, is a highly workable concrete that can be flow under its own weight through restricted sections without segregation and bleeding. For SIFCON, it is generally necessary to use super plasticizers in order to obtain high mobility. Adding a large volume of powdered material or viscosity modifying admixture can eliminate segregation. SIFCON was introduced in India in the Ninctics (Parameswaran et al., 1993). European Federation of natural trade associations representing procedures and applicators of specialists and guidelines for SIFCON to provide a framework for design and use of high-quality SIFCON.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SOLAR PANEL ROADS FOR FOOT PATH

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ABSTRACT:

India has the second-largest road network in the world and is blessed with about 300 days of sunny weather. India does not have enough electricity to even power all its cities, towns and villages. In order to make the* solar power *a viable economical option, open spaces that are situated close to the high energy demand areas must be identified. Hence, it is proposed that open spaces such as the* roads, *parking lots, bicycle lanes, footpaths etc be utilized for this purpose. All great cities have one thing in common - clean, wide, pedestrian-friendly* roads. Chennai, *with an eye on the future, is planning huge investments to build* roads *that encourage* walking. *Therefore solar panel footpaths can be implemented in Chennai. In this context, a solarpowered foot paths that generates electricity sounds like a good idea. Solar panel footpaths are a modular system of specially engineered solar panels that can be walked upon. Solar panel tiles are made of acrylic glass protecting crystalline silicon solar cells, which can support the weight of the pedestrians. Solar panel consists of three layers, road surface layer, electronics layer and base layer. Solar panel tiles use solar panels, photovoltaic effect, LEDS and microprocessor chips with circuit boards. The renewable energy generated by solar panel footpaths will replace the current need for fossil fuel which is used for generation of electricity.

Keywords: *solar panels, foot paths, roads, mechanical properties, tiles.*

[1] INTRODUCTION

The Solar Roadway is a series of structurallyengineered solar panels that are driven upon. The idea is to replace all current petroleum-based asphalt roads, parking lots, and driveways with Solar Road Panels that collect energy to be used by our homes and businesses. Solar roadways can save our country from energy crisis and climate change. The solar roadways gives answers to our deteriorating highway infrastructure, our crumbling power grid, and the climate change. As the day by day the price of petroleum products are getting huge hike and resources are very less there will be no longer feasible material such as asphalt for our road surfaces. The renewable energy generated by solar road panels will replace the current need for fossil fuel which is used for generation of electricity as also oil used for driving the vehicles which in turn reduces the greenhouse gases nearly to half. The implementation of Solar Roadways Technology will create the clean energy boom, spurring private investment on a massive scale, with relatively little extra cost.

Limitation of petrol, diesel and other fossil fuels in nature will create a resource crisis in near future. It's hazardous pollution and global warming is creating severe environment problem even for the survival of human. This has attracted attention all around the world and alternative resources and technologies. The concept of solar roadways is to replace the all traditional fuel

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© December 2023| IJIRT | Volume 10 Issue 7 | ISSN: 2349-6002

Analysis And Design of Primary School Building

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Abstract— **The planning and design of the school building includes our project, which involves designing the proposed school building plan and planning the school in accordance with NBC 2005 criteria. followed by using STAADPRO software to assess whether or not the proposed school is stable. A fundamental comprehension of the engineer's surroundings and the behavior of a structure is essential for anybody overseeing the construction process. On the construction site, constructors must be able to answer a variety of technical queries, including structural ones that the design experts may not always address.**

Construction managers need to know this information because worker safety and the strength and stability of structures during construction are critical issues. A wide range of software applications are available for the many specializations within civil engineering. The majority of civil engineers work in specific areas within the field, including project and construction management, geotechnical, structural, transportation, and environmental engineering. Because of its advanced features, flexible modeling environment, and fluid data collaboration, STAAD, or STAAD.Pro, is the go-to tool for structural engineering professionals when designing virtually any type of structure, including culverts, petrochemical plants, tunnels, bridges, piles, and much more. STAAD.Pro allows structural engineers to analyze and design virtually any type of structure through its flexible modeling environment, advanced features and fluent data collaboration. Its wide use in the field of civil engineering makes it of an utter importance to learn.

Keywords—***School Building, NBC-2005, analysis, design, staad-pro.***

I. INTRODUCTION

Planning When thinking about planning of school from a constructors point of view certain factors need to be considered environmental factors, social factors and economical factors etc. My project involves analysis and design of PRIMARY SCHOOL BUILDING using very popular designing software STAAD Pro v8i.

The detailed assessment of the primary school building needs and associated capital and operational funding requirements for primary school facility to service.

This building comes under the category of educational in the higher educational sector, there form of construction is typically academic buildings consisting of offices, principal cabin, classrooms and laboratories, restrooms. This school is having primary section. This buildings is G+2 having ground floor, first floor, second floor.

This education building is rectangular shaped, shows that the building is symmentrical and having good air circulation throughout the building.

1.1 Scope of the Study

- *Architectural Design:* To Planning and designing functional and aesthetically pleasing spaces for classrooms, laboratories, libraries, administrative offices, and recreational areas.
- *Structural Engineering:* Ensuring the structural integrity of the building to withstand environmental factors and provide a safe learning environment.
- *Safety:* To Adhering to building codes, safety standards, and accessibility requirements to ensure the well-being of students, staff, and visitors.
- *Educational Technology Integration:* To incoporating technology infrastructure to support modren teaching methods and educational tools.

1.2 Objectives

This school building is found technically good in every season, giving good environment for teaching. The objectives of school building construction include creating a safe and conducive learning environment, accommodating the educational needs of students, fostering a sense of community, complying with building codes and regulations, and ensuring sustainability and efficiency in design and construction.

- To Ensure the construction meets safety standards to provide a secure environment for students, staff, and visitors.

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Design of cell transmission tower with different bracing patterns

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[2,3,4]*B.E Student,Department of civil engineering PERI INSTITUTE OF TECHNOLOGY,CHENNAI*

Abstract - *The analysis and design of a cell transmission tower employing various bracing designs is the primary focus of this article. Angles are typically used in the fabrication of steel lattice towers for the bracing members and main legs.When a high load bearing capacity, low self weight, economical material usage, and quick manufacturing and construction are required, latticed structures are the ideal option. These factors make self-supporting lattice towers most common in the power line and telecommunications industries. Finding a cost-effective and extremely efficient design is crucial.*

As few members as feasible should be used in the tower's arrangement to maintain its basic geometry, and every member should be sufficiently stressed under several loading cases. The objective is to create an appealing, well-proportioned, and cost-effective building. Towers are built with a high safety factor for wind loads.

***Key Word*...Transmission tower, wind speed, analysis, design, staad-pro**

1.INTRODUCTION

India is inhabited to a substantial population that requires an extensive transmission and distribution network in order to meet their needs for energy and signal supply. Angles are commonly employed in the bracing components and main legs of lattice tower construction. Because cell towers, also known as cell sites, are equipped with electric communications equipment and antennae, telephones and radios in the surrounding area may connect wirelessly. Towers are modelled using constants such as height, bracing system, angle sections, base widths, wind zone, common clearances, span, conductor, and ground wire parameters.

Members may be secured by gusset plates or by direct fastening. To reduce the unsupported length and increase their buckling strength, the main legs and the bracing components are laterally supported at intervals between their end nodes using redundant or secondary bracings. Lattice structures are ideal for applications requiring a high load carrying capacity, low self-weight, efficient material utilisation, and speedy manufacture and assembly. The power line and telecommunications sectors are the ones that use self-supporting latticed towers the most due to these considerations. Since hundreds of towers may be utilised for power transmission and communication purposes, it is critical to find an incredibly efficient and reasonably priced lattice tower design.

1.1 Scope of the Study

The primary goals of this study are to build towers with effective bracing patterns and to use appropriate bracing patterns to minimise maximum member stress and frequency. Additionally, to build the tower with a high wind load safety factor.

1.2 Objectives

The goals of this suggested research work are to design a cell transmission tower, including foundation details, and analyse it, taking into account the fundamental factors listed below.

I. Base width II. Height of the tower

III. Soil bearing capacity IV. configuration of tower

The following tasks need to be completed in order to achieve these goals:

a.Tower layouts are created with AUTOCAD.
b. The towers' longitudinal face is used to compute wind load.
c. The loading format and safety pattern need to be assessed
d.The towers are now modelled and examined using STADD.pro as a three-dimensional structure.

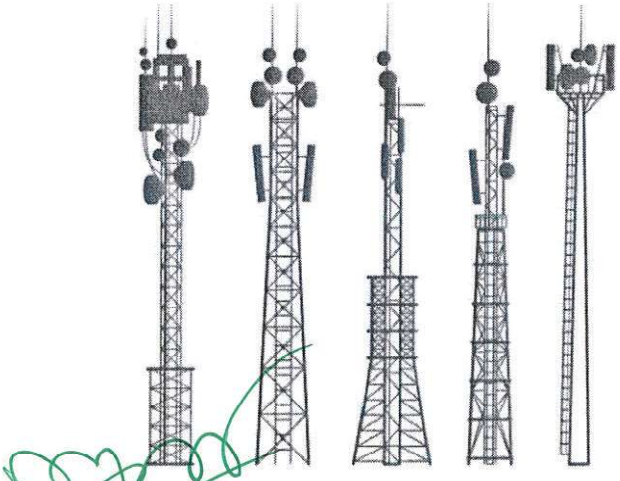


Fig. 1 Different types of Bracing Cell Towers

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
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India has the second-largest road network in the world and is blessed with about 300 days of sunny weather. India does not have enough electricity to even power all its cities, towns and villages. In order to make the* solar power *a viable economical option, open spaces that are situated close to the high energy demand areas must be identified. Hence, it is proposed that open spaces such as the* roads, *parking lots, bicycle lanes, footpaths etc be utilized for this purpose. All great cities have one thing in common - clean, wide, pedestrian-friendly* roads. Chennai, *with an eye on the future, is planning huge investments to build* roads *that encourage* walking. *Therefore solar panel footpaths can be implemented in Chennai. In this context, a solarpowered foot paths that generates electricity sounds like a good idea. Solar panel footpaths are a modular system of specially engineered solar panels that can be walked upon. Solar panel tiles are made of acrylic glass protecting crystalline silicon solar cells, which can support the weight of the pedestrians. Solar panel consists of three layers, road surface layer, electronics layer and base layer. Solar panel tiles use solar panels, photovoltaic effect, LEDS and microprocessor chips with circuit boards. The renewable energy generated by solar panel footpaths will replace the current need for fossil fuel which is used for generation of electricity.

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Design of Sewage Treatment Plant for Peri Education

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[1, 2, 4] *Assistant Professor, Department of civil Engineering, PERI Institute of Technology, Manivakkam-600048*
[3] Dr.G.Loganathan, *Assistant Professor, Department of Mechanical Engineering, PERI Institute of Technology, Manivakkam-600048*

Abstract— One of the most important and valuable land resources for humans and all other living things on the planet is water. Regretfully, pollution and contamination are spreading quickly. This was primarily caused by industries disposing of waste untreated into adjacent bodies of water, such as lakes, ponds, and rivers. Every educational institution needs a suitable treatment facility to handle the sewage that is produced there. Thus, a sewage treatment plant with enough capacity to process the sewage must be built for the PERI EDUCATION. Prior to designing the sewage treatment plant, a study on the characteristics of the wastewater will be conducted. The pH value, total solids, total suspended particles, hardness, alkalinity, fluoride, iron, ammonia, nitrate, and phosphate are all analyzed as part of this research study. A sewage treatment plant is quite necessary to receive the hostels, college and canteen waste water and removes the materials which pose harm for general public environment. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer). The main purpose of Sewage treatment process is to remove the various constituents of the polluting load: solids, organic carbon, nutrients, inorganic salts, metals, pathogens etc. Effective wastewater collection and treatment are of great importance from the standpoint of both; environmental and public health. Sewage/Wastewater treatment operations are done by various methods in order to reduce its water and organic content, and the ultimate goal of wastewater management is the protection of the environment in a manner commensurate with public health and socioeconomic concerns. This project deals with the proper design of a complete treatment of sewage and its major components such as storage tank, screen chamber, primary sedimentation tank, ASP (activated sludge process), secondary sedimentation tank.

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I. INTRODUCTION

Sewage and sewage effluents are the major sources of water pollution. Sewage is mainly composed of human fecal material, domestic wastes including wash-water and industrial wastes. The growing environmental pollution needs for decontaminating waste water result in the study of characterization of waste water, especially domestic sewage. In the past, domestic waste water treatment was mainly confined to organic carbon removal. Recently, increasing pollution in the waste water leads to developing and implementing new treatment techniques to control nitrogen and other priority pollutants.

Sewage Treatment Plant is a facility designed to receive the waste from domestic, commercial and industrial sources and to remove materials that damage water quality and compromise public health and safety when discharged into water receiving systems. It includes physical, chemical, and biological processes to remove various contaminants depending on its constituents. Using advanced technology it is now possible to re-use sewage effluent for drinking water.

1.1 DEFINITIONS

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International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

H_2 PRODUCTION FROM SULFIDE WASTEWATER USING ZnO DOPED TIO_2 PHOTOCATALYSIS

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Abstract - *ZnO-TiO_2 powder synthesized with by sol-gel method was used for production of hydrogen from sulfide wastewater. SEM, XRD, UV-DRS, FT-IR were used for characterization of the product. SEM shows that agglomeration of particles was due to cerium. XRD pattern indicates that crystal is tetragonal, body centred cubic lattice in anatase phase with particle size of 34.06 nm. The band gap energy of 1.7 eV and threshold wavelength of 700 nm were found using UV-DRS. Also, the surface adsorption was determined using FTIR. The photocatalytic properties for the production of H_2 from simulated sulfide water were studied using ZnO -TiO_2 a tubular photocatalytic reactor. The results show that 0.1 g suspended in 500 ml of simulated wastewater (10000 mg/L) irradiated at 150W visible lamp produced maximum H_2 of 5189 µmol h^{-1} by converting sulfide (200 mg/L). The comparison of performance also reveals that ZnO-TiO_2 was better than Nano TiO_2 and TiO_2.*

***Key Words*: ZnO-TiO_2, Band gap, Sulfide, Hydrogen, Photocatalysis, Sol-gel method.**

1.INTRODUCTION *(Size 11 , cambria font)*

During the past few decades, refining crude oil by refiners have siginificantly reduced sulfur dioxide emissions in the transportation sector. The sulfur present in the crude oil is removed and it generates sulfide rich wastewater which is the biting issue in the industrial sectors. The presence of sulfide in the wastewater exerts a high biological oxygen demand of 2mol O_2/L mol S^{2-} which remains a threat to living organisms in water (Poulton *et al.*, 2002). Hence, if released to the water bodies without treatment can cause serious environmental effects causing adverse threat to the aquatic life and mass fish mortality (Altas and Buyukgungor, 2008). Considering the impacts, the treatment of sulfide from wastewater is often attempted through various treatment processes like adsorption, coagulation, chemical oxidation, wet air oxidation, membrane technologies, and biological processes to avoid the related environmental concerns but all of them are either expensive or not friendly to environment (El Naas *et al.*, 2009, Demirci *et al.*, 1997, Abdelwahab *et al.*, 2009, Sun *et al.*, 2008, Rahman and Al Malack, 2006). Furthermore, refineries are also in need of large quantities of hydrogen to purify sulfur rich crude oils (World diesel, 2003). To resolve both the problems by framing a suitable strategy, solar photocatalysis is the best and beneficial treatment process which has a high oxidation potential (estimated to be +2.8V) to mineralize all the organic pollutants and the catalyst itself is non-toxic, cost effective and readily available (Al-Rasheed., 2005, Laoufi *et al.*, 2008,

Gaya and Abdullah, 2008). Among the semiconducting materials, more attention is given to TiO_2 because of its high photocatalytic activity, resistance to photocorrosion, photostability, low cost and non toxicity. Nevertheless, Titania has a large band gap (3.2 eV for anatase TiO_2) and therefore small fraction of solar light, about 2-3 % in the UV region can be utilized so that they cannot be installed in refineries to solve the problem. Hence, continuous improvement of photoreaction rate and the solar efficiency via adjusting the band structure of TiO_2 is a promising phenomenon at this stage.

To achieve this goal, metal doped titania is given more focus, testing their efficiency by comparison with pristine TiO_2 (Sampath *et al.*, 1994 and Ranjit *et al.*, 1997). So far, this technology is yet to be commercialized because of the low photocatalytic rate degradation efficiency on the surface of TiO_2 particles, which is due to the fast recombination rate of photogenerated electron-hole pairs. In order to slow

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Recent Patents on Engineering, XXXX, XX,

REVIEW ARTICLE

Progress in the Development of Additive Manufacturing Techniques for Infrastructure Engineering

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ARTICLE HISTORY

Received: May 22, 2023
Revised: August 21, 2023
Accepted: August 30, 2023

DOI:
10.2174/0118722121257966231010092500

Abstract: It is a moral duty to act in a way that considers the welfare of both people and the planet. When constructing, two factors should be considered: the sustainability of the development-related workforce and the state of the world after construction. Many experts have achieved notable reforms in the civil infrastructure systems (CIS) sector in the past. However, additive manufacturing (AM) does not seem to be properly understood by the CIS business. This survey examines how all the fundamental components used by AM in CIS, such as metals, cement, and polymers, are utilized. The goal of this study is to foster AM innovation, particularly in the CIS, and to provide an overview of AM development from 2011 to 2022. Additionally, the various AM techniques used to construct the aforementioned structures are presented. The audit research suggests that AM might be beneficial in the CIS industry due to the fact that residences, additions, and seats were constructed using this technique. Photos of the constructed structures are also included to enhance the reader's understanding. It is generally assumed that implementing AM tactics in the CIS industry may reduce material consumption, expedite the development process, and enhance employee safety. Due to the limited amount of available research, further investigation into polymer printing and metal printing is recommended.

Keywords: Additive manufacturing, infrastructure, construction, materials, buy to build.

1. INTRODUCTION

The research of additive manufacturing (AM) is one of the recent revolutionary developments that have gained widespread acceptance [1,2]. This advancement has reduced our material waste and sped up our assembling process for single models [3]. When discussing this invention, Charles Hull, an American legend, is frequently praised for his contributions to the development of AM. However, we appraise include Jean-Claude André, a French researcher who was investigating this fascinating discovery at the same time [4]. We also value Japanese rapid prototyping researcher Hideo Kodama enough credit for all of his work on additive manufacturing, however, this article completely focused on the Charles Hull AM development.

Carl Deckard also contributed to the research of additive manufacturing and is the owner of a patent for the laser sintering of polymer-based materials. By examining the most recent prints and the overall exhibiting structure, Deckard continues to advance this topic [5]. Different advancements have likewise been completed by a substantial printing group of Loughborough University, utilizing a mechanized expulsion-based process. The extent of the printing items were restricted, as they could deal with a print aspect up to 5.4 m × 4.4 m × 5.4 m. Such aspects would create sufficient ability to print fundamental precast substantial parts, for example, precast substantial segments. Contrasted with Contour Crafting, the substantial printing strategy has a more modest goal of statement (4-6 mm concerning layer profundity), which leads to a more exact control of perplexing calculations. A cycle called Dshape has likewise been created by stressing a fastener on the material layer. D-shape is a processing plant gantry-based powder-bed 3D printer, which cases to have a viable printing technique for huge-scope objects. The D-shape technique utilizes a powder testimony process, which is very like the inkjet powder printing process where a fastener is utilized so that particular layers of printing materials are solidified. Form

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1872-2121/XX $65.00+.00

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CAR LANE DETECTION USING NUMPY WITH OPENCV PYTHON

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Abstract

Driver support system is one of the most important features of the modern vehicles to ensure driver safety and decrease vehicle accident on roads. Apparently, the road lane detection or road boundaries detection is the complex and most challenging tasks. It is including the localization of the road and the determination of the relative position between vehicle and road. A vision system using onboard camera looking outwards from the windshield is presented in this paper. The system acquires the front view using a camera mounted on the vehicle and detects the lanes by applying few processes. The lanes are extracted using Hough transform through a pair of hyperbolas which are fitted to the edges of the lanes. The proposed lane detection system can be applied on both painted and unpainted roads as well as curved and straight road in different weather conditions. The proposed system does not require any extra information such as lane width, time to lane crossing and offset between the center of the lanes. In addition, camera calibration and coordinate transformation are also not required. The system was investigated under various situations of changing illumination, and shadows effects in various road types without speed limits. The system has demonstrated a robust performance for detecting the road lanes under different conditions.

Keywords—Image processing, Hough Transform, Python, Deep learning.

Introduction

The emergence of vehicles has liberated human feet from long journeys. In a modern society where almost every household has a car, people enjoy the convenience of travel, but also face many traffic hazards. To help make the driving safer and more intelligent, intelligent driving uses various sensing and detection equipment along with advanced algorithms to acquire, process and analyse the collected data promptly, so that driver can be alert to potential dangers and vehicles can be controlled automatically.

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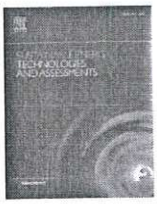
Sustainable Energy Technologies and Assessments 57 (2023) 103290



Contents lists available at ScienceDirect

Sustainable Energy Technologies and Assessments

journal homepage: www.elsevier.com/locate/seta



Structural performance of Nano alumina-based RC element with polypropylene fibre and GGBS: An experimental assessment

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ARTICLE INFO

Keywords:
GGBS
Nano alumina
Compressive strength
Polypropylene fibre
Deflection

ABSTRACT

In today's scenario, the essential ingredients of concrete, such as cement, and fine and coarse aggregate will vanish completely in a few decades due to its overexploitation and unscaled utilization. Similarly, cement has contributed to more emissions of carbon dioxide into the atmosphere during its stage of manufacturing, and it's become a major influencer of increasing global temperatures. Recent researchers are finding alternative sources of materials that replace fully or partially the role of conventional concrete materials. Several industrial and agricultural solid residues are under investigation to be utilised nowadays to alter the place of conventional concrete materials and to control the impact of environmental problems. In this study, the performance of structural RC elements of M35 grade was evaluated by replacing the Nano alumina in a fixed proportion of 1% with the inclusion of ground granulated blast furnace slag and Polypropylene fibre at definite proportions in place of cement as per mix design. Engineering parameters such as compression, modulus of rupture and elasticity, crack width, and rate of deflection was examined. Based on the results of experiments, it was found that the cement proportion CAG1 and CAGP4 have provided the promotable result when compared to conventional concrete and led to using these materials instead of cement has made RC elements stronger than when they were made with regular cement.

Introduction

In the last few decades, the growth of the construction field gets rumbled due to the deficiency of global housing and the rapid growth of urbanization, and it leads to an increase in the manufacture of cement globally. As per a recent study, the production of cement has been estimated to increase by 45% more in the year 2050 when compared to present demand. Worldwide, cement production alone accounted for 5–7% of carbon dioxide emissions and increases the greenhouse gas effect by 65%. It was suggested that the emission caused by the conventional OPC was reduced only by finding and utilizing the alternative binding material. Several types of research have been carried out to investigate the alternative binding material to reduce the negative impact of conventional Portland cement. Currently, both the agricultural and industrial sectors are struggling to dispose of their huge quantity of waste which is responsible for numerous environmental issues [1]. Out of which, some of the waste materials or residues such as fly ash, Rice husk ash, Red mud, Nano Silica, Glass waste, steel slag, Saw dust etc., have possessed the property of pozzolanic and varied with physical and chemical properties, such material are potentially consider and utilized as the replacement for conventional cement material in concrete. Replacing those waste materials or industrial residues are replaced as partially or fully can help to maintain the improvement of environmental hazards and increase the property of concrete without compromising its strength and durability.

In recent periods, the term sustainability has been widely implemented in the construction sector through the constraint of resources and developing a challenging perspective. Particularly those alternative materials are replaced with cement to reduce the cost of construction and improve its structural behaviour [2]. In general, the replacement of cement with alternative material in concrete has been done in two ways such as either the alternative or substitute material are added together with cement while manufacturing or mixed separately after some time with the help of batching plant. Likewise, the addition of Nanomaterials with particle size less than 500 μm in concrete helps to improve the properties of conventional concrete by increasing its density and filling the inter-zone particle of concrete. The addition of Nano size particles in concrete can help to eliminate the common concrete discrepancies such

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https://doi.org/10.1016/j.seta.2023.103290
Received 28 June 2022; Received in revised form 9 January 2023; Accepted 13 May 2023
Available online 30 May 2023
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PERI INSTITUTE OF TECHNOLOGY
Mannivakkam, Chennai - 600 048.

Sustainable Materials and Smart Practices - NCSMSP-2021
Materials Research Proceedings **23** (2022) 50-59
Materials Research Forum LLC
https://doi.org/10.21741/9781644901953-7

Experimental Investigation on Partial Replacement of Cement with Metakaoline, Fly Ash and Silica Fume in Concrete

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Keywords: Metakaoline, Silica Fume, Fly Ash, RCPT, Acid Test

Abstract. The process of construction begins some thousand years ago and the monuments that we are seeing are the proof for that. The materials that are being used in the construction some thousand years ago are not the same which are being used nowadays. The construction materials get modified and new inventions are taking place due to the continuous research. The scope of this project is to make building materials sustainable and to make them eco-friendly. In the olden days lime was used as a mortar and now it's being replaced by cement. But still research is going on to make better binding materials to make construction reliable. As an initiative, in our project we are going to partially replace cement with metakaoline, fly ash and silica fume simultaneously. We are going to replace cement with each additive in the order of 5%, 7.5%, 10%, 12.5%, and 15%. Therefore, the summation of replacement of all additives will be in the order of 15%, 22.5%, 30%, 37.5%, 45%. The concrete specimens are casted based on the replacement ratios along with the conventional concrete specimens. The specimens are subjected to the various laboratory tests and it was found that a 10% replacement of cement with additive materials to be optimum.

Introduction

The main constituent of construction is concrete. Cement used in concrete is ordinary Portland cement which emits carbon dioxide that causes pollution to the environment. Reduction in the usage of OPC in concrete gains a greatest advantage in the environment. As the nation is focusing more on the infrastructure development the usage of cement in the structure is increasing tremendously. So we are in need of finding an alternative resource that can replace cement and also which does not harm the environment. In this research work we are going to replace the OPC with metakaolin, silica fume and fly ash in different percentage in order to find the optimum percentage of the replacement. The metakaoline is used for greater binder in concrete.

Material Investigation

The materials which are to be used in the research are subjected to basic material test and the results are furnished in the Table 1.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT WITH ALKALI ACTIVATED GLASS POWDER

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Abstract - Efforts have been made in the concrete industry to use waste glass as partial replacement of coarse or fine aggregates and cement.In this project, finely powdered waste glasses are used as a partial replacement of cement in concrete and compared it with conventional concrete. This work extensive study the possibility of using Glass powder as a partial replacement of cement for new concrete. M30 grade was used. Glass powder was partially replaced as 15%, 20% and tested for its compressive,Tensile and flexural strength up to 28 days of curing and were compared with those of conventional concrete , it is found that glass powder can be used as cement replacement material upto particle size less than 75µm.The glass powder is mixed with Naoh solution and metakolin which tends to form gel like structure producing the binding property .

Keywords: Metakolin, NaoH solution, glass powder, split tensile strength , compressive strength.

1. Introduction

Concrete is the second largest material widely used Cement industry emits 7% of greenhouse gases to the atmosphere. One ton of Carbon-di-oxide is released to the atmosphere for producing one-ton cement in industry. To reduce the emission the alternative materials to be used in concrete.

There are many alternatives like rice husk ash, fly ash, egg shell, glass powder. When we are going for an alternative in construction it should be economical and easily available. Glass is anamorphous material produced by melting a mixture of silica, soda ash, caco3 at high temperature followed by cooling where the solidification occurs without crystallization process. Waste glass is being generated annually all over the world.

Once the glass becomes a waste it is disposed as landfills, which is unsustainable as this does not decompose in the environment. Glass is principally composed of silica. Use of milled (ground) waste glass in concrete as partial replacement of cement could be an important step toward development of sustainable infrastructure systems. When waste glass is milled down to micro size particles, it is expected to undergo pozzolanic reactions with cement hydrates, forming secondary Calcium Silicate Hydrate (C–S– H).In this research chemical properties of both clear and coloured glass were evaluated. Chemical analysis of glass and cement samples was determined using different composition between clear and coloured glasses. Since the demand in the concrete manufacturing is increasing day by day, the utilization of river sand as fine aggregate leads to exploitation of natural resources, lowering of water table, sinking of the bridge piers, etc as a common treat. Attempts have been made in using crushed glass as fine aggregate in the replacement of river sand.

The crushed glass was also used as coarse aggregate in concrete production but due to its flat and elongated nature which enhances the decrease in the workability and attributed the drop in compressive strength. Glass is non - biodegradable material hence it is not suitable for landfill process. It is an inert material which could be recycled and used many times without changing their chemical properties.

In glass powder the main concern is alkali silica reaction, the chemical reaction takes place between silica rich glass particle and the alkali solution of concrete. Efforts have been made in the concrete industry to use waste glass as partial replacement of coarse or fine aggregates. However, due to the strong reaction between the alkali in cement and the reactive silica in glass, studies for use of glass in concrete as part of the coarse aggregate were not always satisfactory due to reduction and simultaneous excessive expansion.

Efforts have been made in the concrete industry to use waste glass powder as partial replacement of cement. Waste glass when ground to a very fine powder shows pozzolanic properties as it contains SiO_2 and therefore to some extent can replace cement in concrete and contribute in strength development. This paper reports the results of an experimental investigation on the use of glass powder in partially replacement cement in concrete applications and summarized the behavior of concrete.

1.1 Objective

The objective of the research is to study the effect of the use of „Glass Powder" as a replacement of cement to assess the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060403*

Analysis of Formability of Aa6061 by Dual Step Angle Single Point Incremental Forming

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

Abstract— Single Point Incremental Forming (SPIF) is one among the chief promising more current strategies in metal shaping procedure, and this procedure depends on confined plastic misshapening on a thin level strong clear. Steady framing process has higher formability limits than other level strong shaping procedures including stepping, and is in this way an attractive technique for shaping level strong parts. to require bit of leeway of this high formability it's important to realize an approach to boost the formability, improving the probability of segment achievement. It distorts continuously and locally the level strong by round framing. Hemi-round headed device is to be acclimated distort the sheet in to required shapes. Formability investigation must be dispensed to get effective shaping procedure. This venture plans to survey the framing conduct of AA6061 through steady shaping procedure by double step framing edge. Shortened cones are to be framed for this reason at temperature, with the assistance of PC controlled numerical machine Formability Limit Diagram (FLD) is utilized to survey the conduct of level strong. FLD and thickness circulation has been anticipated and looked at for the structure.

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Keywords: ***Single Point Incremental Forming, Incremental forming; formability limit diagram; thickness distribution***

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Citation: Sivakumar.R, Prabhakaran, Sathiyamoorthy.R.M. "Analysis of Formability of Aa6061 by Dual Step Angle Single Point Incremental Forming", Journal of Science, Computing and Engineering Research, 6(4), 10-14, 2023.

I. INTRODUCTION

Gradual framing is one among the more current shaping advances where convoluted outside shapes are frequently framed without utilizing punches and kicks the bucket. A hemispherical device is squeezed over the level strong to make the necessary shape. The instrument way is constrained by a CNC machine. it's bolstered the procedure of assembling the structured formed by dynamic development of the hemispherical instrument. Since limited distortion is created during shaping, more extending happens than in regular framing. This procedure is typically applied as a result of greater adaptability and less tooling cost. on account of moderate shaping procedure, this will be restricted uniquely to little cluster creation frameworks.

Azaouzi et al (2012) demonstrated that an advancement system tried for a given framing technique, in order to decrease the assembling time and homogenize thickness appropriation of an uneven part. The ideal framing system resolve by Finite Element Analyses (FEA) along with Response Surface Method (RSM) and Sequential Quadratic Programming (SQP) calculation.

Suriyaprakan et al (2013) researched the steady framing process, extraordinarily spend significant time in test SPIF and Multi-Stage ISF tried with the Aluminum Alloy 1050. The impact of the toolpath and shaping apparatus development, got a vertical divider, on thickness dissemination was contemplated. For formability examination, lattice strain investigation and estimation was firm.

Khwere et al (2013) researched the nuts and bolts of steady sheet framing, groupings, devices utilized and impact of arranged parameters like plane anisotropy, device size and shape, grease subsequently. The examination additionally incorporated the propelled strategies fused in ISF like doubly bended surfaces, half and half framing, their favorable circumstances and impediments.

Mugendiran et al (2014) shortened square pyramid and cone were shaped to audit the formability of AA6061 at temperature. A PC controlled numerical machine was utilized for framing. Framing limit graph (FLD) was acclimated study the conduct of sheet. FLD and thickness dispersion had anticipated and looked at for both the shapes. As far as possible graph got through gradual framing impressively shifts from customary shaping breaking point outline. Correlation of FLD and thickness dispersion indicated that cone has higher framing limit than square cup and hence the thickness in the wake of shaping was preferred in cone shapes over in square cups.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604010*

Design of Smart Helmet

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— In present time many cases of bike accident can be seen around us. peoples get injured or might be dead and one of the reason is not wearing helmet. Many peoples could save their life in accident cases if they weared helmet at the time of accident, continuously road rules are violated. So as to overcome these problems, an Smart helmet is proposed having a control system built on a helmet. Smart Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among motorcyclists. A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety for the rider. It will send the message and dial call which can be easy to connect the rider with the emergency number when he/she met an accident with helmet on. A smart helmet is a special idea which makes motorcycle driving safer than before. This is implemented using GSM module technology. The working of this smart helmet is very simple, vibration sensor sense the vibration of helmet where the probability of hitting is more which are connected to nano-arduino board. So when the rider crashes and the helmet hit the ground, these sensors sense and gives to the nano-arduino board, When the data exceeds minimum stress limit then GSM module automatically sends message and call to Emergency or family members. Also here we have an fan for rider's comfort and light indications to indicate other vehicles. May Wearing this smart helmet can save a life

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Keywords: ***Nano Arduino, Gsm Module, Vibration Sensor, Fan and Led Indications***

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Citation: Sivakumar.R, Prabhakaran.D, Sathiyamoorthy.R.M. "Design of Smart Helmet", Journal of Science, Computing and Engineering Research, 6(4), 38-45, 2023.

I. INTRODUCTION

The Main motive of developing this project is that rider should wear Helmet while riding. Day by day the two wheeler accidents are increasing and leads to loss of many lives. According to the Survey of India there are around 1200 accidents occurring due to bike crashes per year. The reasons may be many such as no proper driving knowledge, no fitness of the bike, fast riding of bike, drunken and drive etc. If accidents are one issue, lack of treatment in proper time is another reason for deaths. According to survey 700 accidents occur per year, nearly half the injured people die due to lack of treatment in proper time. Many reasons for this are late arrival of Ambulance, absence of pupil ate the accident site to inform the family or ambulance or to provide victim with first aid.

This is a situation we observe our day to day life, a thought of finding some solution to resolve this problem come up with this idea of giving the information about accident as soon as possible and in Time. Because after all time matter a lot, if everything is done in time atleast we can save half the lives that are lost due to bike accidents.

The aim of our project is to give information to the ambulance and family members about the accident as soon as possible so that they can take certain measures to save the life of the person who met with an accident.

A. Project Objectives

The Objectives of Design and Fabrication of Smart Helmet are given below

1. It is the minimum cost helmet that is capable of sensing the vibration of helmet and prevents deaths from road accidents.
2. It has the front lights that will indicate the other vehicles and prevent accidents.
3. It also have sweat-free fans for rider's comfort.

II. LITERATURE REVIEW

Jesudoos A et.al[1] proposed a mechanism, where sensors such as IR sensor, vibration sensor and gas sensor, mems are used. The gas sensor is used to detect the amount of liquor he had consumed by checking the breath of a person wearing the helmet. The bar control of the vehicle is handled by MEMS. Accident is detected by vibration

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604017*

Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 12 April 2023

Abstract— The hybridization of natural and synthetic fibers leads to composites optimum mechanical properties. Chicken feather fibers have potential application in light weight composites. In this study, an attempt was made to study the effect of the stacking sequence on epoxy-based Jute (J), Glass (G), Chicken feather (CF) hybrid composites. Two types of hybrid composite, each containing two different layers of jute and glass fabric and chicken feather as filler were manufactured by the hand layup method. Mechanical properties, such as tensile and flexural were studied. The experimental results showed that the stacking sequence of the fiber layers has a significant effect on the overall performance of prepared hybrid composites. Among the prepared hybrid composites, composite laminate with jute layers on their outer surfaces exhibited improved tensile strength of 92.3 MPa and the composites with glass fiber layers on their outer surfaces showed enhanced flexural strength of 125.7 MPa. This study demonstrated a new way to utilize CFFs and the prepared hybrid fiber composite has better mechanical properties than CFF composites while having increased bio-based content.

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Keywords: ***Natural fiber; Glass fiber; Chicken feather, Polymer Matrix Composites; Mechanical Properties***

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Citation: Sathiyamoorthy Margabandu , Madhavan. P 3Anilkumar, Prabhakaran, Sivakumar. "Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites", Journal of Science, Computing and Engineering Research, 6(4), 86-89, 2023.

I. INTRODUCTION

Over the past few decades, polymers have replaced many of the conventional materials in various applications. This is possible because of the advantages such as the ease of processing, productivity, and cost reduction which polymers offer over conventional materials. In most of these applications, the properties of polymers are modified by using fillers and fibres to suit the high strength/high modulus requirements. Fibre reinforced polymers offer advantages over other conventional materials when specific properties are compared [1]. These composite materials find applications in diverse fields from home appliances to space-crafts. Natural fibres have recently attracted the attention of scientists and technologists because of the advantages that they provide over synthetic fibres. They are readily available low-cost fibres with low density and high specific properties. These are biodegradable and nonabrasive compared to other fibres used as reinforcement [2].

Recently, animal-based fibres have attracted increasing attention as potential high performance reinforcing fibres. Animal-based fibres that are traditionally used for polymer reinforcement are wool and silk. An alternative to the aforementioned fibres is fibre recovered from chicken feathers, as they are widely available and has good mechanical properties [3]. Large quantity of feather is produced by the poultry industry every year and these waste materials can be effectively used as a reinforcing agent. Around 24 billion chickens are killed per year across the world, which discard around 8.5 billion tons of feathers, in which India's contribution alone is 400 million tonnes. India is ranked the fifth largest poultry producer in the world. People of Kerala are among the major consumers of chicken in India and the degree of chicken waste accumulation in the state is very high [4]. There are some traditional disposal strategies for chicken feathers which includes their recycling into low quality animal feeds. But these are not commonly explored in Kerala and the waste is often burned in incineration plants or casually dumped on roadsides. However, these disposal methods cause serious environmental, social and health hazards. The chicken feathers pollute the soil into which it is dumped or pollutes the air when it is burnt. In both cases the presence of sulphur dioxide in feathers is the cause of pollution [5]. Chicken waste also causes water pollution. Chicken feathers are made of keratin fibres (about 90% by weight) which possess high toughness, good thermal insulating properties, non-abrasive behaviour and hydrophobic nature. Its morphology consists of an ordered hierarchy comprising a central rachis

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MECHANICS OF ADVANCED MATERIALS AND STRUCTURES
https://doi.org/10.1080/15376494.2023.2215837

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ORIGINAL ARTICLE

Buckling and dynamic behavior of uniform and tapered woven carbon/jute fiber reinforced polyester hybrid composite beams

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ABSTRACT

In the current work, the dynamic and buckling properties of hybrid fiber-reinforced polymer composite beams are investigated. The hybrid composite beam is made of polyester matrix, carbon fiber, and jute fiber. The mechanical characteristics of carbon/jute/polyester composites were examined using ASTM standards. Experimental dynamic analysis was performed on jute, carbon, and hybrid carbon/jute composite beams. The validity of a finite element (FE) model based on higher-order theory was examined, and it exhibits outstanding agreement for composite beams when compared to experiments and literature. The hybrid composite beams have a considerable impact on structural stiffness when compared to neat jute/polyester composite beams. In this work, the effects of end conditions, taper angles, and composite layers are also investigated in relation to the dynamic and buckling properties of uniform and tapered hybrid carbon/jute/polyester composite beams. The findings imply that hybrid composites can be a superior substitute material for automotive applications.

ARTICLE HISTORY
Received 3 February 2023
Accepted 16 May 2023

KEYWORDS
Natural fiber; hybrid composite; mechanical characterization; dynamic analysis; buckling

1. Introduction

Fiber hybridization is a technique that combines two or more fiber types in a single matrix to create a hybrid composite material with improved mechanical and physical qualities to satisfy competing and diverse design requirements at a cheaper cost. The use of natural fibers as reinforcement in polymer composites is the focus of recent research on hybrid composites because of their significant benefits, which include their wide availability, renewable nature, and affordability [1–2]. Due to its exceptional characteristics, which include a higher production feasibility than usual composites, it finds applications in the automotive, construction, and sporting goods industries [3–4]. The effects of fabric hybridization, stacking patterns, and ply angles on the mechanical characteristics of the natural composites were investigated in a variety of research. Gowda et al. [5] examined the various mechanical characteristics of jute fiber composites that had not been treated. A jute/polypropylene (PP) composite's mechanical performance was examined by Liu and Dai [6] using sodium hydroxide (NaOH) and a maleic anhydride-grafted polypropylene (MPP) emulsion. It was reported that the chemical treatment offers good adhesion, which improves the interfacial shear strength, flexural and tensile strengths, but not the impact strength of the composite. Madsen et al. [7] suggested modifying the Rule of Mixtures and including the composite porosity content and fiber anisotropy to forecast the axial stiffness and transverse stiffness of unidirectional flax/polypropylene composites. It was found that only the composite axial stiffness exhibits a better forecast, while the transverse stiffness prediction almost failed, despite the inclusion of two different types of porosity content in the proposed model, namely porosities generated by fiber structure and composite processes. Shah et al. [8] assessed the mechanical and physical characteristics of plant fiber yarns and investigated the use of a novel surface treatment method for plant fibers utilizing hydroxyethylcellulose to enhance the mechanical performance of yarn and fiber-matrix adhesion. The mechanical and viscoelastic characteristics of banana/epoxy composites were investigated by Venkateshwaran et al. [9] at different alkali treatment concentrations. The authors came to the conclusion that a concentration of 1% alkali treatment results in good mechanical and viscoelastic properties.

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Photocatalytic Hydrogen Production using PD doped CDS

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Abstract **- We report on the photocatalytic hydrogen production of Pd/CdS photocatalyst using an unconventional batch process with passive mixing. The catalyst has been characterized using X-ray diffraction and Scanning electron microscope. The result reveals that particle size 3.7 µm. The feasibility studies were carried out by varying the treatability parameters and it was found that maximum hydrogen production occurs at their respective optimum values. The highest volume of hydrogen produced after optimization is 80 mL at 250 W/m2 light intensity, 0.2 M sulphide concentration, 0.2 M sulphite concentration, 10 pH, 300 mL photolyte volume, 0.5g catalyst dosage and 30mL/hr recycle flow rate. Close investigation revealed that this high production is due to the optimization of parameters coupled with batch process with passive mixing. The catalyst also has proved to be photo stable for up to 5 trials**

Index Terms **- Batch process, Photocatalyst, Passive mixing, Photostable.**

I.INTRODUCTION

Hydrogen has gained importance as a clean fuel in the energy economy recently. The idea is to obtain a renewable solution to supply this fuel in sufficient quantities and photocatalytic splitting of hydrogen sulphide waste stream have been garnering attention in this area. H_2, as an energy carrier with a high calorific value of 122 kJ g^{-1} (2.75 times greater than hydrocarbon fuels) is clean and renewable [1]. Photocatalysis was carried out using Pd-Cr_2O_3 nanocomposite cocatalyst which has been reported earlier in achieving high photocatalytic efficiencies greatly due to the doping of CdS with Pd and Cr [2]. The rate of hydrogen production depends on the type of reactor used as its main purpose is to facilitate photocatalysis using a catalyst. Batch process with passive mixing was found out to have good photocatalytic hydrogen production [3]. This method of batch process with passive mixing omits the need for a magnetic stirrer to circulate the catalyst that have settled at the bottom in conventional batch processes. There is no formation of dead zones where some amount of the catalyst settles down and remains stagnant.

II.MATERIALS AND METHOD

2.1 Preparation of photocatalyst

For the synthesis of the photocatalyst Palladium chloride ($PdCl_2$, 99.99% purity), Chromium nitrate ($Cr(NO_3)_3.9H_2O$, 98% purity), Sodium borohydride ($NaBH_4$,98%) and Cadmium sulphide (CdS) were obtained from Merck. All chemicals were used as received without further purification. Then a calculated amount of CdS was added based on the experimental requirements and the solution is stirred vigorously for 20 minutes.

2.2 Photocatalytic reaction

For carrying out the reaction in a batch process with passive mixing, an airtight reactor made out of Borosilicate© glass was fabricated with a volume capacity of 500 mL(Fig. 1). The reactor has three openings, one for photolyte entry, photolyte exit and gas exit respectively. The photolyte exit is placed at the bottom of the reactor which is tapered so that the photocatalyst loaded into the reactor will also exit along with the photolyte and go into passive circulation. All of the openings have a valve attached and circulation is achieved using a peristaltic pump [3]. The gas is collected in an inverted water displacement apparatus where there is a septum through which the gas can be sampled. Gas chromatography analysis was carried out to test the presence of hydrogen in the gas sample.

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MACHINE LEARNING AND DEEP LEARNING: THE FRICTION STIR WELDING AND PLASMA ARC WELDING PROCESS

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Abstract- **This paper examines how artificial intelligence systems can be applied in the welding Procedures. AI and profound learning techniques could be utilized to work on the productivity of different welding processes by tracking down answers for their issues. Utilizing AI calculations has been shown to significantly improve welding cycle proficiency and precision. Modern robots equipped with artificial intelligence are able to resolve a number of puzzling issues affecting the assembling industry. Several welding processes rely upon human capacity while picking ideal limits that are extremely feeble to human botch and less useful. To diminish this faith, robots and modified systems are arranged using mind networks fit for conveying unsurprising weld quality and further created efficiency. Artificial intelligence is similarly used to picture welding given that the visual audit is essential to choose weld quality. These procedures can moreover be worn to weigh up the explanations behind various prosperity risks using backslide assessment.**

Keywords: **Artificial, Applied, Welding, Quality, etc.**

1. INTRODUCTION

Welding is a production cycle by which no less than two segments are entwined through force, pressure or equally forming a bond as the parts breezy. Welding is regularly applied to thermoplastics and metals, yet it can likewise be applied to wood. The completed welded joint may be implied as a weldment. Gas Metal Roundabout section Welding (GMAW) is used precisely and can be functional in ferrous also non-ferrous materials. This is a direct result of its versatility, high efficiency, steadfastness, usability, and robotization [1, 2], [3,] The connection offers various impenetrability rightness of the welding limits, appropriate to the modestly enormous integer of limits and a sturdy interrelationship [3], [4].

The fundamental guideline behind most kinds of welding stays to soften the two metals (by warming them over their dissolving focuses), add motion, and circuit them. Allow us to gain proficiency with the functioning guideline of gas welding. The metals are softened by the intensity from the response of fuel gas (Acetylene, Propane, Butane, Hydrogen, and so on) and oxygen. At the point when the gases from the chamber put away at high-pressure are delivered, they move through the light at high speed and are blended. The mixture is ignited by an external spark and has high temperatures and carbon dioxide characteristics. The fire begins blowing from the light. The intensity from this fire can be expanded by expanding the tension of the surge gas.

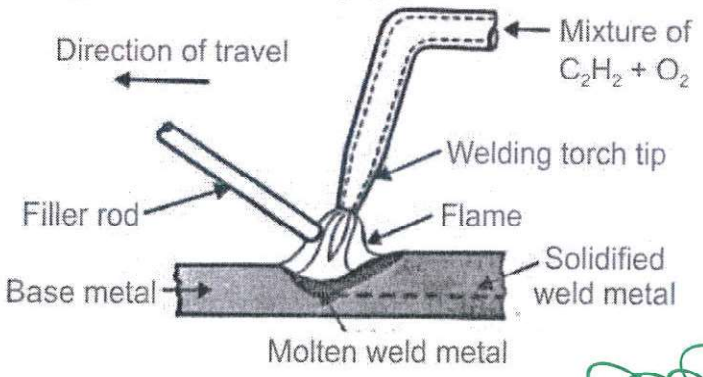


Figure 1 Gas Welding process

A subfield of AI known as profound learning depends on fake brain organizations. It is good for learning complex models and associations inside data. In significant learning, we don't need to unequivocally program everything. Because of enhancements in handling power and the accessibility of huge datasets, it has acquired prevalence as of

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International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Review of Supply Chain Management and Logistics Study

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Abstract

Supply chain management (SCM) is progressively more understood as the controlling of precarious business processes across a set-up of organizations that make up a supply chain. Many recognize the value of a process-based attitude to business and supply chain management, but do you know which processes to cogitate, what replace practices and activities each includes, and how these practices intermingle with each other?. Most people are not clear about how to interact with the, and how to interact with the process. There are mutually outdated functional silos. This paper affords considered and operational explanations of each of the eight supply chain practices identified by members of the Global Supply Chain Forum (GSCF). It also affords examples of interfaces between processes and how to contrivance processes approach in your union. Our goal is to afford managers with a charter they can use when employing supply chain management. Trainers provide useful materials for building supply chain management courses, and canvassers provide a variety of prospects to advance the field.

Keywords: SCM, Business, Replace, Interact, Chain, Field.

1. Introduction

Creation network the board (SCM) is a lot of attitudes recycled to really organize suppliers, creators, stockrooms, and stores, so item is conveyed and dispersed at the perfect sums, to the right regions, and with faultless timing, to restrict system wide costs while satisfying organization level essentials. Creation network the leaders is crucial in the business friendship park as it controls other key business areas, for instance, exercises the board, stock control and worth union. However, what really makes SCM so huge is that it can similarly renovate into an acute high milled for associations. Coming up next are the eight centre cycles of inventory network the board that were recognized by the Worldwide Inventory network Gathering [1]: Production network the board is the administration of eight key business processes," as indicated by Stock and Lambert [1].

1. Customer relationship management.
2. Customer Service Management.
3. Demand management.
4. Order Fulfillment.
5. Manufacturing flow management.
6. Procurement.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 5, September –October 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030501*

Efficient Network Threat Detection And Classification Method Using SVM+NB Algorithm On Cloud Computing

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Article Information

Received : 06 Sep 2022
Revised : 22 Sep 2022
Accepted : 10 Oct 2022
Published : 12 Oct 2022

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Abstract— In this work, NSL-KDD dataset is considered for processing the session flow and to analyse threat which is related to files in the cloud. Also, feature extraction is performed based on two essential features like high level features and low level features which are considered for classification purpose. Here, three effectual classifiers like efficient Naive Bayes (NB) classifier, Improved Support Vector Machine (ISVM) and Artificial Neural Networks (ANN) are utilized over the features extracted from the dataset for intrusion detection. Empirical outcomes depict that the selected features will offer better outcome to design the threat detection system which will be more efficient for cloud based network security. Results acquired from this methods show better trade off in comparison with existing systems like decision tree, random forest and so on. Performance metrics like as precision with 100%, accuracy with 99.5%, specificity with 100%, Recall with 100% and F measure with 100% has been evaluated with this machine learning algorithms.

Keywords: ***Artificial Neural Network, Cloud storage, Machine Learning algorithms, NB classifier, SVM.***

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Citation: Abishek.M, Anil Kumar. "Efficient Network Threat Detection And Classification Method Using SVM+NB Algorithm On Cloud Computing, Journal of Science, Computing and Engineering Research, 3(5), 01-11, Sep- Oct 2022.

I. INTRODUCTION

With the emergent growth in internet technology, various strategies for hacking information have also been raised. Even though there are numerous deals for protecting methodologies such as encryption and other protecting schemes [1]. However, there are certain types of intrusion that is to be detected.

As well, there is a bigger concerns related to cloud users and enormous hurdles to transfer their in- house business towards public cloud security. The problem might be that cloud vendors have not offer data security whilst being transported towards cloud environment. Furthermore, remote access comes under the influence of clients" responsibility and users" needs to possess stronger security knowledge associated to internet and networking, before acquiring access to cloud [2]. Anything that is connected with internet is not secured perfectly. Consequently, numerous data breaches occur.

Information stealing is the foremost concern when dealing with cloud computing, based on the Breach level Index website, there is roughly 39891145672 records were stolen in 2013. In 2016, roughly of 554 million records were lost, by reaching highest peak in October (approximately 472 million stolen data). Even technology giants like Microsoft was not left out, with 8 recorded data breaches in the year 2013-2016.

Intrusion Detection (ID) methodologies utilize two ideas: Anomaly Detection and Misuse Detection [3]. The former recognizes pattern sourced attacks departed from normal characteristics whilst the latter recognizes pattern sourced attacks that is inhibited from acknowledge intrusions. Accuracy is essential factor for intrusion detection, extensibility and adaptability as networking is crucial in network computation. Foremost crisis associated with present intrusion detection is the failure to identify 0-day attacks. Anomaly detection are generally adaptive where it cannot be proficient to foresee new attack, still it cannot recognize certain types of attack. From this view point, machine learning approach is cast off to enhance accuracy and other performance related factors.

Numerous cloud based attacks like fraud and phishing, malicious insider, unauthorized access, insecure interfaces etc. causes" data breach. An effectual classification model for cloud security threat [4] sourced on machine learning algorithm is used effectively.

Machine learning tools are measured as an effectual tool and utilized in government, financial services, health care, information security, transportation, etc. [5] for diverse prediction problems. These procedures attain computers to work without explicitly programmed to carry something. However, it makes computers to learn from previous experiences to resolve certain future crisis. By measuring the extensive usage, machine learning algorithms for cloud computing based threat detection is analysed and investigated. Intrusion Detection strategy for classification to effectually extract misuse detection to produce general network profile for anomaly detection, and then design an effectual classification algorithm to identify attacks The ID

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

ANALYSIS OF DRILLS USED IN BONE SURGERY

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ABSTRACT

The aim of this research is to find the life of the drill material used in bone surgery. In ancient days the doctors used to fix the bone fracture with the help of bamboo sticks, and a raw medicine from the forest due to the change of time, there are mechanical devices taking part in the human body as external bodies to the implementation also. In this work, three different materials are taken for testing and stress analysis of both static and dynamic for all the materials will be done to get the stress values for the life prediction inputs. Also, the optimization will be done to find out the best material. For evaluating the data obtained, wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

1. INTRODUCTION

Drill bit include very wide range of geometrically and functionally an operational surgical drill bit is the special group of medical instrument. Furthermore, because of a work in chemically active environment (body fluids, drugs) it is necessary to sterilize them after each use. The mentioned working conditions of the surgical instrument determine the selection of drill bit material which are Tungsten – Carbide, Titanium, Cobalt – Chromium and Titanium – chromium – vanadium.

1.1 Purpose

The aim of the work is determination of life period of a surgical drill – bone system in simulated conditions of drilling in a bone.

1.2 Design/methodology/approach

Drill is loaded with forces in the range F= 100200 N and torque T = 0.04 Nm. Calculations were carried out for two kinds of metallic material of the drill. The dynamic load and Static load were considered in selection of drill bit materials.

1.3 Findings from the literature

The effect of numerical analysis determinate of strains and stresses in working part of the drill. Results of analysis indicate diverse values of strains and stresses distribution in working part of the drill depending on its

geometry. The maximum values of strains and stresses were obtained for the drill of point angle 2κ1=120 deg. For evaluating this wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

1.4 Research limitations/implications

In order to simulate phenomena in real system, a simplified model of surgical drill – femur system will be modelled for analysis. The simplifications concerned mostly geometry of a femur. The femur is represented by

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060309*

Design and Fabrication of Multipurpose Agriculture Vehicle

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— The main aim of the project is to develop multipurpose agricultural vehicle, for performing major agricultural operations like ploughing, seeding, harvesting. The modification includes fabricating a vehicle which is small, compact in size. The project is about a machine design which makes cultivation much simpler. The design of the chassis of the vehicle is made in such a way that it is suitable for the operations. The design for automatic seed modified the currently available plough tool in such a way that it with stand the load. The harvester (cutter) is designed and working by scotch yoke mechanism.

Keywords: ***Ploughing, Seed sowing, Harvester, Cutter, Chassis, Scotch yoke mechanism, Cultivation, Agriculture, Operations, Design.***

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Citation: Madhavan P, Anil Kumar, Sivakumar R. "Design and Fabrication of Multipurpose Agriculture Vehicle, "Journal of Science, Computing and Engineering Research, 6(3), 38-45, 2023.

I. INTRODUCTION

Agriculture is the cultivation of animals, plants and fungi used to sustain and enhance human life agriculture was the key development in the rise of sedentary human civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. Modern agronomy, plants breeding, agrochemicals such as pesticides and fertilizers, and technological developments have in many cases sharply increased yields from cultivation, but at the same time have caused widespread ecological damage. Agricultural food production and water management are increasingly becoming global issues. Mechanized agriculture is the process of using agriculture machinery to mechanize the work of agriculture, greatly increasing farm worker productivity in modern times, and powered machinery has replaced many farm jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules.

The entire history of agriculture contains many examples of the use of tools, such as the hoe and the plough. But the ongoing integration of machines since the industrial revolution has allowed farming to become much less labour intensive current mechanized agriculture includes the use of tractors, trucks, combine harvesters, countless types of farm implements, airplanes and helicopters and other vehicles. Precision agriculture even uses computers in conjunction satellite imagery and satellite navigation to increase yields. Mechanization was one of the large factors responsible for urbanization and industrial economies. Besides improving production efficiency, mechanization encourages large scale production and sometimes can improve the quality farm produce on the other hand it can displace unskilled farm labour and can cause environmental degradation especially if it is applied short-sightedly rather than holistically.

II. SCOPE AND OBJECTIVE

A. Scope of the Project

•The seed sowing mechanism is modified into simple mechanism

•The multipurpose agriculturc vehicle is designed for small farmers in future

•The project will become an example for future works

B. Objective of the Project

•The primary objective is to develop a harvester which is simple and cost effective

•The reduction of cost of the Ploughing tool

•The life of the Ploughing tool is increase

III. PROPOSED WORK METHODOLOGY

A. Chassis of the Vehicle

The choice of material for the vehicle is the first and most important factor for automotive design. There is variety of materials that can be used in automotive body and chassis. The most important criteria that a material should meet are lightweight, economic effectiveness, safety, recyclability, and life cycle consideration. Some of these criteria are the result of legislation and regulation. The material for the frame and chassis is steel. The main factors for selecting material specially for body is wide

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604017*

Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— The hybridization of natural and synthetic fibers leads to composites optimum mechanical properties. Chicken feather fibers have potential application in light weight composites. In this study, an attempt was made to study the effect of the stacking sequence on epoxy-based Jute (J), Glass (G), Chicken feather (CF) hybrid composites. Two types of hybrid composite, each containing two different layers of jute and glass fabric and chicken feather as filler were manufactured by the hand layup method. Mechanical properties, such as tensile and flexural were studied. The experimental results showed that the stacking sequence of the fiber layers has a significant effect on the overall performance of prepared hybrid composites. Among the prepared hybrid composites, composite laminate with jute layers on their outer surfaces exhibited improved tensile strength of 92.3 MPa and the composites with glass fiber layers on their outer surfaces showed enhanced flexural strength of 125.7 MPa. This study demonstrated a new way to utilize CFFs and the prepared hybrid fiber composite has better mechanical properties than CFF composites while having increased bio-based content.

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Keywords: ***Natural fiber; Glass fiber; Chicken feather, Polymer Matrix Composites; Mechanical Properties***

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Citation: Sathiyamoorthy Margabandu , Madhavan. P 3Anilkumar, Prabhakaran, Sivakumar. "Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites", Journal of Science, Computing and Engineering Research, 6(4), 86-89, 2023.

I. INTRODUCTION

Over the past few decades, polymers have replaced many of the conventional materials in various applications. This is possible because of the advantages such as the ease of processing, productivity, and cost reduction which polymers offer over conventional materials. In most of these applications, the properties of polymers are modified by using fillers and fibres to suit the high strength/high modulus requirements. Fibre reinforced polymers offer advantages over other conventional materials when specific properties are compared [1]. These composite materials find applications in diverse fields from home appliances to space-crafts. Natural fibres have recently attracted the attention of scientists and technologists because of the advantages that they provide over synthetic fibres. They are readily available low-cost fibres with low density and high specific properties. These are biodegradable and nonabrasive compared to other fibres used as reinforcement [2].

Recently, animal-based fibres have attracted increasing attention as potential high performance reinforcing fibres. Animal-based fibres that are traditionally used for polymer reinforcement are wool and silk. An alternative to the aforementioned fibres is fibre recovered from chicken feathers, as they are widely available and has good mechanical properties [3]. Large quantity of feather is produced by the poultry industry every year and these waste materials can be effectively used as a reinforcing agent. Around 24 billion chickens are killed per year across the world, which discard around 8.5 billion tons of feathers, in which India's contribution alone is 400 million tonnes. India is ranked the fifth largest poultry producer in the world. People of Kerala are among the major consumers of chicken in India and the degree of chicken waste accumulation in the state is very high [4]. There are some traditional disposal strategies for chicken feathers which includes their recycling into low quality animal feeds. But these are not commonly explored in Kerala and the waste is often burned in incineration plants or casually dumped on roadsides. However, these disposal methods cause serious environmental, social and health hazards. The chicken feathers pollute the soil into which it is dumped or pollutes the air when it is burnt. In both cases the presence of sulphur dioxide in feathers is the cause of pollution [5]. Chicken waste also causes water pollution. Chicken feathers are made of keratin fibres (about 90% by weight) which possess high toughness, good thermal insulating properties, non-abrasive behaviour and hydrophobic nature. Its morphology consists of an ordered hierarchy comprising a central rachis

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Design, Analysis and Rapid prototype of Hip Simulator

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Abstract - **Universally more than 2lakhs people are ailing from hip failure every year and the remedy for this is replacement. In India, the percentage of people getting handicapped due to hip fractures is high. For that, the people are going for replacements of the hip using artificial hip prosthesis. The artificial prosthesis is imported from the foreign countries which are costlier than the custom-made Indian prosthesis. For that, the Indian people are going for Indian custom-made prostheses. To evaluate the custom made for patients of Indian prostheses, many institutes are working on the prostheses simulators. In this work the walk simulator or hip simulator for Indian customized prostheses is designed. Using this simulator, the prostheses life period can be evaluated with the existing data available from the literature and with the data acquiring from the simulator.**

Index Terms - **Hip simulator model, stainless steel and aluminium alloy material, Fatigue and wear analysis.**

1.INTRODUCTION

Once a suitable implant configuration was achieved, initial bench testing was repeated with the simple load to failure test using a hydraulic jack and donated polyurethane foam femurs from Pacific Research Laboratories The information from these initial tests was valuable to develop a qualitative understanding of failure modes. For example, it was noted that the head of the compression screws migrated superiorly as the construct approached failure. This was addressed with a plate designed to fit between the interlocking screw and the posterior compression screw to serve as a buttress. Although prominence of the plate was originally problematic, this was resolved with successive iterations of the design. Furthermore, early testing demonstrated the distinct advantage of having the threaded screw heads for fixation into the lateral cortex. Overall, the load-to-failure testing system was invaluable in comparing early design iterations of the hip construct. Ultimately, it was recognized that although early bench testing was helpful, a more sophisticated testing apparatus was needed before using the implant clinically. This testing was achieved through a collaborative effort between SIGN, Program for Appropriate Technology in Health (PATH) (an international on-profit organization), and Allan Tenser from the University of Washington Orthopedic Science Laboratory. Although load-to-failure testing was valuable in the early design process of the SHC, fatigue testing was necessary to understand the failure modes associated with more physiologic loading.(Ref 1,4 and 7)

Maturation of the fitness movement has brought with it an increasingly sophisticated consumer who has become concerned with the stress that activities such as Walking or running impose on the body. In order to maintain and improve their level of fitness, many in this group have sought out new modalities that provide the desired training stimulus but with reduced wear and tear.

To meet this demand, manufacturers first introduced treadmills with impact absorbing suspension systems. Later, the entire nature of weight-bearing cardiovascular exercise was altered with the introduction of gait simulators. These devices mimic walking and running by keeping the user suspended on two moving footplates. Unlike treadmills, however, gait simulators impart no jarring forces on the user, by virtue of the fact that the foot never leaves the support platform.

The degree to which gait simulator induces joint stress is entirely a function of its design. The initial design utilized an elliptical path of motion and was referred to as an elliptical cross trainer. A new class of gait simulator is designed around an accurate path of motion and has, thereby, been designated an arc trainer. The purpose of this investigation is to examine the kinematics and biomechanics of these gait simulators and to compare them to normal ambulatory conditions.(Ref 3,4 and9)

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

ANALYSIS OF POLYPROPYELEN ACACIA FIBERS

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ABSTRACT

In this polypropylene acacia composites were developed and studied for wear behavior at different applied loads and acacia concentrations. Wear tests were conducted using taber abraser or taber abrader apparatus. The composite discs were tested against E100-125 steel disc. The specific wear rate of polypropylene reduced on addition of acacia powder. The coefficient of friction of polyester resin increased on cotton reinforcement and reduced significantly on addition of graphite in cotton–polyester composite. The temperature of contact surface reduced on addition of acacia in polypropylene composite.

1.INTRODUCTION

The kinds of composite material used in production technology and their use areas are continually increasing. On account of their good combinations of properties, fiber-reinforced-polymer composites are used particularly in the automotive and aircraft industries and the manufacture of spaceships and sea vehicles [1–3]. There are the two main characteristics which make these materials attractive compared to conventional metallic designs. They are of relatively low density and they can be tailored to have stacking sequences to provide high strength and stiffness in directions of high loading [4]. The environment friendly, natural-fibre reinforced polymer composites are being preferred over the synthetic fibre reinforced composites due to their inherent bio-degradability, low density, a range of mechanical properties, less abrasiveness, etc.[2–8]. The application of nanoparticles with polymers for novel composites is a rapidly developing field of study and has become one of the most promising means of dramatically enhancing the physical properties of plastics[9].

Amongst the natural fibres, acacia is one of the most popular fibre used in several applications those varying from common fabrics to composites.

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Polypropylene (PP) was the thermoplastic used in this work, being a semi-crystalline polymer with various industrial applications [10], but it is also a commodity polymer by the low cost, low level of mechanical resistance, processing facility and larger production [11]. This polymer remains unaffected when it comes in contact with chemicals such as alkaline substances, acids, de-greasing agents, electrolytic attacks, etc. However, its resistance towards aromatic or aliphatic hydrocarbons, chlorinated solvents and ultraviolet radiation is not very strong. Its tensile strength is quite high. It shows strong resistance towards stress and cracking. Polypropylene is crystalline in nature and possesses a regular geometrical shape. Polypropylene does not get damaged by water exposure because its moisture absorption is very low.

Many studies of the wear mechanism of acacia-polypropylene composites have been carried out [3, 11–14]. In the past, this material was used for the manufacture of statically loaded parts but nowadays, after some improvement on material, it is used for the manufacturing of components that sustain dynamic effects [2]. In the production industry, non-metal composite materials have begun to be used instead of steel and other metals. For this reason, the wear resistance of this material according to mechanical effects must be known [3]. In industry, particularly materials working in places under wear effects, are desired to resist wear. The wear resistance of materials was determined by the result of laboratory experiments. In this study, the wear behaviours of a acacia polypropylene composite and plain polypropylene were experimentally investigated under various loads and speeds.

2. EXPERIMENTAL:

2.1. *Materials and specimens:*

In this study, a acacia powder and polypropylene (MAPP110) were chosen as test

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

MECHANICAL TESTING OF POLYVINYLE CHLORID WITH LOTUS STEM FIBERS

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ABSTRACT

In this polypropylene lotus stem composites were developed and studied for wear behavior at two different applied loads and acacia concentrations. Wear tests were conducted using taber abraser or taber abrader apparatus. The composite discs were tested against E100-125 steel disc. The wear test is experimentally investigated for speeds of 500 and 1000 rpm. The specific wear rate of polypropylene reduced on addition of acacia powder.

Key words: Polypropylene, Lotus stem Wear test, Taber abraser.

1. INTRODUCTION

The kinds of composite material used in production technology and their use areas are continually increasing. On account of their good combinations of properties, fiber-reinforced-polymer composites are used particularly in the automotive and aircraft industries and the manufacture of spaceships and sea vehicles [1–3]. There are the two main characteristics which make these materials attractive compared to conventional metallic designs. They are of relatively low density and they can be tailored to have stacking sequences to provide high strength and stiffness in directions of high loading [4].The environment friendly, natural-fiber reinforced polymer composites are being preferred over the synthetic fiber reinforced composites due to their inherent bio-degradability, low density, a range of mechanical properties, less abrasiveness ,etc.[5-11].The application of nanoparticles with polymers for novel composites is a rapidly developing field of study and has become one of the most promising means of dramatically enhancing the physical properties of plastics [12].

Amongst the natural fibers, acacia is one of the most popular fiber used in several applications those varying from common fabrics to composites.

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Polypropylene (PP) was the thermoplastic used in this work, being a semi-crystalline polymer with various industrial applications [13], but it is also a commodity polymer by the low cost, low level of mechanical resistance, processing facility and larger production [14]. This polymer remains unaffected when it comes in contact with chemicals such as alkaline substances, acids, de-greasing agents, electrolytic attacks, etc. However, its resistance towards aromatic or aliphatic hydrocarbons, chlorinated solvents and ultraviolet radiation is not very strong. Its tensile strength is quite high. It shows strong resistance towards stress and cracking. Polypropylene is crystalline in nature and possesses a regular geometrical shape. Polypropylene does not get damaged by water exposure because its moisture absorption is very low.

Many studies of the wear mechanism of acacia-polypropylene composites have been carried out [15–19]. In the past, this material was used for the manufacture of statically loaded parts but

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INTERNATIONAL JOURNAL OF AMBIENT ENERGY, 2018
https://doi.org/10.1080/01430750.2017.1423388

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Experimental investigation on a CI engine fuelled with bio gas and rice straw additives

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ABSTRACT

Biogas is a new source of fuel for mechanisation of agriculture and village industries. It can be used for running diesel and petrol engines. The objective of the present work is to run a CI engine through biogas and biogas with rice straw as an additive and to analyse its performance through a load test. The experiments in the study consist of three phases. Diesel, diesel and biogas (DF) and with adding an additive (rice straw) to the biogas. The rice straw was dried and pulverised into fine pieces of maximum 1 inch in size and mixed with diesel and biogas with a weight ratio of 20–40% for the experimental purpose. The results show good performance characteristics of biogas in the tested CI engine.

ARTICLE HISTORY
Received 13 December 2017
Accepted 29 December 2017

KEYWORDS
Biogas; CI engine; rice straw; additive; performance

1. Introduction

Biogas production technology is based on the phenomenon of biological decomposition of organic materials in the absence of oxygen the organic materials are obtained from cattle dung and agricultural residues (Von Mitzlaff and Mkumbwa 1984). Biogas is an excellent and economic fuel for both petrol and diesel engines. Even electricity can be generated from it. The cost involved is low which leads to greater acceptability (Demirbas 2000; Gavrilescu and Chisti 2005). However, the power obtained is less than that obtained when liquid fuel alone is used. As engines using biogas become hotter than those on liquid fuels, they need to be cooled to be kept in good condition. Petrol engines can be run 100% on biogas except that little petrol is consumed for starting up. Diesel engines are modified to dual-fuel engines which use both biogas and diesel oil (Mckendry 2001; Ali, Habib, and Malik 2015). Biogas is introduced into the inlet pipe after it passes through the air filter. Gas inlet devices are designed to suit different engine designs and inlet pipes in order to give the proper biogas/air mixture (Karekezi and Kimani 2002).

2. Load test

The main aim of the study was to run the engine through biogas and to calculate its performance through a load test. The experiment was done on three phases, the first phase is with diesel only, the second phase is mixture of diesel and bio gas (DF) and the third phase is by adding an additive of rice straw on weight basis. The straw was dried and cut into small pieces of and then was mixed with slurry on weight ratios of about 20% and 40%. The experiment was conducted on a Kirloskar single cylinder engine. The biogas used in this test was from cow dung which is commonly known as Gobar gas in India. The biogas unit is a floating drum type and it produces 30 m^3 volume of gas every day.

3. Experimental procedure

The experiment is conducted by varying the load applied to the engine in the form of ratio of the rated power. The speed is maintained at 1500 rpm. The experimental test rig consists of electrical loading, i.e. the indirect loading method. The engine is connected to the generator by means of flexible coupling, and the output is given to the loading device. Certain modifications were made in order to conduct the tests which are explained in the next sections.

3.1. Fuel flow modification

The measurement of diesel flow is measured by using a burette. The time taken for each trial is noted and flow of the engine can be modified according to the requirement. A special type of inlet passage to the fuel filter has been designed to feed the fuel through the burette by means of the siphon method.

3.2. Modification of air inlet

Since the engine requires both biogas and air as mixture to run, air and biogas are need to be mixed before air filter. An air filter hose is connected with a T type connector by using a reducer. One end of the 'T' connector is fed to the atmosphere and the other end is connected to the biogas pipe at the outlet of the gas flow meter.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060309*

Design and Fabrication of Multipurpose Agriculture Vehicle

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— The main aim of the project is to develop multipurpose agricultural vehicle, for performing major agricultural operations like ploughing, seeding, harvesting. The modification includes fabricating a vehicle which is small, compact in size. The project is about a machine design which makes cultivation much simpler. The design of the chassis of the vehicle is made in such a way that it is suitable for the operations. The design for automatic seed modified the currently available plough tool in such a way that it with stand the load. The harvester (cutter) is designed and working by scotch yoke mechanism.

Keywords: ***Ploughing, Seed sowing, Harvester, Cutter, Chassis, Scotch yoke mechanism, Cultivation, Agriculture, Operations, Design.***

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Citation: Madhavan P, Anil Kumar, Sivakumar R. "Design and Fabrication of Multipurpose Agriculture Vehicle, "Journal of Science, Computing and Engineering Research, 6(3), 38-45, 2023.

I. INTRODUCTION

Agriculture is the cultivation of animals, plants and fungi used to sustain and enhance human life agriculture was the key development in the rise of sedentary human civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. Modern agronomy, plants breeding, agrochemicals such as pesticides and fertilizers, and technological developments have in many cases sharply increased yields from cultivation, but at the same time have caused widespread ecological damage. Agricultural food production and water management are increasingly becoming global issues. Mechanized agriculture is the process of using agriculture machinery to mechanize the work of agriculture, greatly increasing farm worker productivity in modern times, and powered machinery has replaced many farm jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules.

The entire history of agriculture contains many examples of the use of tools, such as the hoe and the plough. But the ongoing integration of machines since the industrial revolution has allowed farming to become much less labour intensive current mechanized agriculture includes the use of tractors, trucks, combine harvesters, countless types of farm implements, airplanes and helicopters and other vehicles. Precision agriculture even uses computers in conjunction satellite imagery and satellite navigation to increase yields. Mechanization was one of the large factors responsible for urbanization and industrial economies. Besides improving production efficiency, mechanization encourages large scale production and sometimes can improve the quality farm produce on the other hand it can displace unskilled farm labour and can cause environmental degradation especially if it is applied short-sightedly rather than holistically.

II. SCOPE AND OBJECTIVE

A. Scope of the Project

•The seed sowing mechanism is modified into simple mechanism

•The multipurpose agriculturc vehicle is designed for small farmers in future

•The project will become an example for future works

B. Objective of the Project

•The primary objective is to develop a harvester which is simple and cost effective

•The reduction of cost of the Ploughing tool

•The life of the Ploughing tool is increase

III. PROPOSED WORK METHODOLOGY

A. Chassis of the Vehicle

The choice of material for the vehicle is the first and most important factor for automotive design. There is variety of materials that can be used in automotive body and chassis. The most important criteria that a material should meet are lightweight, economic effectiveness, safety, recyclability, and life cycle consideration. Some of these criteria are the result of legislation and regulation. The material for the frame and chassis is steel. The main factors for selecting material specially for body is wide

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603012*

Experimental Study on Drilling Characteristics of Fiber Metal Laminates

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— Drilling is often experienced machining process in industry due to the need for element assembly in mechanical pieces and structures. Drilling of composite material appreciably affected by damage tendency of these materials under action of cutting forces (thrust forces and torque). So aim of this experiment is the drilling parameters (feed rate and cutting speed) in fiber metal laminates. The analysis of variance was performed to investigate the drilling characteristics of fiber metal laminates using HSS (High speed steel) two fluted standard twist drill bit in 4mm.The main purpose is to find the chip shape during diverse feed rates in fiber metal laminates materials.

Keywords: ***Drilling, Machining, HSS, Fiber, Metal.***

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Citation: P. Madhavan, Dhilipkumar, R. Sivakumar, G. Loganathan. "Experimental Study on Drilling Characteristics of Fiber Metal Laminates", Journal of Science, Computing and Engineering Research, 6(3), 57-62, 2023.

I. INTRODUCTION

Fiber Metal Laminates are hybrid materials built up from interlacing layers thin metals and fiber reinforced adhesives. They were developed in late 1970's and have gained wide attention in the aerospace and space industries since late 1980.There are two types of commercially available FML: GLARE and ARALL. The past is made of alternating glass-epoxy and aluminium layers while the latter is formed by alternating aramid epoxy and aluminium layers. Glare is a hybrid composite. In this composites offer several advantages such as better corrosion resistance, better fire resistance, better damage tolerance to fatigue crack growth, foreign object damage and high strength etc.

Fiber Metal Laminates (FML) are new type of composite developed at the Delft University of Technology. Thin sheets of aluminium are alternated with thin sheets of traditional composite. The first FML was ARALL, a combination of aluminium and Aramid/epoxy. Although the material showed promise and adoption by the aerospace industry was slow. In the 1980s, Delft University began developing a glass/epoxy FML called Glare. Glare was intended to be an alternative to aluminium in aircraft structures .Early research showed it had benefit over both aluminium and fiber glass composites, especially in fatigue and impact. Development continued over a number of years, and the commercial breakthrough came when Airbus decided to use the material on the A380. Glass fiber Reinforced Epoxy Aluminium (GLARE) is a Fiber Metal Laminate (FML) composed of several very thin layers of metal (aluminium) interspersed with layers of glass fiber, bonded together with a matrix such as epoxy. The bi-directional glass fiber layers may be aligned in different directions to suit the predicted stress conditions. Even though GLARE is a composite material, its material properties and fabrications are very related to bulk aluminium metal sheets. It has far less in common with composite structures when it comes to design, manufacture and inspection are maintained. GLARE parts are constructed and repaired using generally conventional metal matrix techniques.

Its major advantages over conventional aluminium are:

- Better damage tolerance
- High stiffness
- Better corrosion resistance
- Lower specific weight

While a simple manufactured sheet of GLARE will be more exclusive than an equivalent sheet of aluminium, considerable production savings can be made using the aforementioned optimization. A structure properly designed for GLARE will be significantly lighter and less complex than an equivalent metal structure, and will require less inspection and maintenance and enjoy a much longer life time-till failure, making it a cheaper, lighter and safer option over all.

GLARE is a relatively successful FML, patented by Akzo Nobel in 1987, which has entered commercial applications in the Airbus A380. GLARE is also the substance used in the ECOS3 blast-resistant Unit Load Device. This is cargo container shown to completely contain the explosion and fire resulting from a bomb such as that used over Lockerble. Other applications include among

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604017*

Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 12 April 2023

Abstract— The hybridization of natural and synthetic fibers leads to composites optimum mechanical properties. Chicken feather fibers have potential application in light weight composites. In this study, an attempt was made to study the effect of the stacking sequence on epoxy-based Jute (J), Glass (G), Chicken feather (CF) hybrid composites. Two types of hybrid composite, each containing two different layers of jute and glass fabric and chicken feather as filler were manufactured by the hand layup method. Mechanical properties, such as tensile and flexural were studied. The experimental results showed that the stacking sequence of the fiber layers has a significant effect on the overall performance of prepared hybrid composites. Among the prepared hybrid composites, composite laminate with jute layers on their outer surfaces exhibited improved tensile strength of 92.3 MPa and the composites with glass fiber layers on their outer surfaces showed enhanced flexural strength of 125.7 MPa. This study demonstrated a new way to utilize CFFs and the prepared hybrid fiber composite has better mechanical properties than CFF composites while having increased bio-based content.

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Keywords: ***Natural fiber; Glass fiber; Chicken feather, Polymer Matrix Composites; Mechanical Properties***

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Citation: Sathiyamoorthy Margabandu , Madhavan. P 3Anilkumar, Prabhakaran, Sivakumar. "Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites", Journal of Science, Computing and Engineering Research, 6(4), 86-89, 2023.

I. INTRODUCTION

Over the past few decades, polymers have replaced many of the conventional materials in various applications. This is possible because of the advantages such as the ease of processing, productivity, and cost reduction which polymers offer over conventional materials. In most of these applications, the properties of polymers are modified by using fillers and fibres to suit the high strength/high modulus requirements. Fibre reinforced polymers offer advantages over other conventional materials when specific properties are compared [1]. These composite materials find applications in diverse fields from home appliances to space-crafts. Natural fibres have recently attracted the attention of scientists and technologists because of the advantages that they provide over synthetic fibres. They are readily available low-cost fibres with low density and high specific properties. These are biodegradable and nonabrasive compared to other fibres used as reinforcement [2].

Recently, animal-based fibres have attracted increasing attention as potential high performance reinforcing fibres. Animal-based fibres that are traditionally used for polymer reinforcement are wool and silk. An alternative to the aforementioned fibres is fibre recovered from chicken feathers, as they are widely available and has good mechanical properties [3]. Large quantity of feather is produced by the poultry industry every year and these waste materials can be effectively used as a reinforcing agent. Around 24 billion chickens are killed per year across the world, which discard around 8.5 billion tons of feathers, in which India's contribution alone is 400 million tonnes. India is ranked the fifth largest poultry producer in the world. People of Kerala are among the major consumers of chicken in India and the degree of chicken waste accumulation in the state is very high [4]. There are some traditional disposal strategies for chicken feathers which includes their recycling into low quality animal feeds. But these are not commonly explored in Kerala and the waste is often burned in incineration plants or casually dumped on roadsides. However, these disposal methods cause serious environmental, social and health hazards. The chicken feathers pollute the soil into which it is dumped or pollutes the air when it is burnt. In both cases the presence of sulphur dioxide in feathers is the cause of pollution [5]. Chicken waste also causes water pollution. Chicken feathers are made of keratin fibres (about 90% by weight) which possess high toughness, good thermal insulating properties, non-abrasive behaviour and hydrophobic nature. Its morphology consists of an ordered hierarchy comprising a central rachis

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MACHINE LEARNING AND DEEP LEARNING: THE FRICTION STIR WELDING AND PLASMA ARC WELDING PROCESS

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Abstract- **This paper examines how artificial intelligence systems can be applied in the welding Procedures. AI and profound learning techniques could be utilized to work on the productivity of different welding processes by tracking down answers for their issues. Utilizing AI calculations has been shown to significantly improve welding cycle proficiency and precision. Modern robots equipped with artificial intelligence are able to resolve a number of puzzling issues affecting the assembling industry. Several welding processes rely upon human capacity while picking ideal limits that are extremely feeble to human botch and less useful. To diminish this faith, robots and modified systems are arranged using mind networks fit for conveying unsurprising weld quality and further created efficiency. Artificial intelligence is similarly used to picture welding given that the visual audit is essential to choose weld quality. These procedures can moreover be worn to weigh up the explanations behind various prosperity risks using backslide assessment.**

Keywords: **Artificial, Applied, Welding, Quality, etc.**

1. INTRODUCTION

Welding is a production cycle by which no less than two segments are entwined through force, pressure or equally forming a bond as the parts breezy. Welding is regularly applied to thermoplastics and metals, yet it can likewise be applied to wood. The completed welded joint may be implied as a weldment. Gas Metal Roundabout section Welding (GMAW) is used precisely and can be functional in ferrous also non-ferrous materials. This is a direct result of its versatility, high efficiency, steadfastness, usability, and robotization [1, 2], [3,] The connection offers various impenetrability rightness of the welding limits, appropriate to the modestly enormous integer of limits and a sturdy interrelationship [3], [4].

The fundamental guideline behind most kinds of welding stays to soften the two metals (by warming them over their dissolving focuses), add motion, and circuit them. Allow us to gain proficiency with the functioning guideline of gas welding. The metals are softened by the intensity from the response of fuel gas (Acetylene, Propane, Butane, Hydrogen, and so on) and oxygen. At the point when the gases from the chamber put away at high-pressure are delivered, they move through the light at high speed and are blended. The mixture is ignited by an external spark and has high temperatures and carbon dioxide characteristics. The fire begins blowing from the light. The intensity from this fire can be expanded by expanding the tension of the surge gas.

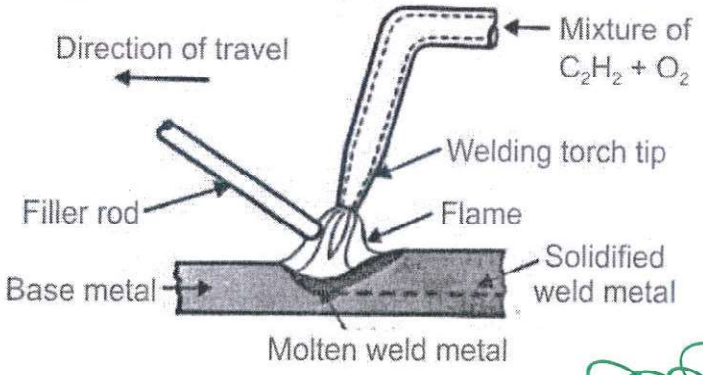


Figure 1 Gas Welding process

A subfield of AI known as profound learning depends on fake brain organizations. It is good for learning complex models and associations inside data. In significant learning, we don't need to unequivocally program everything. Because of enhancements in handling power and the accessibility of huge datasets, it has acquired prevalence as of

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International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Review of Supply Chain Management and Logistics Study

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Abstract

Supply chain management (SCM) is progressively more understood as the controlling of precarious business processes across a set-up of organizations that make up a supply chain. Many recognize the value of a process-based attitude to business and supply chain management, but do you know which processes to cogitate, what replace practices and activities each includes, and how these practices intermingle with each other?. Most people are not clear about how to interact with the, and how to interact with the process. There are mutually outdated functional silos. This paper affords considered and operational explanations of each of the eight supply chain practices identified by members of the Global Supply Chain Forum (GSCF). It also affords examples of interfaces between processes and how to contrivance processes approach in your union. Our goal is to afford managers with a charter they can use when employing supply chain management. Trainers provide useful materials for building supply chain management courses, and canvassers provide a variety of prospects to advance the field.

Keywords: SCM, Business, Replace, Interact, Chain, Field.

1. Introduction

Creation network the board (SCM) is a lot of attitudes recycled to really organize suppliers, creators, stockrooms, and stores, so item is conveyed and dispersed at the perfect sums, to the right regions, and with faultless timing, to restrict system wide costs while satisfying organization level essentials. Creation network the leaders is crucial in the business friendship park as it controls other key business areas, for instance, exercises the board, stock control and worth union. However, what really makes SCM so huge is that it can similarly renovate into an acute high milled for associations. Coming up next are the eight centre cycles of inventory network the board that were recognized by the Worldwide Inventory network Gathering [1]: Production network the board is the administration of eight key business processes," as indicated by Stock and Lambert [1].

1. Customer relationship management.
2. Customer Service Management.
3. Demand management.
4. Order Fulfillment.
5. Manufacturing flow management.
6. Procurement.

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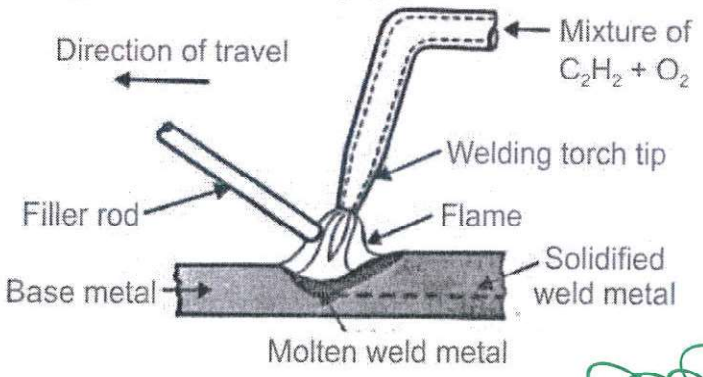


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International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

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Keywords: SCM, Business, Replace, Interact, Chain, Field.

1. Introduction

Creation network the board (SCM) is a lot of attitudes recycled to really organize suppliers, creators, stockrooms, and stores, so item is conveyed and dispersed at the perfect sums, to the right regions, and with faultless timing, to restrict system wide costs while satisfying organization level essentials. Creation network the leaders is crucial in the business friendship park as it controls other key business areas, for instance, exercises the board, stock control and worth union. However, what really makes SCM so huge is that it can similarly renovate into an acute high milled for associations. Coming up next are the eight centre cycles of inventory network the board that were recognized by the Worldwide Inventory network Gathering [1]: Production network the board is the administration of eight key business processes," as indicated by Stock and Lambert [1].

1. Customer relationship management.
2. Customer Service Management.
3. Demand management.
4. Order Fulfillment.
5. Manufacturing flow management.
6. Procurement.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

ANALYSIS OF DRILLS USED IN BONE SURGERY

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ABSTRACT

The aim of this research is to find the life of the drill material used in bone surgery. In ancient days the doctors used to fix the bone fracture with the help of bamboo sticks, and a raw medicine from the forest due to the change of time, there are mechanical devices taking part in the human body as external bodies to the implementation also. In this work, three different materials are taken for testing and stress analysis of both static and dynamic for all the materials will be done to get the stress values for the life prediction inputs. Also, the optimization will be done to find out the best material. For evaluating the data obtained, wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

1. INTRODUCTION

Drill bit include very wide range of geometrically and functionally an operational surgical drill bit is the special group of medical instrument. Furthermore, because of a work in chemically active environment (body fluids, drugs) it is necessary to sterilize them after each use. The mentioned working conditions of the surgical instrument determine the selection of drill bit material which are Tungsten – Carbide, Titanium, Cobalt – Chromium and Titanium – chromium – vanadium.

1.1 Purpose

The aim of the work is determination of life period of a surgical drill – bone system in simulated conditions of drilling in a bone.

1.2 Design/methodology/approach

Drill is loaded with forces in the range F= 100200 N and torque T = 0.04 Nm. Calculations were carried out for two kinds of metallic material of the drill. The dynamic load and Static load were considered in selection of drill bit materials.

1.3 Findings from the literature

The effect of numerical analysis determinate of strains and stresses in working part of the drill. Results of analysis indicate diverse values of strains and stresses distribution in working part of the drill depending on its

geometry. The maximum values of strains and stresses were obtained for the drill of point angle 2κ1=120 deg. For evaluating this wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

1.4 Research limitations/implications

In order to simulate phenomena in real system, a simplified model of surgical drill – femur system will be modelled for analysis. The simplifications concerned mostly geometry of a femur. The femur is represented by

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603012*

Experimental Study on Drilling Characteristics of Fiber Metal Laminates

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— Drilling is often experienced machining process in industry due to the need for element assembly in mechanical pieces and structures. Drilling of composite material appreciably affected by damage tendency of these materials under action of cutting forces (thrust forces and torque). So aim of this experiment is the drilling parameters (feed rate and cutting speed) in fiber metal laminates. The analysis of variance was performed to investigate the drilling characteristics of fiber metal laminates using HSS (High speed steel) two fluted standard twist drill bit in 4mm.The main purpose is to find the chip shape during diverse feed rates in fiber metal laminates materials.

Keywords: ***Drilling, Machining, HSS, Fiber, Metal.***

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Citation: P. Madhavan, Dhilipkumar, R. Sivakumar, G. Loganathan. "Experimental Study on Drilling Characteristics of Fiber Metal Laminates", Journal of Science, Computing and Engineering Research, 6(3), 57-62, 2023.

I. INTRODUCTION

Fiber Metal Laminates are hybrid materials built up from interlacing layers thin metals and fiber reinforced adhesives. They were developed in late 1970's and have gained wide attention in the aerospace and space industries since late 1980.There are two types of commercially available FML: GLARE and ARALL. The past is made of alternating glass-epoxy and aluminium layers while the latter is formed by alternating aramid epoxy and aluminium layers. Glare is a hybrid composite. In this composites offer several advantages such as better corrosion resistance, better fire resistance, better damage tolerance to fatigue crack growth, foreign object damage and high strength etc.

Fiber Metal Laminates (FML) are new type of composite developed at the Delft University of Technology. Thin sheets of aluminium are alternated with thin sheets of traditional composite. The first FML was ARALL, a combination of aluminium and Aramid/epoxy. Although the material showed promise and adoption by the aerospace industry was slow. In the 1980s, Delft University began developing a glass/epoxy FML called Glare. Glare was intended to be an alternative to aluminium in aircraft structures .Early research showed it had benefit over both aluminium and fiber glass composites, especially in fatigue and impact. Development continued over a number of years, and the commercial breakthrough came when Airbus decided to use the material on the A380. Glass fiber Reinforced Epoxy Aluminium (GLARE) is a Fiber Metal Laminate (FML) composed of several very thin layers of metal (aluminium) interspersed with layers of glass fiber, bonded together with a matrix such as epoxy. The bi-directional glass fiber layers may be aligned in different directions to suit the predicted stress conditions. Even though GLARE is a composite material, its material properties and fabrications are very related to bulk aluminium metal sheets. It has far less in common with composite structures when it comes to design, manufacture and inspection are maintained. GLARE parts are constructed and repaired using generally conventional metal matrix techniques.

Its major advantages over conventional aluminium are:

- Better damage tolerance
- High stiffness
- Better corrosion resistance
- Lower specific weight

While a simple manufactured sheet of GLARE will be more exclusive than an equivalent sheet of aluminium, considerable production savings can be made using the aforementioned optimization. A structure properly designed for GLARE will be significantly lighter and less complex than an equivalent metal structure, and will require less inspection and maintenance and enjoy a much longer life time-till failure, making it a cheaper, lighter and safer option over all.

GLARE is a relatively successful FML, patented by Akzo Nobel in 1987, which has entered commercial applications in the Airbus A380. GLARE is also the substance used in the ECOS3 blast-resistant Unit Load Device. This is cargo container shown to completely contain the explosion and fire resulting from a bomb such as that used over Lockerble. Other applications include among

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

DESIGN AND ANALYSIS OF AUTOMOTIVE BUMPER BEAM USING POLYMER MATRIX COMPOSITE

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Abstract :

An automotive bumper beam is a structural component with intended function to absorb kinetic energy during dynamic loading condition. Generally, most of the researches focus on the substitution of new material such as polymeric based composite to achieve higher energy absorption capacity. This project is aimed to investigate the most suitable geometry of bumper beam at conceptual design stage. The various geometry of automotive bumper such as Box, Channel, T and I- sections were analyzed. The suitable shape of bumper beam was selected due to its high stiffness, low weight and high load sustainability. Also, compare the analysis results for epoxy polymer/ glass fiber material with steel, aluminum and copper materials.

Key words: composite; polymer matrix; bumper beam; conceptual design.

INTRODUCTION

It is a truism that technological development depends on advances in the field of materials. One does not have to be an expert to realize that a most advanced turbine or aircraft design is of no use if adequate materials to bear the service loads and conditions are not available. Whatever the field may be, the final limitation on advancement depends on materials. Composite materials in this regard represent nothing but a giant step in the ever-constant endeavor of optimization in materials.

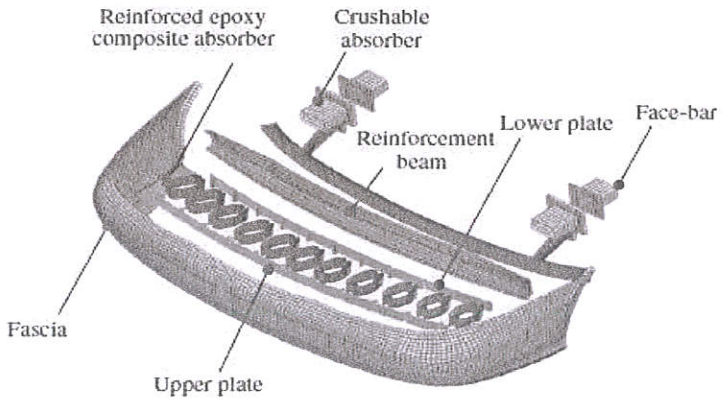


Fig :AUTOMOTIVE BUMPER SYSTEM COMPONENT

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 5, September - October 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030502*

IOT usage in Mobile system and Ecosystem

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Article Information

Received : 28 Sep 2022
Revised : 09 Oct 2022
Accepted : 14 Oct 2022
Published : 25 Oct 2022

Corresponding Author:
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Abstract— Mobile technology opens the door for a new kind of learning called here and now learning that occurs when learners have access to information anytime and anywhere to perform authentic activities in the context of their learning. Mobile devices, applications and services have become integrated into people's daily lives on a personal and professional level. The purpose of this study was to investigate challenges &opportunities of IoT in mobile technology. The paper is divided in 5 sections and the content of the paper covers the history, elements, challenges and opportunities along with future of IoT specific to Indian Mobile arena.

Keywords: *IoT, M2M, Mobile technology, Smart Devices, 5G.*

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Citation: Dr.C.Sureshkumar, Dr.S.Prabakaran, Dr.T.Prashanth, K.Varalakshmi. "IOT usage in Mobile system and Ecosystem, "Journal of Science, Computing and Engineering Research, 3(5), 12-19, September- October 2022.

I. INTRODUCTION

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an Internet Protocol (IP) address and is able to transfer data over a network.1 The Internet of Things (IoT) also describes the network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools.

Over the past few years, IoT has become one of the most important technologies of the 21st century. Now that we can connect everyday objects—kitchen appliances, cars, thermostats, baby monitors—to the internet via embedded devices, seamless communication is possible between people, processes, and things.

By means of low-cost computing, the cloud, big data, analytics, and mobile technologies, physical things can share and collect data with minimal human intervention. In this hyper connected world, digital systems can record, monitor, and adjust each interaction between connected things. The physical world meets the digital world—and they cooperate.[2]

A. IoT Progress

First coined in 1999, the term refers to the giant network of connected things and people, all of which share data amongst each other. Today, IoT objects have come to include smartphones to automobiles and everything in between. The innumerable data points that billions of IoT devices capture each day are processed into actionable insights with the help of analytics. While the reciprocity between AI and IoT is relatively well known, there are other technologies at play that enable the Internet of Things.[5]

Different people call Internet of Things with different names but the objective of IoT is same in the broad sense. The aliases of Internet of Things include Web of Things, Internet of Objects, Embedded Intelligence, Connected Devices and Technology Omnipotent, Omniscient and Omnipresent. In addition to these, it has also calling as counting

a) Cyber Physical Systems "Integrations of computation and physical processes", in which bringing the real and virtual worlds together.
b) Pervasive Computing is a computer environment in which virtually every object has processing power with wireless or wired connections to a global network
c) Ubiquitous Computing or Calm technology, where technology becomes virtually invisible in our lives
d) Machine-to-Machine Interaction means no human intervention whilst devices are communicating end-to-end.
e) Human Computer Interaction involves the study, planning, and design of interaction between people and computers.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060309*

Design and Fabrication of Multipurpose Agriculture Vehicle

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— The main aim of the project is to develop multipurpose agricultural vehicle, for performing major agricultural operations like ploughing, seeding, harvesting. The modification includes fabricating a vehicle which is small, compact in size. The project is about a machine design which makes cultivation much simpler. The design of the chassis of the vehicle is made in such a way that it is suitable for the operations. The design for automatic seed modified the currently available plough tool in such a way that it with stand the load. The harvester (cutter) is designed and working by scotch yoke mechanism.

Keywords: ***Ploughing, Seed sowing, Harvester, Cutter, Chassis, Scotch yoke mechanism, Cultivation, Agriculture, Operations, Design.***

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Citation: Madhavan P, Anil Kumar, Sivakumar R. "Design and Fabrication of Multipurpose Agriculture Vehicle, "Journal of Science, Computing and Engineering Research, 6(3), 38-45, 2023.

I. INTRODUCTION

Agriculture is the cultivation of animals, plants and fungi used to sustain and enhance human life agriculture was the key development in the rise of sedentary human civilization. The study of agriculture is known as agricultural science. The history of agriculture dates back thousands of years, and its development has been driven and defined by greatly different climates, cultures, and technologies. Modern agronomy, plants breeding, agrochemicals such as pesticides and fertilizers, and technological developments have in many cases sharply increased yields from cultivation, but at the same time have caused widespread ecological damage. Agricultural food production and water management are increasingly becoming global issues. Mechanized agriculture is the process of using agriculture machinery to mechanize the work of agriculture, greatly increasing farm worker productivity in modern times, and powered machinery has replaced many farm jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules.

The entire history of agriculture contains many examples of the use of tools, such as the hoe and the plough. But the ongoing integration of machines since the industrial revolution has allowed farming to become much less labour intensive current mechanized agriculture includes the use of tractors, trucks, combine harvesters, countless types of farm implements, airplanes and helicopters and other vehicles. Precision agriculture even uses computers in conjunction satellite imagery and satellite navigation to increase yields. Mechanization was one of the large factors responsible for urbanization and industrial economies. Besides improving production efficiency, mechanization encourages large scale production and sometimes can improve the quality farm produce on the other hand it can displace unskilled farm labour and can cause environmental degradation especially if it is applied short-sightedly rather than holistically.

II. SCOPE AND OBJECTIVE

A. Scope of the Project

•The seed sowing mechanism is modified into simple mechanism

•The multipurpose agriculturc vehicle is designed for small farmers in future

•The project will become an example for future works

B. Objective of the Project

•The primary objective is to develop a harvester which is simple and cost effective

•The reduction of cost of the Ploughing tool

•The life of the Ploughing tool is increase

III. PROPOSED WORK METHODOLOGY

A. Chassis of the Vehicle

The choice of material for the vehicle is the first and most important factor for automotive design. There is variety of materials that can be used in automotive body and chassis. The most important criteria that a material should meet are lightweight, economic effectiveness, safety, recyclability, and life cycle consideration. Some of these criteria are the result of legislation and regulation. The material for the frame and chassis is steel. The main factors for selecting material specially for body is wide

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603012*

Experimental Study on Drilling Characteristics of Fiber Metal Laminates

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Fiber Metal Laminates (FML) are new type of composite developed at the Delft University of Technology. Thin sheets of aluminium are alternated with thin sheets of traditional composite. The first FML was ARALL, a combination of aluminium and Aramid/epoxy. Although the material showed promise and adoption by the aerospace industry was slow. In the 1980s, Delft University began developing a glass/epoxy FML called Glare. Glare was intended to be an alternative to aluminium in aircraft structures .Early research showed it had benefit over both aluminium and fiber glass composites, especially in fatigue and impact. Development continued over a number of years, and the commercial breakthrough came when Airbus decided to use the material on the A380. Glass fiber Reinforced Epoxy Aluminium (GLARE) is a Fiber Metal Laminate (FML) composed of several very thin layers of metal (aluminium) interspersed with layers of glass fiber, bonded together with a matrix such as epoxy. The bi-directional glass fiber layers may be aligned in different directions to suit the predicted stress conditions. Even though GLARE is a composite material, its material properties and fabrications are very related to bulk aluminium metal sheets. It has far less in common with composite structures when it comes to design, manufacture and inspection are maintained. GLARE parts are constructed and repaired using generally conventional metal matrix techniques.

Its major advantages over conventional aluminium are:

- Better damage tolerance
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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604017*

Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 12 April 2023

Abstract— The hybridization of natural and synthetic fibers leads to composites optimum mechanical properties. Chicken feather fibers have potential application in light weight composites. In this study, an attempt was made to study the effect of the stacking sequence on epoxy-based Jute (J), Glass (G), Chicken feather (CF) hybrid composites. Two types of hybrid composite, each containing two different layers of jute and glass fabric and chicken feather as filler were manufactured by the hand layup method. Mechanical properties, such as tensile and flexural were studied. The experimental results showed that the stacking sequence of the fiber layers has a significant effect on the overall performance of prepared hybrid composites. Among the prepared hybrid composites, composite laminate with jute layers on their outer surfaces exhibited improved tensile strength of 92.3 MPa and the composites with glass fiber layers on their outer surfaces showed enhanced flexural strength of 125.7 MPa. This study demonstrated a new way to utilize CFFs and the prepared hybrid fiber composite has better mechanical properties than CFF composites while having increased bio-based content.

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Keywords: ***Natural fiber; Glass fiber; Chicken feather, Polymer Matrix Composites; Mechanical Properties***

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Citation: Sathiyamoorthy Margabandu , Madhavan. P 3Anilkumar, Prabhakaran, Sivakumar. "Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites", Journal of Science, Computing and Engineering Research, 6(4), 86-89, 2023.

I. INTRODUCTION

Over the past few decades, polymers have replaced many of the conventional materials in various applications. This is possible because of the advantages such as the ease of processing, productivity, and cost reduction which polymers offer over conventional materials. In most of these applications, the properties of polymers are modified by using fillers and fibres to suit the high strength/high modulus requirements. Fibre reinforced polymers offer advantages over other conventional materials when specific properties are compared [1]. These composite materials find applications in diverse fields from home appliances to space-crafts. Natural fibres have recently attracted the attention of scientists and technologists because of the advantages that they provide over synthetic fibres. They are readily available low-cost fibres with low density and high specific properties. These are biodegradable and nonabrasive compared to other fibres used as reinforcement [2].

Recently, animal-based fibres have attracted increasing attention as potential high performance reinforcing fibres. Animal-based fibres that are traditionally used for polymer reinforcement are wool and silk. An alternative to the aforementioned fibres is fibre recovered from chicken feathers, as they are widely available and has good mechanical properties [3]. Large quantity of feather is produced by the poultry industry every year and these waste materials can be effectively used as a reinforcing agent. Around 24 billion chickens are killed per year across the world, which discard around 8.5 billion tons of feathers, in which India's contribution alone is 400 million tonnes. India is ranked the fifth largest poultry producer in the world. People of Kerala are among the major consumers of chicken in India and the degree of chicken waste accumulation in the state is very high [4]. There are some traditional disposal strategies for chicken feathers which includes their recycling into low quality animal feeds. But these are not commonly explored in Kerala and the waste is often burned in incineration plants or casually dumped on roadsides. However, these disposal methods cause serious environmental, social and health hazards. The chicken feathers pollute the soil into which it is dumped or pollutes the air when it is burnt. In both cases the presence of sulphur dioxide in feathers is the cause of pollution [5]. Chicken waste also causes water pollution. Chicken feathers are made of keratin fibres (about 90% by weight) which possess high toughness, good thermal insulating properties, non-abrasive behaviour and hydrophobic nature. Its morphology consists of an ordered hierarchy comprising a central rachis

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060303*

Analysis of Drills Used in Bone Surgery

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Article Information

Received	:	03 Jan 2023
Revised	:	18 Feb 2023
Accepted	:	0 Mar 2023
Published	:	16 Mar 2023

Corresponding Author:
Anilkumar

Abstract— The aim of this research is to find the life of the drill material used in bone surgery. In ancient days the doctors used to fix the bone fracture with the help of bamboo sticks, and a raw medicine from the forest due to the change of time, there are mechanical devices taking part in the human body as external bodies to the implementation also. In this work, three different materials are taken for testing and stress analysis of both static and dynamic for all the materials will be done to get the stress values for the life prediction inputs. Also, the optimization will be done to find out the best material. For evaluating the data obtained, wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

Keywords: ***Applied force, Drill bit, bone surgery, drill speed, feed rate***

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Citation: Anilkumar, Sounthar Rasu, Dhilipkumar. "Analysis of Drills Used in Bone Surgery" Journal of Science, Computing and Engineering Research, 6(3), 09-14, 2023.

I. INTRODUCTION

Drill bit include very wide range of geometrically and functionally an operational surgical drill bit is the special group of medical instrument. Furthermore, because of a work in chemically active environment (body fluids, drugs) it is necessary to sterilize them after each use. The mentioned working conditions of the surgical instrument determine the selection of drill bit material which are Tungsten – Carbide, Titanium, Cobalt – Chromium and Titanium – chromium – vanadium..

II. PURPOSE

The aim of the work is determination of life period of a surgical drill – bone system in simulated conditions of drilling in a bone.

III. LANGUAGE ACQUISITION

Drill is loaded with forces in the range F= 100 - 200 N and torque T = 0.04 Nm. Calculations were carried out for two kinds of metallic material of the drill. The dynamic load and Static load were considered in selection of drill bit materials

IV. FINDINGS FROM THE LITERATURE

The effect of numerical analysis determinate of strains and stresses in working part of thc drill. Results of analysis indicate diverse values of strains and stresses distribution in working part of the drill depending on its geometry. The maximum values of strains and stresses were obtained for the drill of point angle 2κ1=120 deg. For evaluating this wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

V. RESEARCH LIMITATIONS/IMPLICATIONS

In order to simulate phenomena in real system, a simplified model of surgical drill – femur system will be modelled for analysis. The simplifications concerned mostly geometry of a femur. The femur is represented by disc of height h = 10 mm, corresponding with thickness of bone.

VI. ORIGINALITY/VALUE

The numerical analysis of the surgical drill – femur system in simulated conditions of drilling in a bone can be a basis for optimization of cutting edge geometry of surgical tools as well as for selection of their mechanical properties.

VII. LITERATUR E REVIEW

Drilling of bone is an essential part of internal fixation in orthopedic surgery. In case of any fracture of human bones, the best way to better and faster knitting is when it is fixed by drilling and setting the immobilization plates by screws. Because of the drilling process, the surrounding bone tissue is heated and if temperature around the drilled bone hole exceeds the critical limit, this may result in Thermal necrosis.

The main group of metallic materials applied in surgical instrumentarium is stainless steels divided into three groups: martensitic, austenitic and ferritic steels. The main group of tools used in surgical operations are cutting(drill bit) tools. This group includes one-, two and multicdge tools. The most frequent used multiedge tools are surgical drills and screw taps. They are mainly used in osteosynthesis procedures. Application of drills in bone surgery forced by development of osteosynthesis methods. Diversity of operation procedures, need of custom design tools and tendencies to simplify operations, bore fruit in variety of drills. Besides standard surgical drills there are also available special design drills, for example drills with guide end and cannulated. As opposed to

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603012*

Experimental Study on Drilling Characteristics of Fiber Metal Laminates

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Abstract— Drilling is often experienced machining process in industry due to the need for element assembly in mechanical pieces and structures. Drilling of composite material appreciably affected by damage tendency of these materials under action of cutting forces (thrust forces and torque). So aim of this experiment is the drilling parameters (feed rate and cutting speed) in fiber metal laminates. The analysis of variance was performed to investigate the drilling characteristics of fiber metal laminates using HSS (High speed steel) two fluted standard twist drill bit in 4mm.The main purpose is to find the chip shape during diverse feed rates in fiber metal laminates materials.

Keywords: ***Drilling, Machining, HSS, Fiber, Metal.***

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Citation: P. Madhavan, Dhilipkumar, R. Sivakumar, G. Loganathan. "Experimental Study on Drilling Characteristics of Fiber Metal Laminates", Journal of Science, Computing and Engineering Research, 6(3), 57-62, 2023.

I. INTRODUCTION

Fiber Metal Laminates are hybrid materials built up from interlacing layers thin metals and fiber reinforced adhesives. They were developed in late 1970's and have gained wide attention in the aerospace and space industries since late 1980.There are two types of commercially available FML: GLARE and ARALL. The past is made of alternating glass-epoxy and aluminium layers while the latter is formed by alternating aramid epoxy and aluminium layers. Glare is a hybrid composite. In this composites offer several advantages such as better corrosion resistance, better fire resistance, better damage tolerance to fatigue crack growth, foreign object damage and high strength etc.

Fiber Metal Laminates (FML) are new type of composite developed at the Delft University of Technology. Thin sheets of aluminium are alternated with thin sheets of traditional composite. The first FML was ARALL, a combination of aluminium and Aramid/epoxy. Although the material showed promise and adoption by the aerospace industry was slow. In the 1980s, Delft University began developing a glass/epoxy FML called Glare. Glare was intended to be an alternative to aluminium in aircraft structures .Early research showed it had benefit over both aluminium and fiber glass composites, especially in fatigue and impact. Development continued over a number of years, and the commercial breakthrough came when Airbus decided to use the material on the A380. Glass fiber Reinforced Epoxy Aluminium (GLARE) is a Fiber Metal Laminate (FML) composed of several very thin layers of metal (aluminium) interspersed with layers of glass fiber, bonded together with a matrix such as epoxy. The bi-directional glass fiber layers may be aligned in different directions to suit the predicted stress conditions. Even though GLARE is a composite material, its material properties and fabrications are very related to bulk aluminium metal sheets. It has far less in common with composite structures when it comes to design, manufacture and inspection are maintained. GLARE parts are constructed and repaired using generally conventional metal matrix techniques.

Its major advantages over conventional aluminium are:

- Better damage tolerance
- High stiffness
- Better corrosion resistance
- Lower specific weight

While a simple manufactured sheet of GLARE will be more exclusive than an equivalent sheet of aluminium, considerable production savings can be made using the aforementioned optimization. A structure properly designed for GLARE will be significantly lighter and less complex than an equivalent metal structure, and will require less inspection and maintenance and enjoy a much longer life time-till failure, making it a cheaper, lighter and safer option over all.

GLARE is a relatively successful FML, patented by Akzo Nobel in 1987, which has entered commercial applications in the Airbus A380. GLARE is also the substance used in the ECOS3 blast-resistant Unit Load Device. This is cargo container shown to completely contain the explosion and fire resulting from a bomb such as that used over Lockerble. Other applications include among

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IOT INTEGRATED FOREST FIRE DETECTION AND PREDICTION USING NODE MCU

M. Khadar, V. Ranjith, K. Varalakshmi

ABSTRACT

Forest fires in Riau Province Indonesia are issues that regularly happen with affected the length and breadth of Indonesia. The effects forest fire and of haze on human health as reported in that particular year were about 20 million people have suffered from respiratory problems and serious deterioration in overall health in Riau community. This research proposes development of Wireless Sensor Network (WSN) for detection of forest fire in Riau province for the region that high risk forest fire in dry session, with WSN technology data be able to collect from the sensor deploy in the forest area. The deployment of sensors will be located at several locations that has badly impacted in previous case and forecast location with potential fire happen. Mathematical analysis is used in this case for modelling number of sensor required to deploy and the size of forest area represented overall of Riau Province. An early indication of forest fires is needed for quick prevention before they become uncontrollable and overwhelming. The design and development of WSN sensors give high feasibility to overcome current issues in Riau Province because of forest fire. The development of this system used WSN highly applicable for early warning and alert to representative institution for action taken.

Index Terms WSNs, Forest Fire, Sensors, Detection

Reference to this paper should be made as follows:

M. Khadar, V. Ranjith, K Varalakshmi, "Iot Integrated Forest Fire Detection and Prediction using NodeMCU" Int. J. of Electronics Engineering and Applications, Vol. 9, No. 1, pp. 28—35, doi 10.30696/IJEEA.IX.I.2021.28-35.

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STUDY OF FIRE FIGHTING ROBOT

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Abstract — In this paper a fire extinguishing robot has been proposed and designed which detects the fire location and extinguish fire by using sprinkler on triggering the pump. This robot uses three flame sensors for accurate fire detection. This proposed model of Fire Extinguishing Robot using Arduino used to detect presence of fire and extinguishing it automatically without any human interference. It contains gear motors and motor driver to control the movement of robot when it detects any presence of fire and will automatically start the water pump to extinguish that fire breakout. This model robot has a water ejector which is capable of ejecting water at the fire breakout place. The water ejector pipe can be move towards the required direction using servo motor the whole operation is controlled by an Arduino UNO micro controller.

Keywords:

1. Introduction—One of the most important parameter in fire disaster is life, i.e. lives lost in saving someone else life. It is sometimes impossible for fire-fighters personnel to access the site of a fire because of explosive materials, smoke, and high temperatures. A fast response to detect the fire can avoid many disastrous things. But it can be avoided using proper fire controlling methods. For such environments, fire-fighting robot is proposed. In today's generation a lot of robots are proposed and designed to remove the human factor from dangerous and deadly work.Use of robots is becoming very common that safely completes the labour intensive or deadly work for human beings. A fire extinguishing robot is based on IOT technology. It will automatically detect the fire with the help of flame sensors. The key features of this system are to provide surveillance of fire so that major fire accidents can be prevented and loss of human lives gets minimized.

Objectives:

- To detect fire in the disaster prone area.
- Extinguishes fire on detection.
- Reduces the efforts of human labour and level of destruction.

Hardware Components

Fire sensor

Buzzer

Motor

Arduino

Software Components

Arduino IDE

Embedded C

2. Methodology:

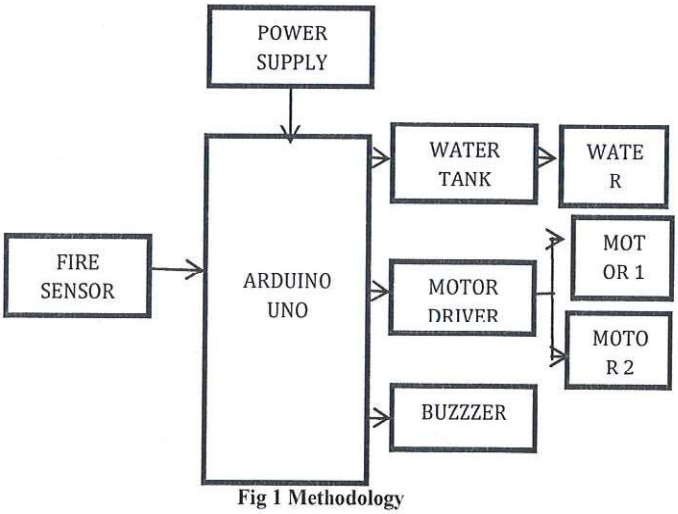


Fig 1 Methodology

2.1 Fire Sensor:

A flame-sensor is one kind of detector which is mainly designed for detecting as well as responding to the occurrence of a fire or flame. The flame detection response can depend on its fitting. It includes an alarm system, a natural gas line, propane & a fire suppression system. This sensor is used in industrial boilers. The main function of this is to give authentication whether the boiler is properly working or not. The response of these sensors is faster as well as more accurate compare with a heat/smoke detector because of its mechanism while detecting the flame..

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MACHINE LEARNING AND DEEP LEARNING: THE FRICTION STIR WELDING AND PLASMA ARC WELDING PROCESS

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Abstract- **This paper examines how artificial intelligence systems can be applied in the welding Procedures. AI and profound learning techniques could be utilized to work on the productivity of different welding processes by tracking down answers for their issues. Utilizing AI calculations has been shown to significantly improve welding cycle proficiency and precision. Modern robots equipped with artificial intelligence are able to resolve a number of puzzling issues affecting the assembling industry. Several welding processes rely upon human capacity while picking ideal limits that are extremely feeble to human botch and less useful. To diminish this faith, robots and modified systems are arranged using mind networks fit for conveying unsurprising weld quality and further created efficiency. Artificial intelligence is similarly used to picture welding given that the visual audit is essential to choose weld quality. These procedures can moreover be worn to weigh up the explanations behind various prosperity risks using backslide assessment.**

Keywords: **Artificial, Applied, Welding, Quality, etc.**

1. INTRODUCTION

Welding is a production cycle by which no less than two segments are entwined through force, pressure or equally forming a bond as the parts breezy. Welding is regularly applied to thermoplastics and metals, yet it can likewise be applied to wood. The completed welded joint may be implied as a weldment. Gas Metal Roundabout section Welding (GMAW) is used precisely and can be functional in ferrous also non-ferrous materials. This is a direct result of its versatility, high efficiency, steadfastness, usability, and robotization [1, 2], [3,] The connection offers various impenetrability rightness of the welding limits, appropriate to the modestly enormous integer of limits and a sturdy interrelationship [3], [4].

The fundamental guideline behind most kinds of welding stays to soften the two metals (by warming them over their dissolving focuses), add motion, and circuit them. Allow us to gain proficiency with the functioning guideline of gas welding. The metals are softened by the intensity from the response of fuel gas (Acetylene, Propane, Butane, Hydrogen, and so on) and oxygen. At the point when the gases from the chamber put away at high-pressure are delivered, they move through the light at high speed and are blended. The mixture is ignited by an external spark and has high temperatures and carbon dioxide characteristics. The fire begins blowing from the light. The intensity from this fire can be expanded by expanding the tension of the surge gas.

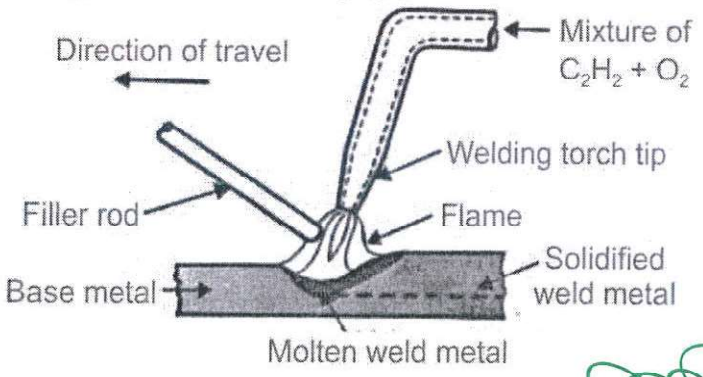


Figure 1 Gas Welding process

A subfield of AI known as profound learning depends on fake brain organizations. It is good for learning complex models and associations inside data. In significant learning, we don't need to unequivocally program everything. Because of enhancements in handling power and the accessibility of huge datasets, it has acquired prevalence as of

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060303*

Analysis of Drills Used in Bone Surgery

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Article Information

Received	:	03 Jan 2023
Revised	:	18 Feb 2023
Accepted	:	0 Mar 2023
Published	:	16 Mar 2023

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Abstract— The aim of this research is to find the life of the drill material used in bone surgery. In ancient days the doctors used to fix the bone fracture with the help of bamboo sticks, and a raw medicine from the forest due to the change of time, there are mechanical devices taking part in the human body as external bodies to the implementation also. In this work, three different materials are taken for testing and stress analysis of both static and dynamic for all the materials will be done to get the stress values for the life prediction inputs. Also, the optimization will be done to find out the best material. For evaluating the data obtained, wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

Keywords: ***Applied force, Drill bit, bone surgery, drill speed, feed rate***

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Citation: Anilkumar, Sounthar Rasu, Dhilipkumar. "Analysis of Drills Used in Bone Surgery" Journal of Science, Computing and Engineering Research, 6(3), 09-14, 2023.

I. INTRODUCTION

Drill bit include very wide range of geometrically and functionally an operational surgical drill bit is the special group of medical instrument. Furthermore, because of a work in chemically active environment (body fluids, drugs) it is necessary to sterilize them after each use. The mentioned working conditions of the surgical instrument determine the selection of drill bit material which are Tungsten – Carbide, Titanium, Cobalt – Chromium and Titanium – chromium – vanadium..

II. PURPOSE

The aim of the work is determination of life period of a surgical drill – bone system in simulated conditions of drilling in a bone.

III. LANGUAGE ACQUISITION

Drill is loaded with forces in the range F= 100 - 200 N and torque T = 0.04 Nm. Calculations were carried out for two kinds of metallic material of the drill. The dynamic load and Static load were considered in selection of drill bit materials

IV. FINDINGS FROM THE LITERATURE

The effect of numerical analysis determinate of strains and stresses in working part of thc drill. Results of analysis indicate diverse values of strains and stresses distribution in working part of the drill depending on its geometry. The maximum values of strains and stresses were obtained for the drill of point angle $2\kappa 1=120$ deg. For evaluating this wear analysis of different materials will be done and the life period will be compared with the fatigue life of the materials.

V. RESEARCH LIMITATIONS/IMPLICATIONS

In order to simulate phenomena in real system, a simplified model of surgical drill – femur system will be modelled for analysis. The simplifications concerned mostly geometry of a femur. The femur is represented by disc of height h = 10 mm, corresponding with thickness of bone.

VI. ORIGINALITY/VALUE

The numerical analysis of the surgical drill – femur system in simulated conditions of drilling in a bone can be a basis for optimization of cutting edge geometry of surgical tools as well as for selection of their mechanical properties.

VII. LITERATUR E REVIEW

Drilling of bone is an essential part of internal fixation in orthopedic surgery. In case of any fracture of human bones, the best way to better and faster knitting is when it is fixed by drilling and setting the immobilization plates by screws. Because of the drilling process, the surrounding bone tissue is heated and if temperature around the drilled bone hole exceeds the critical limit, this may result in Thermal necrosis.

The main group of metallic materials applied in surgical instrumentarium is stainless steels divided into three groups: martensitic, austenitic and ferritic steels. The main group of tools used in surgical operations are cutting(drill bit) tools. This group includes one-, two and multicdge tools. The most frequent used multiedge tools are surgical drills and screw taps. They are mainly used in osteosynthesis procedures. Application of drills in bone surgery forced by development of osteosynthesis methods. Diversity of operation procedures, need of custom design tools and tendencies to simplify operations, bore fruit in variety of drills. Besides standard surgical drills there are also available special design drills, for example drills with guide end and cannulated. As opposed to

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060403*

Analysis of Formability of Aa6061 by Dual Step Angle Single Point Incremental Forming

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— Single Point Incremental Forming (SPIF) is one among the chief promising more current strategies in metal shaping procedure, and this procedure depends on confined plastic misshapening on a thin level strong clear. Steady framing process has higher formability limits than other level strong shaping procedures including stepping, and is in this way an attractive technique for shaping level strong parts. to require bit of leeway of this high formability it's important to realize an approach to boost the formability, improving the probability of segment achievement. It distorts continuously and locally the level strong by round framing. Hemi-round headed device is to be acclimated distort the sheet in to required shapes. Formability investigation must be dispensed to get effective shaping procedure. This venture plans to survey the framing conduct of AA6061 through steady shaping procedure by double step framing edge. Shortened cones are to be framed for this reason at temperature, with the assistance of PC controlled numerical machine Formability Limit Diagram (FLD) is utilized to survey the conduct of level strong. FLD and thickness circulation has been anticipated and looked at for the structure.

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Keywords: ***Single Point Incremental Forming, Incremental forming; formability limit diagram; thickness distribution***

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Citation: Sivakumar.R, Prabhakaran, Sathiyamoorthy.R.M. "Analysis of Formability of Aa6061 by Dual Step Angle Single Point Incremental Forming", Journal of Science, Computing and Engineering Research, 6(4), 10-14, 2023.

I. INTRODUCTION

Gradual framing is one among the more current shaping advances where convoluted outside shapes are frequently framed without utilizing punches and kicks the bucket. A hemispherical device is squeezed over the level strong to make the necessary shape. The instrument way is constrained by a CNC machine. it's bolstered the procedure of assembling the structured formed by dynamic development of the hemispherical instrument. Since limited distortion is created during shaping, more extending happens than in regular framing. This procedure is typically applied as a result of greater adaptability and less tooling cost. on account of moderate shaping procedure, this will be restricted uniquely to little cluster creation frameworks.

Azaouzi et al (2012) demonstrated that an advancement system tried for a given framing technique, in order to decrease the assembling time and homogenize thickness appropriation of an uneven part. The ideal framing system resolve by Finite Element Analyses (FEA) along with Response Surface Method (RSM) and Sequential Quadratic Programming (SQP) calculation.

Suriyaprakan et al (2013) researched the steady framing process, extraordinarily spend significant time in test SPIF and Multi-Stage ISF tried with the Aluminum Alloy 1050. The impact of the toolpath and shaping apparatus development, got a vertical divider, on thickness dissemination was contemplated. For formability examination, lattice strain investigation and estimation was firm.

Khwere et al (2013) researched the nuts and bolts of steady sheet framing, groupings, devices utilized and impact of arranged parameters like plane anisotropy, device size and shape, grease subsequently. The examination additionally incorporated the propelled strategies fused in ISF like doubly bended surfaces, half and half framing, their favorable circumstances and impediments.

Mugendiran et al (2014) shortened square pyramid and cone were shaped to audit the formability of AA6061 at temperature. A PC controlled numerical machine was utilized for framing. Framing limit graph (FLD) was acclimated study the conduct of sheet. FLD and thickness dispersion had anticipated and looked at for both the shapes. As far as possible graph got through gradual framing impressively shifts from customary shaping breaking point outline. Correlation of FLD and thickness dispersion indicated that cone has higher framing limit than square cup and hence the thickness in the wake of shaping was preferred in cone shapes over in square cups.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604010*

Design of Smart Helmet

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— In present time many cases of bike accident can be seen around us. peoples get injured or might be dead and one of the reason is not wearing helmet. Many peoples could save their life in accident cases if they weared helmet at the time of accident, continuously road rules are violated. So as to overcome these problems, an Smart helmet is proposed having a control system built on a helmet. Smart Helmet for Motorcyclist is a project undertaken to increase the rate of road safety among motorcyclists. The idea is obtained after knowing that the increasing number of fatal road accidents over the years is cause for concern among motorcyclists. A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety for the rider. It will send the message and dial call which can be easy to connect the rider with the emergency number when he/she met an accident with helmet on. A smart helmet is a special idea which makes motorcycle driving safer than before. This is implemented using GSM module technology. The working of this smart helmet is very simple, vibration sensor sense the vibration of helmet where the probability of hitting is more which are connected to nano-arduino board. So when the rider crashes and the helmet hit the ground, these sensors sense and gives to the nano-arduino board, When the data exceeds minimum stress limit then GSM module automatically sends message and call to Emergency or family members. Also here we have an fan for rider's comfort and light indications to indicate other vehicles. May Wearing this smart helmet can save a life

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Keywords: ***Nano Arduino, Gsm Module, Vibration Sensor, Fan and Led Indications***

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Citation: Sivakumar.R, Prabhakaran.D, Sathiyamoorthy.R.M. "Design of Smart Helmet", Journal of Science, Computing and Engineering Research, 6(4), 38-45, 2023.

I. INTRODUCTION

The Main motive of developing this project is that rider should wear Helmet while riding. Day by day the two wheeler accidents are increasing and leads to loss of many lives. According to the Survey of India there are around 1200 accidents occurring due to bike crashes per year. The reasons may be many such as no proper driving knowledge, no fitness of the bike, fast riding of bike, drunken and drive etc. If accidents are one issue, lack of treatment in proper time is another reason for deaths. According to survey 700 accidents occur per year, nearly half the injured people die due to lack of treatment in proper time. Many reasons for this are late arrival of Ambulance, absence of pupil ate the accident site to inform the family or ambulance or to provide victim with first aid.

This is a situation we observe our day to day life, a thought of finding some solution to resolve this problem come up with this idea of giving the information about accident as soon as possible and in Time. Because after all time matter a lot, if everything is done in time atleast we can save half the lives that are lost due to bike accidents.

The aim of our project is to give information to the ambulance and family members about the accident as soon as possible so that they can take certain measures to save the life of the person who met with an accident.

A. Project Objectives

The Objectives of Design and Fabrication of Smart Helmet are given below

1. It is the minimum cost helmet that is capable of sensing the vibration of helmet and prevents deaths from road accidents.
2. It has the front lights that will indicate the other vehicles and prevent accidents.
3. It also have sweat-free fans for rider's comfort.

II. LITERATURE REVIEW

Jesudoos A et.al[1] proposed a mechanism, where sensors such as IR sensor, vibration sensor and gas sensor, mems are used. The gas sensor is used to detect the amount of liquor he had consumed by checking the breath of a person wearing the helmet. The bar control of the vehicle is handled by MEMS. Accident is detected by vibration

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604017*

Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 12 April 2023

Abstract— The hybridization of natural and synthetic fibers leads to composites optimum mechanical properties. Chicken feather fibers have potential application in light weight composites. In this study, an attempt was made to study the effect of the stacking sequence on epoxy-based Jute (J), Glass (G), Chicken feather (CF) hybrid composites. Two types of hybrid composite, each containing two different layers of jute and glass fabric and chicken feather as filler were manufactured by the hand layup method. Mechanical properties, such as tensile and flexural were studied. The experimental results showed that the stacking sequence of the fiber layers has a significant effect on the overall performance of prepared hybrid composites. Among the prepared hybrid composites, composite laminate with jute layers on their outer surfaces exhibited improved tensile strength of 92.3 MPa and the composites with glass fiber layers on their outer surfaces showed enhanced flexural strength of 125.7 MPa. This study demonstrated a new way to utilize CFFs and the prepared hybrid fiber composite has better mechanical properties than CFF composites while having increased bio-based content.

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Keywords: ***Natural fiber; Glass fiber; Chicken feather, Polymer Matrix Composites; Mechanical Properties***

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Citation: Sathiyamoorthy Margabandu , Madhavan. P 3Anilkumar, Prabhakaran, Sivakumar. "Mechanical Behaviour of Jute / Glass / Chicken Feather Reinforced Hybrid Composites", Journal of Science, Computing and Engineering Research, 6(4), 86-89, 2023.

I. INTRODUCTION

Over the past few decades, polymers have replaced many of the conventional materials in various applications. This is possible because of the advantages such as the ease of processing, productivity, and cost reduction which polymers offer over conventional materials. In most of these applications, the properties of polymers are modified by using fillers and fibres to suit the high strength/high modulus requirements. Fibre reinforced polymers offer advantages over other conventional materials when specific properties are compared [1]. These composite materials find applications in diverse fields from home appliances to space-crafts. Natural fibres have recently attracted the attention of scientists and technologists because of the advantages that they provide over synthetic fibres. They are readily available low-cost fibres with low density and high specific properties. These are biodegradable and nonabrasive compared to other fibres used as reinforcement [2].

Recently, animal-based fibres have attracted increasing attention as potential high performance reinforcing fibres. Animal-based fibres that are traditionally used for polymer reinforcement are wool and silk. An alternative to the aforementioned fibres is fibre recovered from chicken feathers, as they are widely available and has good mechanical properties [3]. Large quantity of feather is produced by the poultry industry every year and these waste materials can be effectively used as a reinforcing agent. Around 24 billion chickens are killed per year across the world, which discard around 8.5 billion tons of feathers, in which India's contribution alone is 400 million tonnes. India is ranked the fifth largest poultry producer in the world. People of Kerala are among the major consumers of chicken in India and the degree of chicken waste accumulation in the state is very high [4]. There are some traditional disposal strategies for chicken feathers which includes their recycling into low quality animal feeds. But these are not commonly explored in Kerala and the waste is often burned in incineration plants or casually dumped on roadsides. However, these disposal methods cause serious environmental, social and health hazards. The chicken feathers pollute the soil into which it is dumped or pollutes the air when it is burnt. In both cases the presence of sulphur dioxide in feathers is the cause of pollution [5]. Chicken waste also causes water pollution. Chicken feathers are made of keratin fibres (about 90% by weight) which possess high toughness, good thermal insulating properties, non-abrasive behaviour and hydrophobic nature. Its morphology consists of an ordered hierarchy comprising a central rachis

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Design, Analysis and Rapid prototype of Hip Simulator

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Abstract - **Universally more than 2lakhs people are ailing from hip failure every year and the remedy for this is replacement. In India, the percentage of people getting handicapped due to hip fractures is high. For that, the people are going for replacements of the hip using artificial hip prosthesis. The artificial prosthesis is imported from the foreign countries which are costlier than the custom-made Indian prosthesis. For that, the Indian people are going for Indian custom-made prostheses. To evaluate the custom made for patients of Indian prostheses, many institutes are working on the prostheses simulators. In this work the walk simulator or hip simulator for Indian customized prostheses is designed. Using this simulator, the prostheses life period can be evaluated with the existing data available from the literature and with the data acquiring from the simulator.**

Index Terms - **Hip simulator model, stainless steel and aluminium alloy material, Fatigue and wear analysis.**

1.INTRODUCTION

Once a suitable implant configuration was achieved, initial bench testing was repeated with the simple load to failure test using a hydraulic jack and donated polyurethane foam femurs from Pacific Research Laboratories The information from these initial tests was valuable to develop a qualitative understanding of failure modes. For example, it was noted that the head of the compression screws migrated superiorly as the construct approached failure. This was addressed with a plate designed to fit between the interlocking screw and the posterior compression screw to serve as a buttress. Although prominence of the plate was originally problematic, this was resolved with successive iterations of the design. Furthermore, early testing demonstrated the distinct advantage of having the threaded screw heads for fixation into the lateral cortex. Overall, the load-to-failure testing system was invaluable in comparing early design iterations of the hip construct. Ultimately, it was recognized that although early bench testing was helpful, a more sophisticated testing apparatus was needed before using the implant clinically. This testing was achieved through a collaborative effort between SIGN, Program for Appropriate Technology in Health (PATH) (an international on-profit organization), and Allan Tenser from the University of Washington Orthopedic Science Laboratory. Although load-to-failure testing was valuable in the early design process of the SHC, fatigue testing was necessary to understand the failure modes associated with more physiologic loading.(Ref 1,4 and 7)

Maturation of the fitness movement has brought with it an increasingly sophisticated consumer who has become concerned with the stress that activities such as Walking or running impose on the body. In order to maintain and improve their level of fitness, many in this group have sought out new modalities that provide the desired training stimulus but with reduced wear and tear.

To meet this demand, manufacturers first introduced treadmills with impact absorbing suspension systems. Later, the entire nature of weight-bearing cardiovascular exercise was altered with the introduction of gait simulators. These devices mimic walking and running by keeping the user suspended on two moving footplates. Unlike treadmills, however, gait simulators impart no jarring forces on the user, by virtue of the fact that the foot never leaves the support platform.

The degree to which gait simulator induces joint stress is entirely a function of its design. The initial design utilized an elliptical path of motion and was referred to as an elliptical cross trainer. A new class of gait simulator is designed around an accurate path of motion and has, thereby, been designated an arc trainer. The purpose of this investigation is to examine the kinematics and biomechanics of these gait simulators and to compare them to normal ambulatory conditions.(Ref 3,4 and9)

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DIGITAL STUDENT ID CARD USING RFID TECHNOLOGY (DIGITAL INSTITUTE)

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Abstract

This project is an IoT-based solution designed to replace traditional ID cards for students and faculty members in educational institutions .The system will utilize sensors and microcontrollers to capture and transmit each user's unique identifier, such as a biometric signature or NFC tag, RFID to a cloud-based platform.

The platform will then verify the user's identity and provide access to various functions for both students and faculty members, as well as college management functions for administrators. The system will provide a more secure and convenient way to verify identities, reducing the risk of identitytheft and fraud.

By using this IoT-based system, users will no longer need to carry a physical ID card, and the data collected will be encrypted and securely stored in the cloud. Additionally, the system can be easily integrated with existing campus securitysystems, providing a comprehensive security solution for the institution.

Overall, this project aims to leverage IoT technology to enhance security, convenience, and efficiency in the verification of identities within educational institutions.

Keywords—NFC-Near Field Communication, RFID-Radio Frequency identification, IoT- Internet ofThings.

INTRODUCTION

In today's rapidly advancing technological world, the adoption of Information Technologies (IT) is changing the way we do business. Mobile devices, such as smart phones, have become ubiquitous and are constantly Evolving to make our lives easier and more convenient. One of the latest developments in smart devices is Radio frequency identifier (RFID), which allows data transmission over short distances. RFID has a wide range of applications, including ticketing, access control, and mobile payments. It can also be used to bootstrap different types of connections, such as Bluetooth or Wi fi.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060305*

Authorized Data Dedupulication Technique In Cloud Storage System

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	17 Mar 2023

Abstract— Data deduplication is one of important data compression techniques for eliminating duplicate copies of repeating data, and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the confidentiality of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this project makes the first attempt to formally address the problem of authorized data deduplication. Different from traditional deduplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new deduplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

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Keywords: ***Data Deduplication, Security, Cloud Computing, Storage.***

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Citation: S.S.Vasantha Raja, Dr R.Palson Kennedy, S. Jonisha, T.Bersikin Libina. "Enhancing Communication Skills of the Learners in Professional Advancement, "Journal of Science, Computing and Engineering Research, 6(3), 18-23, 2023.

I. INTRODUCTION

Cloud computing provides seemingly unlimited "virtualized" resources to users as services across the whole Internet, while hiding platform and implementation details. Today's cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified privileges, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the ever-increasing volume of data. To make data management scalable in cloud computing, de duplication has been a well-known technique and has attracted more and more attention recently.

Data deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage. The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent. Instead of keeping multiple data copies with the same content, deduplication eliminates redundant data by keeping only one physical copy and referring other redundant data to that copy. Deduplication can take place at either the file level or the block level. For filelevel de duplication, it eliminates duplicate copies of the same file. Deduplication can also take place at the block level, which eliminates duplicate blocks of data that occur in non-identical files. Although data deduplication brings a lot of benefits, security and privacy concerns arise as users' sensitive data are susceptible to both inside and outsider attacks. Traditional encryption, while providing data confidentiality, is incompatible with data deduplication.

Specifically, traditional encryption requires different users to encrypt their data with their own keys. Thus, identical data copies of different users will lead to different cipher texts, making deduplication impossible. Convergent encryption has been proposed to enforce data confidentiality while making deduplication feasible.

It encrypts/decrypts a data copy with a convergent key, which is obtained by computing the cryptographic hash value of the content of the data copy. After key generation and data encryption, users retain the keys and send the cipher text to the cloud. Since the encryption operation is Deterministic and is derived from the data content, identical data copies will generate the same convergent key and hence the same cipher text. To prevent unauthorized access, a secure proof of ownership protocol is also needed to provide the proof that the user indeed owns the same file when a duplicate is found. After the proof, subsequent users with the same file will be provided a pointer from the server without needing to upload the same file. A user can

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Excess Properties and Theoretical Evaluation on Ternary Systems of 1-Pentanol in n-Hexane Solution with some Organic Compounds at 313 K Using Ultrasonic Technique

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Abstract: The parameters like density(ρ), ultrasonic velocity (U), and viscosity (η) were experimentally measured. The excess parameters like adiabatic compressibility, acoustic impedance, free volume, free length, internal pressure and ultrasonic velocity in addition to K value were computed from the experimental data. The variation of these parameters at a constant temperature for the three ternary systems, namely OMP + 1-pentanol+n-hexane, N, N-DMF + 1-pentanol+n-hexane, and MMP + 1-pentanol+n-hexane, have been discussed in the light of molecular interaction. Further, certain theoretical studies are validated with respect to experimental velocities, and the Chi-square test for the goodness of fit is also applied to check the validity of such theoretical models.

Keywords: Charge-transfer complex, stability constant, excess acoustic impedance, Chi-square, molecular interactions.

1. INTRODUCTION

Ultrasonic studies play a vital role in various fields such as medicinal, biological, food industries, pharmaceuticals, Non-destructive testing (NDT) and molecular liquids, etc. Through the ultrasonic studies of liquid mixtures, which are of micro-level concentrations, the strength or nature of the molecular interactions can be detected and assessed [1, 2]. The ultrasonic velocity is temperature dependant for most of the liquid mixture with respect to their acoustical properties. The present investigation is undertaken for three ternary systems consisting of OMP (o (2)-methoxy phenol) /N, N-DMF (N, N dimethylformamide) /MMP (m (3)-methoxy phenol) + 1-pentanol in n-hexane medium at constant temperature 313 K. The organic compounds which are considered for the present study such as OMP, N, N-DMF, and MMP are used in a wide variety of reactions including electrophilic substitution, nucleophilic substitution, oxidation and reduction [3]. n-hexane may not be able to deprotonate under normal temperature, but at high temperature, its behaviour is changed, and hence it is used in various fields like separation technique, preparation of organolithium, etc. For the preparation of many organic compounds, the role of alcohol is considered as important. There are many differences between the branched and unbranched organic compounds, particularly alcohols, and in the present case, unbranched C-5 is considered [4]. The present study is undertaken with OMP /N, N-DMF/ MMP as a donor, and 1-pentanol as an acceptor in n-hexane as the solvent. The present study doesn't consider the para substituent (para methoxy phenol) since it is deliquescent in nature, and also, the instrument which is used in the present investigation is specially made for liquids alone. Besides, the following characters of the organic compounds which are under study prompted the author to probe the present study.

The radical scavenging activity and cytotoxicity of 2-methoxy phenols(OMP) and related compounds and their effect on lipopolysaccharide (LPS) gives rise to possess the antioxidant property. 2-Methoxy phenols are antioxidants widely used in the cosmetic and food industries. Dimers were synthesized, and their radical-scavenging and biological activities were compared with those of the original or other phenols. Computational chemistry is one of the most rapidly expanding and exciting areas of scientific endeavour in the medical, dental, and material sciences [5-21]. The information available from computational methods may help interpret the molecular mechanism of interactions of 2- methoxy phenol antioxidants. N, N-DMF is used in the synthesis of many organic compounds like 2 nitroso 5 methoxy phenol, which is used in the medicinal field, and the same N, N-DMF is also used as food additives and colourants. It is understood that the role of N, N-DMF as in pharmacology and in biochemical reactions which itself a predicted metabolite found in the human body; MMP is used as a food additive, and flavouring agent including cosmetics, perfumes, lotion, shampoos, toothpaste, etc. and these characters of organic compounds (OMP, N, N-DMF, and MMP) stimulated the author to undertake the present study [22, 23].

Therefore, the authors have taken the present study to provide useful information regarding the molecular

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Excess Properties and Theoretical Evaluation on Ternary Systems of 1-Pentanol in n-Hexane Solution with some Organic Compounds at 313 K Using Ultrasonic Technique

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1. INTRODUCTION

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AES

ISSN: 2096-3246
Volume 55, Issue 04, April, 2023

Emotional intelligence and academic motivation in students

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Keywords:
Emotional intelligence, Academic motivation, College task, Primary college

ABSTRACT

The role of emotions in the educational context is one of the lines of research that has generated most interest in recent years. This study explores the level of emotional intelligence (EI) and motivation towards studying of primary college (PS) students, as well as the relationship between both variables. For this, a quasi-experimental design has been used with an accidental sample of 541 students from public centers in the province of Chennai (India). The instruments used were a College Motivation Scale and an EI questionnaire for primary college students, based on the five areas of Goleman EI. The results maintain a mid to high level of EI in all of the factors (self-conscience, self-control, emotional use, empathy and social skills) and a good level of academic motivation. Therefore, they show a positive and significant correlation of both variables. Girls have a higher emotional intelligence index and there is no differ- ence in academic motivation in terms of gender. Based on these results, it is suggested to implement programs that consolidate emotional competences given their importance in the psychevolutionary development of students and their relationship with academic motivation.

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1. Theoretical framework

Education in India, and therefore the primary education (PE) stage, has been exposed to numerous legislative and structural reforms in recent decades. Currently, this stage is focused on the acquisition of competency development, which includes the learning of personal, intellectual, social, and emotional skills. The ultimate goal is that students can learn and develop these skills and abilities that allow them to face their future and adapt to the changing situations of the knowledge society [16], Merchán et al., 2014; [2]. In this sense, more and more voices are emerging that question the exclusivity of rational intelligence as the most influential factor in achieving academic and personal success, understanding that there are other variables that should also be taken into account, such as emotional intelligence (EI) and motivation (Ferrándiz et al., 2012; Filella et al., 2014; [8], Pulido & Herrera, 2017; Rebollo & de la Peña, 2017; Puertas et al., 2020).

The key lies in the harmony between thoughts and emotions, and education is the main instrument to

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Journal of Positive School Psychology
2022, Vol. 6, No. 3, 4111 – 4118

http://journalppw.com

Effectiveness of Listening Strategies Enhancing Comprehensive Listening Skill of English Learners

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Abstract

This study focuses on effectiveness of Strategy based listening activity to enhance comprehensive listening skills of engineering students. The second language learning requires various skills to extract the desired essence of teaching. Especially English language learning requires 'Strategy based' activities to acquire the language skills. It is necessary to modify the teaching-learning approach and to include multiple ways to get attention of students in second language learning class room. Listening is a critical skill that underlies all verbal communication inside and outside the class room. The purpose of this study is to look into comprehensive listening skills of engineering students and to guide how to go about listening and how to get over their problems in listening to English. More over the study aims to suggest effective strategies to enhance comprehensive listening skills

Key Words: Strategy, listening skills, Listening comprehension, language learning

Introduction

The everyday concept of listening is erroneously associated with hearing. Listening tends to be assumed as the process of receiving a spoken message and converting it into a meaning in mind. The first commonly held false conception assumes that listening and hearing are synonymous. However, hearing does not necessarily imply we are listening. Hearing can be seen as the physiological function of our auditory sense, whereas listening is conceptualized as the physiological attribute, which is in action when we discern and actively respond to the sounds heard. In this sense both listening and hearing involve sound perception, but listening involves a degree of intention.

Issues in Listening

The classroom of English still, for instance, reflects a teacher-centered ideology with all its underpinning assumptions. The instructional approach used in most classes is grammar translation where the formal teaching of grammar is ultimately still a panacea; grammar is at the heart of what is done in the classroom. Teachers in this context are perceived as the dispensers of knowledge who are unquestionably empowered with the expertise to set goals, assign tasks, correct mistakes, and assess progress. In contrast, students are ultimately the passive recipients who are easily giving themselves in for teachers to pour piles of grammatical rules and vocabulary as well as ready-made well-written paragraphs that suit any topic to be learnt by heart only for the exams and completely forgotten afterwards. The interest in listening or speaking seems to be totally absent from the teaching practices in the classroom. This means that there is no room for these two skills in the final examination and as the teacher's whole

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Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 44 No. 3 (2023)

Bioavailability of Heavy Metals in Soils and their Uptake by Paddy (*Oryza sativum*) – An Empirical Study

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Abstract: Heavy metals, such as Cadmium, copper, lead and chromium are the most toxic, persistent, and widespread environmental pollutants, particularly in areas with high anthropogenic pressure. Dissolved or suspended metals in soil and water, even in traces can degrade water quality and soil fertility and become available to plankton, nekton which in turn alters the normal biogeochemical cycling. Crop plants growing on heavy metal contaminated medium can accumulate high concentrations of trace elements which cause serious health risks to consumers. The toxicity of heavy metals at high levels of exposure is well known but a major concern is the possibility that continual exposure to relatively low levels of these heavy metals through the consumption of the vegetables and food crops may entail adverse health effects. Only bioavailable metals in soil are able to exert toxic action. Bioavailable metals cannot be measured directly through chemical analysis-only living organisms determine bioavailability. An experimental study was carried out to better understand the bioavailability and extent of toxicity of heavy metals on the growth of paddy plant in the heavy metal contaminated soil samples of Ranipet industrial area. Results show that Chromium and Zinc were recorded in higher concentration in all the four study areas. The heavy metal Cr concentration was in the order MGR Nagar > Vannivedu > Bharathi Nagar >Vanapadi. Germination studies of *Oryza sativam* in the metal contaminated soil medium was carried out with the finally extracted soil and the germination time and extent of growth were studied. The result reveals that the percentage of seed germination is in the order Bharathi Nagar (90%) > Vanapadi (75%) >MGR Nagar (55%) > Vannivedu (50%) respectively.

Keywords: Heavy metals, industrially polluted soils, *Oryza sativam*, germination studies, bioavailablity and bioaccumulation.

1. Introduction

Agricultural and industrial activities release several organic pollutants, drugs, and large quantities of inorganic pollutants as heavy metals (Malidareh et al., 2014; Briffa et al., 2020). They enter in environment from several sources, both natural and anthropogenic sources (Zazouli et al., 2010; Wenga and Gwenzi, 2022). Anthropogenic rare earth elements in aquatic environments: Occurrence, behavior, and fate. In *Emerging Contaminants in the Terrestrial-Aquatic-Atmosphere Continuum:* (pp. 87-102). Elsevier.). These activities can cause severe pollution of highly toxic heavy metals (such as Cu, Cr, Cd, Hg, Pb, and As) in aquatic and terrestrial ecosystems, and even to the atmosphere (Leung et al., 2006). Heavy metals are non-biodegradable, thus persisting for long periods in environmental ecosystems, may be fatal to living organisms.

Crops in close to contaminated sites can uptake and accumulate these metals, and then exert potential risk to humans and animals (Gupta and Gupta, 1998; Jarup, 2003; Cheng et al., 2014). The major route for heavy metals exposure to humans is mainly through the soil-crop-food pathway. Bioaccumulation is the accumulation of a chemical via all routes available to the organisms. Heavy metal accumulation and bioavailability in both soil and water have to be considered to obtain a better understanding of environment–animal interactions. Metal

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IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

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Mineralogical and Firing Temperature characteristics of Indian Pottery Samples from an archaeological site Thoppur, Thiruvannamalai District, Tamilnadu, India by Spectroscopic studies

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Abstract

Indian pottery samples from an archaeological site near Thiruvannaalai (Thoppur), Tamilnadu, India, were analyzed in terms of its mineralogical and firing temperature characteristics to elucidate the technologies of manufacture. The samples were examined with FT-IR spectroscopy and X-ray powder diffraction. In addition, SEM-EDS techniques were used to investigate the degree of vitrification and elements present in the pottery samples. In addition, the thermal reactions associated over the temperature range linearly from room temperature to 1000°C in an inert gas atmosphere were also studied by thermal analysis (TG-DTA). Results obtained from above-said studies reveal that the studied pottery samples of Thoppur contain predominant fine quartz mineral, followed by traces of albite, orthoclase, microcline and Fe-bearing minerals (hematite and magnetite) and indicate that the firing temperature of potteries above 600°C in oxidizing/reducing atmosphere during its fabrication. Based on the results of this research work, we can understand the changes in the properties of the raw material at the time of production during heating.

Keywords: Artifacts, FT-IR, XRD, SEM-EDS, TG-DTA.

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Journal of Molecular Structure 1213 (2020) 128187

Contents lists available at ScienceDirect

Journal of Molecular Structure

journal homepage: http://www.elsevier.com/locate/molstruc

Crystal growth, spectroscopic, optical, thermal and hirshfeld surface analysis of glycinium hydrogen fumarate glycine solvate monohydrate (GHFGSM): A third harmonic nonlinear optical organic crystal

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ARTICLE INFO

Article history:
Received 6 November 2019
Received in revised form
11 March 2020
Accepted 1 April 2020
Available online 4 April 2020

Keywords:
Nonlinear optics
GHFGSM
Optical absorbance
Hirshfeld surface
Lifetime
Z-Scan technique

ABSTRACT

An efficient nonlinear optical single crystal, GHFGSM was grown by solvent evaporation method. Single crystal XRD evince that GHFGSM crystallized in monoclinic system with centric space group $P2_1/n$. The composition of different functional groups in GHFGSM was identified with FTIR spectral investigation. The UV–visible and fluorescence spectrum proved the optical and electronic properties respectively for the grown crystal. The various optical parameters such as extinction coefficient, reflectance, and linear refractive index, electrical and optical conductivity were also determined. Inter molecular interaction in the compound was studied using Hirshfeld Surface generated by crystal explorer 3.1 program. The thermal firmness of the grown crystal was decided by thermogravimetric analysis and accurate melting point was confirmed from differential scanning calorimetry. The dielectric property of the grown crystal was examined for different temperatures. The third harmonic generation in GHFGSM has been investigated using Z-scan technique employing Nd:YAG laser and thus this technique clearly suggest its suitability in emerging technologies such as optoelectronics and third order nonlinear optical applications.

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1. Introduction

Much evolution has been made in the new materials with high optical nonlinearities because their practical applications in harmonic generation, amplitude and phase modulation, laser technology, switching and other signal processing devices [1,2]. Nonlinear optical (NLO) materials have attracted many researchers due to their huge range of applications in the area of photonics, lasers, electro-optic switches and frequency conversion devices [3]. The interaction between the electric field of the wave and the nonlinear optical medium giving out the output possessing three times that of the original frequency executes third harmonic generation (THG) effect. In certain cases when the THG is not acquired directly, then in such case firstly a fraction of the fundamental is converted into second harmonic and thereafter that unconverted fundamental and second harmonic generated signal are coupled to tripler to produce third harmonic signal. The third order nonlinear optical (NLO) materials have been actively employed as promising materials in photonics, communications devices, information processing, optoelectronic switching devices which forms the basis for future optical systems [4,5] and also in photodynamic therapy [6]. The NLO properties can be utilized as sensitive probes in biomedical and environmental fields [7,8]. Especially two-photon absorption is utilized in the field of medicine and photonics [9]. From the computer and telecommunication advances, inherent high nonlinearity, synthetic flexibility and scope to alter their properties

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https://doi.org/10.1016/j.molstruc.2020.128187
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Journal Pre-proof

Synthesis and characterization analysis of unique organic crystal – Urea Glutaric Acid, an optimistic candidate for optical device applications

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Journal of Materials Science: Materials in Electronics
https://doi.org/10.1007/s10854-020-04066-3

Crystal growth, optical, spectroscopic studies, PL behaviour and Hirshfield surface analysis of a third-order nonlinear optical Cesium Hydrogen Oxalate Dihydrate (CHOD) single crystal

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Received: 2 March 2020 / Accepted: 16 May 2020
© Springer Science+Business Media, LLC, part of Springer Nature 2020

Abstract

Single crystal of oxalato-bridged, Cesium-extended frame work, Cesium Hydrogen Oxalate Dihydrate (CHOD), has been synthesized by slow evaporation solution growth technique. Diffraction studies were used to identify the geometry of the atoms present in the primitive cell of the crystal. The title compound has crystallized in triclinic category-bearing space group P-1. Spectroscopic investigation of the compound was done by FTIR and FT-Raman techniques. From UV–Vis studies, optical absorption edge was ascertained as 241 nm. It has excellent optical transmission window throughout the visible region. Energy dispersive X-ray analysis (EDAX) affirms the presence of Cesium in the compound. Fluorescence decay of the molecules present in the excited state for the crystal was studied. Hirshfield surface maps intermolecular contacts present in the crystal and the contributions made by the contacts were assessed by 2D Finger print plots. Z-Scan studies ascertain the magnitude of nonlinear refractive index and nonlinear refraction.

1 Introduction

Metal Organic frameworks (MOF) are porous, crystalline and robust hybrid materials of organic and inorganic constituents with inconceivable tunability of geometry, size and chemical nature. Tunability of MOFs can be made without change in their underlying topology [1,2]. It consists of ordered, crystalline and extended array of charge compensating metal ions coordinated to organic linkers. MOFs are known for astounding void fraction i.e. only 10% area of the material is occupied and it has expansive interior region without occupation of molecules and large void space. Their high porosity leads MOFs to be used in energy storage devices. They are used in batteries and superconductors.

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Published online: 31 July 2020

Journal of Materials Science: Materials in Electronics
https://doi.org/10.1007/s10854-020-04015-0

Linear and nonlinear optical investigation of L-arginium adipate single crystal for photonic applications

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Received: 20 May 2020 / Accepted: 13 July 2020
© Springer Science+Business Media, LLC, part of Springer Nature 2020

Abstract
The L-arginium adipate (LAA) single crystal, is an organic component material efficiently grown by a simple technique called slow evaporation solution technique at ambient temperature. The monoclinic crystal system with the space group of $P2_1$ is exhibited for LAA from the X-ray diffraction analysis. FTIR spectroscopy that designates different molecular vibrations existing in LAA crystal was studied. The absorbance spectrum from the UV profile proclaims very less cut-off wavelength down to 206 nm and its wide optical band gap is also calculated. The perfection of the crystal is shown from Urbach's energy determination. The extent of polarization phenomena was examined for selected temperatures at dissimilar frequencies from the dielectric studies. The double harmonic output and triple-order nonlinear response for LAA are inspected from Kurtz-Perry and Z-scan technique, respectively.

1 Introduction

The focus on the development of new nonlinear optical crystals and its designing technology creates a good exposure in the domain of photonics and optoelectronics. Young scientific researchers explore this technique for assembling suitable materials among various applications for diverse device fabrication. The NLO third-order material with feeble nonlinear absorption and durable refraction has extensive courtesy because of their potential use in signal processing. The existence of strong nonlinear absorption enables the optical limiting property of an organic crystals [1–3]. The potentialities of different organic and inorganic materials with good nonlinear optical properties involve its application over vast image and information processing, terahertz wave generation, optoelectronic modulators etc. through engineering procedures [2, 3].

Mostly, primary amines act as strong bases among carboxylic acid groups because it can easily make bond among different organic acids. Organic materials offer more attention due to their capable application in adipic acid over higher (third) order harmonic generation based on their elevated NLO efficiency with strong optical (laser) damage threshold and show good stability over temperature dependence [4–7]. The nonlinear optical materials grown from low-temperature solution growth techniques stand as a new focus of science and development of technologies of photonics which effectively show more application in the field information domain, optical data transfer, laser, and optical power limiting [8].

Moreover, the crystal structure may be obtained due to fundamental forces through inter-molecular interactions and form the supra assembly of molecules. The hydrogen bondings are more dominant over engineering categories

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Published online: 20 July 2020

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Journal Pre-proof

Spectral, dielectric, mechanical and optical characteristics of LPDMCl single crystal for nonlinear optical applications

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Research Square

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Influence of L-alanine Doping on Zinc (TRIS) Thiourea Sulphate (ZTS) Single Crystals

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Research Article

Keywords: growth from solution, nonlinear optics, X-ray diffraction, second harmonic generation

Posted Date: June 7th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1480676/v1

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Environmental Science and Pollution Research (2023) 30:15082–15101
https://doi.org/10.1007/s11356-022-23126-1

RESEARCH ARTICLE

The performance enhancement of solar cooker integrated with photovoltaic module and evacuated tubes using ZnO/Acalypha Indica leaf extract: response surface study analysis

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Received: 6 April 2022 / Accepted: 14 September 2022 / Published online: 27 September 2022
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Abstract

In this study, the effect of employing ZnO/Acalypha Indica leaf extract (ZAE) on the energy absorption of a coated portable solar cooker has been examined using an experimental setup. A prototypical model has been developed to corroborate in associating an investigative outcome per constituents of the experiments. The studied heat transfer process in ZAE is stable for harsh conditions. The design analysis and an estimation of the system performance were done given various parameters including the pressure of the vacuum envelope, bar plate coating digestion, emissivity, and solar rays. The fabricated solar was tested with and without ZAE to investigate the impact of this coating material on the solar cooker's thermal performance. To observe the performance of the new design, two figures of merit (F_1 and F_2) have been introduced. The factual food cooking assessments were for a family of four people, which operated in ZAE coating (0.8, 1.0, 1.2 μm) of the solar cooker. The values of F_1 and F_2 for the proposed cooker were obtained as 0.1520 and 0.4235, respectively, which is intact with the BIS values. The results revealed that employing ZAE instead of a thermal NHC-PV solar cooker reduced the time required to boil 2 L of water for about 47 min. The overall thermal energy productivity of the solar cooker with electrical backup was obtained as 42.65%, indicating that the ZAE coating can improve the thermal efficiency by 10.35%.

Keywords Electrical backup · Evacuated tubes · Photovoltaic panel · Thermal model · Solar cooker

Introduction

A solar cooking process is a method in which solar radiation is utilized to naturally cook substances. Research worldwide have found out that solar cookers have sustainability for cooking in rural and urban areas with reduced energy consumption. A solar cooker using sun radiation as a heat source, can be utilized on hot sunny days, but on rainy and winter days, it is useless. It has been found that a solar cooker with an electrical backup will overcome these inconveniences. An electric backup integrated with a solar cooker has shown better performance compared to the cooker supported with thermal energy alone. Moreover, selectively coated absorbers using nanoparticles play an important role in enhancing the performance of solar cookers. Several studies have assessed the effect of selective absorber coating using nanoparticles. Kaiyan et al. (2009) used a light funnel to congregate solar energy to achieve temperature suitable for industrial and domestic usage. It was identified that a temperature of 250 °C is achieved with a lighting area of 1.5 m^2. Prasanna and Umanand (2011) experimented by transferring solar energy to the kitchen using fluid circulation to stimulate a cooker using the concept of maximum power point tracking (MPPT) for a thermal collector. Javadi et al. (2013) also reviewed the effect of using nanofluids on the performance of solar collectors. In their review, care was taken to highlight the impact of two-phase analysis of the nanofluid with more than one nanoparticle in the heat transfer fluid. Hussein et al. (2017) reviewed theoretical, numerical, and experimental studies of a heat pipe solar

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PHYSICS AND CHEMISTRY OF SOLID STATE
V. 23, No. 3 (2022) pp. 443-449
Section: Chemistry

DOI: 10.15330/pcss.23.3.443-449

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ФІЗИКА І ХІМІЯ ТВЕРДОГО ТІЛА
Т. 23, № 3 (2022) С. 443-449
Хімічні науки

PACS:78.90.+t

ISSN 1729-4428

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Enhanced photocatalytic and Antibacterial Activity of Copper oxide Nanoparticles Synthesized by Facile Combustion methods from Mussaendafrondosa Plant Extract

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Microwave heating (MHM) and mutated sol-gel (SGM) mechanisms were used to effectively create CuO samples with two dissimilar morphologies, such as nanoparticles (CuO-NPs) and nanorods (CuO-NRs), using Mussaendafrondosalinn plant extract as the bio-reducing operator.X-ray powder diffraction (XRD), scanning electron microscopy (SEM), and energy-dispersive X-ray (EDX) investigations were used to analyze the sample's structure, pureness, and morphological characteristics.UV-Visible diffuse reflectance (DRS) and photoluminescence (PL) spectroscopy methodologies were used to analyze optical properties and calculate band gap energy. The band gap of the samples was measured using the Kubelka-Munk mechanism, and it was found to be 2.74eV and 2.33eV for CuO-NPs and CuO-NRs, correspondingly.CuO-NPs and CuO-NRs were investigated for antibacterial activity versus each Gram-positive and Gram-negative microorganisms using a modified disc diffusion method. When correlated to the sample CuO nanorods, the antibacterial study confirms that the sample CuO nanoparticles are high-grade antibacterial agents.Using solar lighting, the photocatalytic activity of CuO nano reactants (CuO-NPs and CuO-NRs) for the degradation of methylene blue (MB) dye was investigated, and the findings revealed that CuO-NPs with tinier particle sizes degraded MB more than CuONRs.

Keywords: CuO, Nanoparticles; Mussaendafrondosalinn; Antibacterial Activity; Optical Properties; Photo-Catalytic Applications.

Received 22 February 2022; Accepted 09 August 2022.

I. Introduction

Various fields like food industry, chemical industry, healthcare and electronics are embracing nanotechnology due to their many unique and desirable properties that fulfill the end users needs. When compare with all the fields, the biomedical area is greatly influenced by the nanotechnology advancement. CuO nanoparticles exhibit better biological features, especially good antibacterial function over a broad area of pathogens and drug-resistant bacteria. CuO nanoparticles have shown their potential in pharmacological activity, specifically in anti-tumor therapy. After being recognized as antimicrobial materials by the US Environmental Protection Agency (EPA), nanoparticles of copper and its oxides have received much attention to be used in biomedical devices to prevent bacterial infection. These nanosystems are also thought to be effective possibilities in the advancement of sophisticated equipment for pathogen identification and

PHYSICS AND CHEMISTRY OF SOLID STATE
V. 23, No. 1 (2022) pp. 45-51
Section: Physics

DOI: 10.15330/pcss.23.1.45-51

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ФІЗИКА І ХІМІЯ ТВЕРДОГО ТІЛА
Т. 23, № 1 (2022) С.45-51
Фізико-математичні науки

PACS: 42.70.Mp

ISSN 1729-4428

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Growth, structural, optical and mechanical studies on Amino acids doped nonlinear optical sodium acid phthalate single crystals

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The slow evaporation technique was used to successfully grown amino acid doped sodium acid phthalate (NaAP) crystals at room temperature. A great deal of research has been done on the effects of amino acids on NaAP growth and characteristics. X-ray diffraction was used to examine the crystal structure and lattice parameters of the grown crystals. Functional groups were found in the title crystals, which revealed themselves utilizing FTIR spectra. The optical transparency of the doped crystals was noticed by measurements of optical absorption. In order to assess the mechanical strength of the produced crystals, Vickers microhardness tests were employed. The technique of Kurtz powder was utilized to calculate the second harmonic generation (SHG) performance of the cultivated crystals.

Keywords: Nonlinear optical material; FTIR; Micro hardness.

Received 17 November 2021; Accepted 10 December 2021.

Introduction

Nonlinear optical materials have fascinated researchers in photonics, lasers, electro-optic switches, and frequency conversion industries [1-11]. There have been many nonlinear materials synthesized in the last decade that include both organic and inorganic compounds. Although they had to overcome problems related to a low laser damage threshold, inadequate optical transmittance, and poor optical precision, their system applications have been hindered by these problems [12]. Because of the hydrogen bonding, pure organic crystals have lower mechanical robustness. Inorganic Nonlinear organic (NLO) materials have outstanding mechanical and thermal properties, but due to the lack of electron delocalization, they have only modest optical susceptibilities. [13-16]. Crystals from the Phthalic acid family are possible NLO materials that have a broad range of applications [17]. SHG applications benefit greatly from sodium acid phthalate [18, 19]. Slow evaporation was used to try to develop amino acids (L-alanine, L-arginine, and Glycine) doped sodium acid phthalate in this study. Because of the impact of doping on intrinsic defects, the effect of dopants is important [20-25]. The reports and characterization suggest that dopants strengthen optical, mechanical, and other properties.

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Solar Energy 236 (2022) 369–382

Contents lists available at ScienceDirect

Solar Energy

journal homepage: www.elsevier.com/locate/solener

Laplacian tactic for the prediction of the temperature components of solar cooker with logical prediction by fuzzy rules

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ARTICLE INFO

Keywords:
Solar Cooker
Fuzzy rules
Laplacian
Performance cooker

ABSTRACT

An attempt has been made to design, fabricate and study the performance of the solar cooker incorporated with the absorber plate made of copper coated with mat black paint with NiO_2 nanoparticles of 1 g. Analytical solutions for the temperature components of the solar cooker based on the energy balance equations i.e., temperature of glass cover, absorber plate, lid of the cooking vessel, base of the cooking vessel and cooking fluid have been found. Laplacian approach has been attempted for the solution of the temperature components and results are compared with the experimental observations by finding the RMSE and R^2 values. From the solution, fuzzification is carried out for deriving the fuzzy rules influencing the thermal performance of the cooker. It is found that, the values of RMSE and R^2 for temperature of glass cover (0.115 and 0.993), absorber plate (0.118 and 0.997), lid of the cooking vessel (0.110 and 0.996), base of the cooking vessel (0.119 and 0.996) and cooking fluid (0.114 and 0.998) respectively. The figure of Merit (F_1) and figure of Merit (F_2) of the proposed cooker is intact with the Bureau of Indian Standard values and are 0.425 and 1.55. The Laplacian method and fuzzification for predicting fuzzy rules are recommended for the optimization of design parameters and found to be effective for the simulation of the cooker in various locations with least error.

1. Introduction

Cooking of food stuff using the conventional energy sources viz., LPG made the most of the community to cook food faster at reasonable rate. Through the time taken for cooking the food is less, it is evident that, cooked food reflects the loss of nutrients due to abrupt raise in temperature of the cooking fluid instead of gradual increase of absorption of thermal energy. In such scenario, many efforts have been put forward to retain the nutrients by the utilization of solar energy cooking because it increases the temperature of the cooking fluid gradually. Various types of Solar cookers are designed and tested to know their performance in cooking various food stuffs. For larger community, community size cooker using parabolic, conical, Fresnel type cookers and for a family of four members, box-type solar cooker has been designed and tested. The box-type cookers performance is influenced by design parameters and can be enhanced by optimizing the parameters by which the First and Second Figure of merit should be intacted with Bureau of Indian Standards (BIS).

Ambiguity of parameters has been considered and solution is obtained using Fuzzy Linear Programming by Tanaka and Asai (1984). Results of the study have revealed that linear programming with fuzzy numbers is an effective model in the place of human evaluation related activities. Jinturkar and Deshmukh (2011) have undergone a fuzzy goal

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https://doi.org/10.1016/j.solener.2022.03.006
Received 5 December 2021; Received in revised form 2 March 2022; Accepted 3 March 2022
Available online 14 March 2022
0038-092X/© 2022 International Solar Energy Society. Published by Elsevier Ltd. All rights reserved.

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Digest Journal of Nanomaterials and Biostructures Vol. 17, No. 2, April - June 2022, p. 661 - 676

Experimental investigation on ferrofluid properties of Cd doped Co-Zn ferrites

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Cadmium substituted Co-Zn ferrites $Co_{0.5}Zn_{0.5}Cd_xFe_{(2-x)}O_4$ (x=0.0, 0.1, 0.2, 0.4, and 0.5) were fabricated by using the Co-precipitation method. The molecular composition and prepared samples of cubic spinel structureswas characterized using X-ray diffraction peak (XRD). X-ray diffraction patterns obtained the most intensive peak at (311) crystallographic planes for x=0.5. Williamson-Hall (W-H) relation was associated with XRD data to determine the crystallite sizes range from 25.356 nm to 35.632 nm and strain value brought into being 0.0024 to 0.0021. Tetrahedral and octahedral sites of hoping length were found to diminish from 3.6707Å-3.6332Å and 2.9967Å-2.9662Å respectively due to the addition of Cd ion concentration. TEM analysis reveals the presence of spherical shape nanoparticles with agglomeration for the prepared samples. It could be referenced based on the investigation of results for molecule size by two XRD and TEM strategies which demonstrate the development of nanomaterials and doping of cobalt ferrites. TEM results are well agreed with the XRD diffraction pattern in crystallite size by using Scherrer's formula. Fourier Transform Infrared Spectroscopy (FTIR) spectra analysis were carried out on synthesized ferrite samples and observed v1 and v2 strong absorption band in the range 400-4000 cm^{-1} be the possession to tetrahedral (A) and octahedral (B) sites. In FTIR, the increase of Cd^{2+} ion in Co-Zn ferrites leads to diminishing peak values towards lower wavenumbers. It is feasible to tune the magnetic characteristics of cobalt ferrite as a potential material for diverse technological applications by substituting Zn^{2+} and Cd^{2+} for cobalt magnetic ions.

(Received January 28, 2022; Accepted June 2, 2022)

*Keywords:*Cobalt ferrite, cadmium doping, Crystalline size, Williamson-Hall method, Tetrahedral, Octahedral

1. Introduction

Magnetic nanoparticles are considered by experts in various fields because they are used in a data structure, clinical diagnosis, Ferrofluid productions, and so on. Recent researches of the utilization of magnetic nanoparticles have been tremendously expanded in biomedical applications.Numerous scientists have been centered around the improvement of attractive nanoparticles (MNPs) just as to work on their relevance in various regions. Current researchers mainly concentrated on nanoparticles due to their excellent magnetic and electric properties [1]. Magnetic Hyperthermia, bioimaging, Magnetic Resonance Imaging (MRI), and drug delivery applications are characterized based on the following spinel ferrites magnetic properties such as spin-glass-like behavior, spin canting effect and superparamagnetismhigh electrical resistivity, and high permeability [2, 3]. Spinel ferrites have excellent magnetic properties, structural and electrical properties compared to various magnetic nanoparticles [5].Since, nano synthesized spinel ferrites (MFe_2O_4, M = Zn, Co, Mn, Ni, Cu, etc. general formula of ferrites) hasbeen used to implement in hyperthermia-based magnetic proficiency, electronic devices, sensors, and energy storage device [6-7].Conversely, these properties differ due to the range and profile of the mixture of nanoparticles based on the synthesis process. In this way, fitting these boundaries can empower us

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https://doi.org/10.15251/DJNB.2022.172.661

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Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-021-16863-2

RESEARCH ARTICLE

Microcontroller PIC 16F877A standard based on solar cooker using PV—evacuated tubes with an extension of heat integrated energy system

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Received: 5 June 2021 / Accepted: 29 September 2021
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Abstract

The unavailability of sunlight during nighttime and cloudy weather condition has limited the usage of solar cookers throughout the day. This study will attempt to engineer a solar cooker with PV (photovoltaic panel), evacuated tubes with CPC reflectors, battery, and charge controller using the microcontroller PIC 16F877A. A mathematical model is developed to predict the electrical power (E_p) required during cloudy weather condition and nighttime as well as the temperatures occurring at different parts of the cooker. The proposed model is validated against experimental observations gathered for one of the typical working days of the system. The cooker is tested for various cooking loads to find the cooking time, and it is proven that the proposed cooker can be utilized over 24/7 without interruption.

Keywords Solar cooker · Charge controller · Evacuated tubes · PV panel

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Published online: 11 October 2021

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Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-021-14194-w

RESEARCH ARTICLE

Simulation study on thermal performance of a Solar box Cooker using nanocomposite for natural Food invention

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Received: 15 April 2020 / Accepted: 26 April 2021
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Abstract
The double glass cover analysis of a solar box cooker has been implemented in an internal heat transfer using MoS_2–Fe_2O_3–Cr_2O_3 nanomaterials. A nanocomposite material's essential role is its higher surface/volume ratio which agrees in small area size of a high ductility without strength loss and an enhanced optical property. The nanocomposite materials have an average particle size of 0.2 - 0.5 μm. Compared to the overall thermal energy efficiency of the solar cookers used, the samples with and without this study's modification are 56.21–31.77% and 33.90–24.90%. The design used nanomaterials' performance with and without coating materials achieved by the bar plate temperature of about 163.74 °C and 113.34 °C below solar radiation of 1037W/m^2. The simulation model is conducted on the fuzzy intelligent logic and Cramer's rules. It agreed with the experimental results by 91%.

Keywords Double glass covers · Nanocomposites · Cooking power · Fuzzy and Cramer's rules · Thermal performance parameters

Introduction

In recent years, the development means the use of ecologically followed by friendly behavior technology. The multicomponent composite materials are using more solar energy absorption of bar plate temperature enhanced by the solar box cooker and have involved much attentions. The solar box cooker method effectively uses abundant and clean solar radiation through an extensive range of possible applications in the elimination of affluence and manufacture of energy conversion used by the solar thermal applications.

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Published online: 09 May 2021

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J Mater Sci: Mater Electron

Crystal growth, spectroscopic and antimicrobial investigations on glycine-doped $ZnSO_4$–$(NH_4)_2SO_4$ single crystal

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Received: 27 March 2021
Accepted: 12 April 2021

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ABSTRACT

In this paper, investigations on Glycine doped in Zinc Sulphate, ammonium sulphate were reported for the first time. Single crystals Glycine and zinc-ammonium sulphate were grown at room temperature by slow evaporation technique. Single-crystal X-ray diffraction studies show that the grown crystal belongs to hexagonal crystal structure with a $P3_1$ space group. Inductively coupled optical emission spectrometry studies were analyzed to know the Zinc Sulphate-ammonium sulphate element presence in the grown new material. To find the title material crystalline nature Powder X-ray diffraction analysis was carried out, and using FT-IR the grown crystal functional groups was identified. Thermal behavior and melting point of the sample was found using TG/DTA-DSC analysis which indicated that the material does not decompose before melting. The emission of green light on passing the Nd: YAG laser light confirmed the second harmonic generation property of the crystals and the SHG efficiency of the crystals was found to be higher than that of KDP. The NLO test confirms the second harmonic signal generation in the sample. The UV–Vis–NIR result shows that the crystal has a sharp cut off at 210 nm and is nearly 75% transparent over a wide wavelength range enabling it for application in the UV region. To know the grown crystal surface morphology scanning electron microscopy analysis was done. The antibacterial activity was carried out for the title compound using agar diffusion method. The test compounds were screened in vitro for their antibacterial activity against three Gram-positive species (*Staphylococcus aureus*) (*E. coli*, *Salmonella typhi*) of bacterial strains and also against two fungal strains i.e., *Aspergillus Niger* and *Aspergillus clavatus*.

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https://doi.org/10.1007/s10854-021-05967-7
Published online: 26 April 2021

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IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

An International Open Access, Peer-reviewed, Refereed Journal

Mineralogical and Firing Temperature characteristics of Indian Pottery Samples from an archaeological site Thoppur, Thiruvannamalai District, Tamilnadu, India by Spectroscopic studies

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Abstract

Indian pottery samples from an archaeological site near Thiruvannaalai (Thoppur), Tamilnadu, India, were analyzed in terms of its mineralogical and firing temperature characteristics to elucidate the technologies of manufacture. The samples were examined with FT-IR spectroscopy and X-ray powder diffraction. In addition, SEM-EDS techniques were used to investigate the degree of vitrification and elements present in the pottery samples. In addition, the thermal reactions associated over the temperature range linearly from room temperature to 1000°C in an inert gas atmosphere were also studied by thermal analysis (TG-DTA). Results obtained from above-said studies reveal that the studied pottery samples of Thoppur contain predominant fine quartz mineral, followed by traces of albite, orthoclase, microcline and Fe-bearing minerals (hematite and magnetite) and indicate that the firing temperature of potteries above 600°C in oxidizing/reducing atmosphere during its fabrication. Based on the results of this research work, we can understand the changes in the properties of the raw material at the time of production during heating.

Keywords: Artifacts, FT-IR, XRD, SEM-EDS, TG-DTA.

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Indian Journal of Natural Sciences www.tnsroindia.org.in ©IJONS

Vol.13 / Issue 76 /February/ 2023 *International Bimonthly (Print)* *ISSN: 0976 – 0997*

RESEARCH ARTICLE

Heat Transfer Analysis of MHD Casson Fluid Flow Over an Unsteady Vertical Permeable Porous Plate Under the Influence of Heat Source and Thermal Radiation with Hall Current Effect

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Received: 31 Oct 2022 Revised: 21 Nov 2022 Accepted: 24 Dec 2022

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ABSTRACT

The unstable free convection flow of a Casson fluid in the occurrence of an infinite vertical porous dish and a bouncy force was reviewed in this work. The flow field is controlled by nonlinear combined partial differential equations of momentum and energy, which are converted into an ordinary differential equation system. The perturbation technique was used to solve the flow's leading equations to get non-dimensional velocity and temperature grounds. We also calculated the Nusselt number and estimated the skin friction variation. Graphical representations of the temperature and velocity outlines for various constraint values were also included in the revision. For various values of these relevant parameters, typical results for the velocity and temperature profiles, as well as the skin-friction coefficient and local Nusselt number, are presented to demonstrate the tendency of the solutions.

Keywords: Thermal conductivity, free convection, Casson fluid parameter, Hall current, Heat absorption.

INTRODUCTION

This research paper analyses the unsteady free flow of a Casson fluid past an oscillating vertical plate with constant wall temperature. The Casson fluid model is used to distinguish the non-Newtonian fluid behaviour. By employing nondimensional variables, the governing partial differential equations, correlated with momentum and energy equations are transmuted into linear ordinary differential equations. In recent decades, Newtonian fluids described

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Excess Properties and Theoretical Evaluation on Ternary Systems of 1-Pentanol in n-Hexane Solution with some Organic Compounds at 313 K Using Ultrasonic Technique

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Abstract: The parameters like density(ρ), ultrasonic velocity (U), and viscosity (η) were experimentally measured. The excess parameters like adiabatic compressibility, acoustic impedance, free volume, free length, internal pressure and ultrasonic velocity in addition to K value were computed from the experimental data. The variation of these parameters at a constant temperature for the three ternary systems, namely OMP + 1-pentanol+n-hexane, N, N-DMF + 1-pentanol+n-hexane, and MMP + 1-pentanol+n-hexane, have been discussed in the light of molecular interaction. Further, certain theoretical studies are validated with respect to experimental velocities, and the Chi-square test for the goodness of fit is also applied to check the validity of such theoretical models.

Keywords: Charge-transfer complex, stability constant, excess acoustic impedance, Chi-square, molecular interactions.

1. INTRODUCTION

Ultrasonic studies play a vital role in various fields such as medicinal, biological, food industries, pharmaceuticals, Non-destructive testing (NDT) and molecular liquids, etc. Through the ultrasonic studies of liquid mixtures, which are of micro-level concentrations, the strength or nature of the molecular interactions can be detected and assessed [1, 2]. The ultrasonic velocity is temperature dependant for most of the liquid mixture with respect to their acoustical properties. The present investigation is undertaken for three ternary systems consisting of OMP (o (2)-methoxy phenol) /N, N-DMF (N, N dimethylformamide) /MMP (m (3)-methoxy phenol) + 1-pentanol in n-hexane medium at constant temperature 313 K. The organic compounds which are considered for the present study such as OMP, N, N-DMF, and MMP are used in a wide variety of reactions including electrophilic substitution, nucleophilic substitution, oxidation and reduction [3]. n-hexane may not be able to deprotonate under normal temperature, but at high temperature, its behaviour is changed, and hence it is used in various fields like separation technique, preparation of organolithium, etc. For the preparation of many organic compounds, the role of alcohol is considered as important. There are many differences between the branched and unbranched organic compounds, particularly alcohols, and in the present case, unbranched C-5 is considered [4]. The present study is undertaken with OMP /N, N-DMF/ MMP as a donor, and 1-pentanol as an acceptor in n-hexane as the solvent. The present study doesn't consider the para substituent (para methoxy phenol) since it is deliquescent in nature, and also, the instrument which is used in the present investigation is specially made for liquids alone. Besides, the following characters of the organic compounds which are under study prompted the author to probe the present study.

The radical scavenging activity and cytotoxicity of 2-methoxy phenols(OMP) and related compounds and their effect on lipopolysaccharide (LPS) gives rise to possess the antioxidant property. 2-Methoxy phenols are antioxidants widely used in the cosmetic and food industries. Dimers were synthesized, and their radical-scavenging and biological activities were compared with those of the original or other phenols. Computational chemistry is one of the most rapidly expanding and exciting areas of scientific endeavour in the medical, dental, and material sciences [5-21]. The information available from computational methods may help interpret the molecular mechanism of interactions of 2- methoxy phenol antioxidants. N, N-DMF is used in the synthesis of many organic compounds like 2 nitroso 5 methoxy phenol, which is used in the medicinal field, and the same N, N-DMF is also used as food additives and colourants. It is understood that the role of N, N-DMF as in pharmacology and in biochemical reactions which itself a predicted metabolite found in the human body; MMP is used as a food additive, and flavouring agent including cosmetics, perfumes, lotion, shampoos, toothpaste, etc. and these characters of organic compounds (OMP, N, N-DMF, and MMP) stimulated the author to undertake the present study [22, 23].

Therefore, the authors have taken the present study to provide useful information regarding the molecular

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E-ISSN: 1929-5030/21 © 2021 Lifescience Global

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AES

ISSN: 2096-3246
Volume 55, Issue 04, April, 2023

Emotional intelligence and academic motivation in students

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Keywords:
Emotional intelligence, Academic motivation, College task, Primary college

ABSTRACT

The role of emotions in the educational context is one of the lines of research that has generated most interest in recent years. This study explores the level of emotional intelligence (EI) and motivation towards studying of primary college (PS) students, as well as the relationship between both variables. For this, a quasi-experimental design has been used with an accidental sample of 541 students from public centers in the province of Chennai (India). The instruments used were a College Motivation Scale and an EI questionnaire for primary college students, based on the five areas of Goleman EI. The results maintain a mid to high level of EI in all of the factors (self-conscience, self-control, emotional use, empathy and social skills) and a good level of academic motivation. Therefore, they show a positive and significant correlation of both variables. Girls have a higher emotional intelligence index and there is no differ- ence in academic motivation in terms of gender. Based on these results, it is suggested to implement programs that consolidate emotional competences given their importance in the psychevolutionary development of students and their relationship with academic motivation.

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1. Theoretical framework

Education in India, and therefore the primary education (PE) stage, has been exposed to numerous legislative and structural reforms in recent decades. Currently, this stage is focused on the acquisition of competency development, which includes the learning of personal, intellectual, social, and emotional skills. The ultimate goal is that students can learn and develop these skills and abilities that allow them to face their future and adapt to the changing situations of the knowledge society [16], Merchán et al., 2014; [2]. In this sense, more and more voices are emerging that question the exclusivity of rational intelligence as the most influential factor in achieving academic and personal success, understanding that there are other variables that should also be taken into account, such as emotional intelligence (EI) and motivation (Ferrándiz et al., 2012; Filella et al., 2014; [8], Pulido & Herrera, 2017; Rebollo & de la Peña, 2017; Puertas et al., 2020).

The key lies in the harmony between thoughts and emotions, and education is the main instrument to

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Journal of Positive School Psychology
2022, Vol. 6, No. 3, 4111 – 4118

http://journalppw.com

Effectiveness of Listening Strategies Enhancing Comprehensive Listening Skill of English Learners

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Abstract

This study focuses on effectiveness of Strategy based listening activity to enhance comprehensive listening skills of engineering students. The second language learning requires various skills to extract the desired essence of teaching. Especially English language learning requires 'Strategy based' activities to acquire the language skills. It is necessary to modify the teaching-learning approach and to include multiple ways to get attention of students in second language learning class room. Listening is a critical skill that underlies all verbal communication inside and outside the class room. The purpose of this study is to look into comprehensive listening skills of engineering students and to guide how to go about listening and how to get over their problems in listening to English. More over the study aims to suggest effective strategies to enhance comprehensive listening skills

Key Words: Strategy, listening skills, Listening comprehension, language learning

Introduction

The everyday concept of listening is erroneously associated with hearing. Listening tends to be assumed as the process of receiving a spoken message and converting it into a meaning in mind. The first commonly held false conception assumes that listening and hearing are synonymous. However, hearing does not necessarily imply we are listening. Hearing can be seen as the physiological function of our auditory sense, whereas listening is conceptualized as the physiological attribute, which is in action when we discern and actively respond to the sounds heard. In this sense both listening and hearing involve sound perception, but listening involves a degree of intention.

Issues in Listening

The classroom of English still, for instance, reflects a teacher-centered ideology with all its underpinning assumptions. The instructional approach used in most classes is grammar translation where the formal teaching of grammar is ultimately still a panacea; grammar is at the heart of what is done in the classroom. Teachers in this context are perceived as the dispensers of knowledge who are unquestionably empowered with the expertise to set goals, assign tasks, correct mistakes, and assess progress. In contrast, students are ultimately the passive recipients who are easily giving themselves in for teachers to pour piles of grammatical rules and vocabulary as well as ready-made well-written paragraphs that suit any topic to be learnt by heart only for the exams and completely forgotten afterwards. The interest in listening or speaking seems to be totally absent from the teaching practices in the classroom. This means that there is no room for these two skills in the final examination and as the teacher's whole

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Tuijin Jishu/Journal of Propulsion Technology
ISSN: 1001-4055
Vol. 44 No. 3 (2023)

Bioavailability of Heavy Metals in Soils and their Uptake by Paddy (*Oryza sativum*) – An Empirical Study

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Abstract: Heavy metals, such as Cadmium, copper, lead and chromium are the most toxic, persistent, and widespread environmental pollutants, particularly in areas with high anthropogenic pressure. Dissolved or suspended metals in soil and water, even in traces can degrade water quality and soil fertility and become available to plankton, nekton which in turn alters the normal biogeochemical cycling. Crop plants growing on heavy metal contaminated medium can accumulate high concentrations of trace elements which cause serious health risks to consumers. The toxicity of heavy metals at high levels of exposure is well known but a major concern is the possibility that continual exposure to relatively low levels of these heavy metals through the consumption of the vegetables and food crops may entail adverse health effects. Only bioavailable metals in soil are able to exert toxic action. Bioavailable metals cannot be measured directly through chemical analysis-only living organisms determine bioavailability. An experimental study was carried out to better understand the bioavailability and extent of toxicity of heavy metals on the growth of paddy plant in the heavy metal contaminated soil samples of Ranipet industrial area. Results show that Chromium and Zinc were recorded in higher concentration in all the four study areas. The heavy metal Cr concentration was in the order MGR Nagar > Vannivedu > Bharathi Nagar >Vanapadi. Germination studies of *Oryza sativam* in the metal contaminated soil medium was carried out with the finally extracted soil and the germination time and extent of growth were studied. The result reveals that the percentage of seed germination is in the order Bharathi Nagar (90%) > Vanapadi (75%) >MGR Nagar (55%) > Vannivedu (50%) respectively.

Keywords: Heavy metals, industrially polluted soils, *Oryza sativam*, germination studies, bioavailablity and bioaccumulation.

1. Introduction

Agricultural and industrial activities release several organic pollutants, drugs, and large quantities of inorganic pollutants as heavy metals (Malidareh et al., 2014; Briffa et al., 2020). They enter in environment from several sources, both natural and anthropogenic sources (Zazouli et al., 2010; Wenga and Gwenzi, 2022). Anthropogenic rare earth elements in aquatic environments: Occurrence, behavior, and fate. In *Emerging Contaminants in the Terrestrial-Aquatic-Atmosphere Continuum:* (pp. 87-102). Elsevier.). These activities can cause severe pollution of highly toxic heavy metals (such as Cu, Cr, Cd, Hg, Pb, and As) in aquatic and terrestrial ecosystems, and even to the atmosphere (Leung et al., 2006). Heavy metals are non-biodegradable, thus persisting for long periods in environmental ecosystems, may be fatal to living organisms.

Crops in close to contaminated sites can uptake and accumulate these metals, and then exert potential risk to humans and animals (Gupta and Gupta, 1998; Jarup, 2003; Cheng et al., 2014). The major route for heavy metals exposure to humans is mainly through the soil-crop-food pathway. Bioaccumulation is the accumulation of a chemical via all routes available to the organisms. Heavy metal accumulation and bioavailability in both soil and water have to be considered to obtain a better understanding of environment–animal interactions. Metal

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International Journal of
INTELLIGENT SYSTEMS AND APPLICATIONS IN ENGINEERING
ISSN:2147-6799 www.ijisae.org Original Research Paper

Undecimated Wavelet Transform Technique for the Security Improvement In the Medical Images for the Atatck Prevention

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Submitted: 01/11/2022 **Accepted:** 02/02/2023

Abstract: Watermarking is effective technology for processing for secure image through transform domain. With ever increases in security threats demands for security in medical images. This paper proposed a Undecimated Discrete Wavelet Transform (SVDUWT) for evaluation of watermarking in medical images. The proposed model is incorporated in two stages. At first, SVD – DWT is performance of embedding of the watermarking in an medical images. Secondly, entrophy scheme is incorporated for computation of pixels in an images, With normal embedding watermarking scheme involved in transformation of low-frequency sub-band of images. The proposed low-frequency bands are classified in to non-overlapping blocks. The experimental evaluation expressed that proposed scheme significant performance in performance analysis of watermarked method. Also, performance of proposed method is evaluated for attack scenario such as noise and scaling attack. The analysis confirmed that proposed model exhibits good performance for medical image watermarking.

Keywords: *Watermarking, Encryption, attacks, embedding, entropy, UDWT*

1. Introduction

The realm of insertion for the mark is related to the numerous watermarking picture methods accessible across the literature (spatial, frequential, multi-resolution, etc). There are several performance choices available for each picture representation region [1]. The selection of the insertion domain is thus a crucial stage in development of watermarking methods. Spatial domain insertion is accomplished by altering image's pixel values directly. This domain's key advantage is that insertion as well as detection operations are computationally cheap, allowing it to be utilized in real-time watermarking applications [2]. The biggest downside is that, following integration, the visual quality of the image declines. Subsequently, these methods are vulnerable to attacks. In frequency domain insertion, mark is injected into converted domain rather than image Discrete Fourier Transform or Discrete Cosine Transform [3] is utilized to obtain the image's frequency representation. The selection of the marked coefficients is the most difficult aspect of this type of scheme. The most effective methods for achieving a good robustness-invisibility compromise frequently position the mark in the image's middle frequencies to enhance imperceptibility simultaneously minimising the likelihood that the mark will be eliminated by compression or noise addition if situated in high frequencies[4]. Despite domain's inherent advantages of translation as well as scale invariance, computing costs for this technique are high also susceptible to windowing and tiny local deformations[5]. It is distinguished by sub-banding of image, It makes it possible to separate low-frequency components, creating a portion of the insertion that is less sensitive[6]. A multi-resolution translation of the image preserves its spatial content, which may then be used to find a mark after a geometric shift.

Digital picture watermarking methods aredivided into two groups based on domain in which watermark is introduced: spatial along with transform domain approaches.Using spatial domain approaches, watermark is quickly applied to

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Conventional arrayed waveguide grating (CAWG) devices for high stability and low insertion loss in near infrared wavelength band

https://doi.org/10.1515/joc-2023-0022
Received January 11, 2023; accepted March 6, 2023;
published online March 30, 2023

Abstract: This study has presented the different suggested compounds based (CAWG) like silicon dioxide (SiO_2), lithium niobate ($LiNbO_3$) and gallium aluminum arsenide ($Ga_{(1-x)}Al_{(x)}As$) taking into consideration their operating wavelength range, their operating temperature range, their physical properties, and also their ability to be used in the manufacture of optical devices. The optimum performance was given in case of using the following materials such as SiO_2, $LiNbO_3$ and $Ga_{(1-x)}Al_{(x)}As$ materials, so these materials have been used as a proposed materials based CAWG devices, which have been investigated for high stability and low insertion loss in near infrared wavelength band. The comparison between these proposed materials are clarified through the design parameters of CAWG device such as the order of diffraction (m), path length adjacent waveguides difference (ΔL), focal length (L_f), free spectral range (FSR), max no. of I/O wavelength channels (N_{max}), and arrayed waveguides (P) number.

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Keywords: AWG; focal length; free spectral range; high stability; low insertion loss.

1 Introduction

Currently, main types of VCSELs have been employed to work at high rate of up to tens of Gb/s [1–17], and meet the requirements of modern networks, as well as operate in high temperatures environment [18–32]. In order to overcome the non-linearity of the gain and saturation in VCSELs at 20 °C [33–50], the bias current should not exceed 5 mA [51–56]. Avalanche photodiode (APD) receivers have higher sensitivity and responsivity than other types of optical detectors which is considered a great inherent benefit of APDs [57–70].

Arrayed waveguide grating is the replacement of multiplexing and demultiplexing devices [71–83]. They have fabricated conventional AWG based different polymer and silica materials for high speed and high system stability [84–98]. But these devices are subjected to the polarization fields and thermal effects [99–110]. These devices may be affected by the temperature effects [111–125]. The thermal effects has a harmful effects on these devices due to the shift in wavelength spectral linewidth. AWG is the best candidate devices for hybrid multiplexing and demultiplexing operations in these days. Silicon and a thermal polymer base band polymer materials are still best candidate basic essential elements for the fabrication of these devices technology [125–150].

We have clarified various suggested compounds based CAWG like SiO_2, $LiNbO_3$ and doped $Ga_{(1-x)}Al_{(x)}As$ taking into consideration their operating wavelength range, their operating temperature range, their physical properties, and also their ability to be used in the manufacture of optical devices. The optimum performance was given in case of using the following materials such as SiO_2, $LiNbO_3$ and $Ga_{(1-x)}Al_{(x)}As$ materials, so these materials have been used as a proposed materials based CAWG devices, which have been investigated for high stability and low insertion loss in near infrared wavelength band. The comparison between these proposed materials are clarified through the design parameters of

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Detection of TCP, UDP and ICMP DDOS attacks in SDN Using Machine Learning approach

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Abstract: Software Defined Networking (SDN) is an architecture for the network to control centrally through programmed software applications. SDN enables the programming behaviour of the network centrally over software programs with the help of open Application interfaces. We can change the parameters of network connections in a dynamic manner. In conventional network, it is impossible to change the settings in a dynamic way, as it is a fixed connection. In SDN, the Control plane is controlled by software is at the center which links the application layer and infrastructure layer. Software-Defined Networking (SDN) has proved its efficiency in countering attacks by providing network surveillance and online configuration of the network. DDoS attack is a malicious attack in which the attacker floods the target server from various sources. This project uses SDN intrusion dataset for training. This project focuses on the implementation of a compatible way for finding the DDoS detriment in SDN employing multiple Machine Learning (ML) approaches.

Keywords: DDoS attack, Machine Learning, Software-Defined Networking.

I. INTRODUCTION

Software Defined Networking (SDN) is widely used interconnected criterion that is dynamic, less cost, extensible, by preparing it better suited to various devices or different network projects. The network or interconnection control and advancing activities are segregated in this architecture, by permitting network control straightforwardly programmable and the framework components are preoccupied for applications and organization administrations. It is critical to construct a Intrusion Detection System (IDS) based on network that detect DDoS detriment using information from network traffic flows (SDN). In SDN, the control planes (CP) are separated by network devices. This technology different from traditional network design in its operation. Because the traditional network is a fixed link, it is not possible to adjust dynamically.

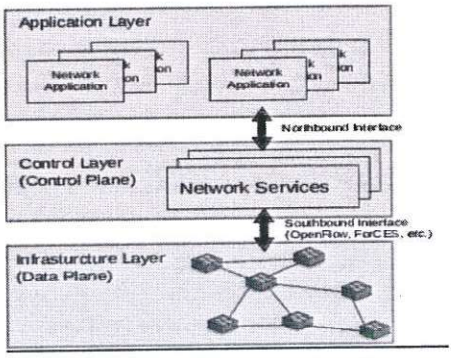


Fig 1: Architecture of SDN.

In SDN, we can modify the specifications of network connections on the fly. On the basis of controller's decisions, the data plane transports network traffic. The control plane determines traffic flow by enumerate routing tables. The application plane controls other applications such like load balancers, firewall, & Quality of Service (QoS) apps. Creating an Intrusion Detection System (IDS) is based on a network and utilizes modern networking technologies like SDN is of utmost importance. This

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Journal of Survey in Fisheries Sciences 10(2S) 1454-1458 2023

Unmasking unbalanced network traffic by intruders based on Machine-learning Algorithms.

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Abstract

Obtrusion unmasking involves identifying and detecting malicious or anomalous network activity. Imbalanced network traffic refers to a scenario where the ratio of normal to abnormal traffic is significantly skewed, with one type of traffic significantly outweighing the other. Machine learning and deep learningtechniques can be used to analyze network traffic and identify patterns and characteristics that may indicate the presence of obtrusions or anomalies. These techniques can be applied to various types of network data, including packets, flows, and logs, and can be trained on large datasets to improve their accuracy and effectiveness. For the purpose of predicting the intrusion in imbalance network traffic, this research employs a variety of categorization techniques. The classification algorithms are Random Forest, Support Vector Machine, convolution neural network, and principal component analysis. The dataset, which included several meteorological parameters, was obtained via the UCI repo. With a testing data ratio of 70:30. Based on precision, accuracy, recall, f1-score, and execution time, the efficacy of the classification algorithms was assessed.

Keywords—Machine learning, Deep learning, Principal component analysis, Convolutional neural network, Random Forest.

I. INTRODUCTION

Obtrusion unmasking in imbalanced network traffic refers to the process of detecting and identifying malicious or anomalous activity within a network environment where the distribution of normal and abnormal traffic is unbalanced. This can be a challenging task, as traditional machine learning algorithms are often designed to perform well on balanced datasets and may struggle to accurately classify anomalous traffic in an imbalanced setting. To overcome this issue, advanced ML and deep learning techniques can be utilized to analyze network traffic and identify patterns and characteristics that may indicate the presence of obtrusions or anomalies. These techniques can be applied to various types of network data, including packets, flows, and logs, and can bc trained on large datasets to improve their accuracy and effectiveness. The use of ML and DL techniques for obtrusion unmasking in imbalanced network traffic can play a critical role in improving the security and reliability of networks by detecting and mitigating the impact of malicious activity and other types of anomalous behavior. This can be especially important in today's interconnected world, where networks are constantly under attack and the risk of cyber threats is constantly evolving. When employing machine learning and deep learning techniques to perform obtrusion unmasking in unbalanced network traffic, a number of difficulties may occur. These difficulties include:

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

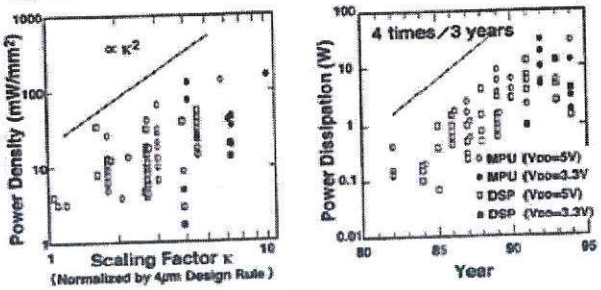


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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DESIGN OF MULTIPLEXER USING ADIABATIC LOGIC

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ABSTRACT

This paper provides low power solutions for Very Large Scale Integration design. The dynamic power consumption of CMOS circuits is rapidly becoming a major concern in VLSI design. By adiabatic technique dynamic power consumption in pull up network can be reduced and energy stored on the load capacitance can be recycled. In this paper different logic style multiplexes have been analyzed and low power 2:1 multiplexer is designed using positive feedback adiabatic logic. It has been observed that adiabatic multiplexer consumes 53.1% less power than energy economized pass-transistor (EEPL) multiplexer. An adiabatic compressor has been designed using PFAL logic, which has shown 79% improvement than conventional CMOS compressor in terms of power.

KEYWORDS: *MUX, PFAL, CMOS, VLSI, BSIM4.*

I. INTRODUCTION

In today's world of portable devices such as laptops, cell phones, computer power consumption has become major concern in VLSI design. Due to the limited power supplied by the batteries, the circuitry involved in these devices must be designed to consume less power. Also large power dissipation requires expensive and noise cooling machinery, batteries and power conservation circuits.Multiplexer is essential component in digital design. It is extensively used within datapath-intensive designs. Thus minimizing the power dissipation of the multiplexer is one of the main concerns of low power design [1].

Most of the power saving techniques involved scaling of the power supply, which results, substantial increase in subthreshold leakage current also it causes uncertainty in the process variation. Therefore some other technique is required which is independent of voltage scaling. It has been found that there is fundamental connection between computation and power dissipation. That is if somehow computation could be implemented without any loss of information, then energy required by it could be potentially reduced to zero. This can be achieved by performing all the computation in a reversible manner. Thus minimum power consumption during charge transfer phase is known as adiabatic switching. Conventional CMOS based designs consume a lot of energy during switching process. Adiabatic switching technique reduces the energy dissipation through PMOS during charging process and reuses some of the energy which is stored on load capacitor during the discharging phase [2-3].

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Original Article

Auto Encoders and Decoders Techniques of Convolutional Neural Network Approach for Image Denoising In Deep Learning

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Abstract

Image Denaoising (I.D) is the process of eliminating noise from the Images. The noise present in the images may be caused by various conditions which are practically hard to deal with. The procedure of eliminating noise from images given is recognized as image denoising. The noise in the photos might be generated by a variety of factors that are difficult to deal with. In order to process images for purposes such as object segmentation, detection, and tracking, it became a critical job to eliminate the noise from an image and to restore a high resolution image. The image is first given a layer of noise ranging from 1% to 10%, and then the CNN model is used to denoise it. The denoised image is next subjected to qualitative and quantitative analysis. The encoder and decoder layers of the CNN model are responsible for denoising the image. This strategy focuses picture denoising using the Auto encoders and decoders of convolutional neural network (CNN) model in deep learning, but the median filter tends to remove image information. The results of the analysis and experiment show that the CNN model is more effective than other traditional/standard image filtering techniques at removing noise and restoring image details and data.

Keywords: Image Denoising, Noise, Convolutional Neural Network, Auto Encoders and Decoders, Deep Learning.

DOI: 10.47750/pnr.2022.13.04.142

INTRODUCTION

Image noise is a form of electronic noise that results in unpredictable fluctuations in image illumination and color info. Image sensors and scanners or digital camera electronics can do that. The inevitable shot noise of film grain and the ideal photon finder may also cause image noise. It is an unwelcome byproduct of image detention. It also obscures details. The mentioned word "noise" originally meant "unwelcome signal" because unwelcome electrical fluctuations in the AM radio signal produced audible acoustic noise ("static"). Unwelcome electrical oscillations in devices used are denoted to as "noise" by analogy.

I.N can be ranged from nearly undetectable spots on a digital snap which is occupied in brightest light to almost fully noise-free optical and radio astronomical images from which a certain pleasable. An image captured with such uppermost level of noise would be impractical as a result of it would be solid to acknowledge the subject.

A. Types of noise

- Gaussian noise:

Digital photography's most prevalent source of Gaussian noise is the taking of the picture process. Due to the intensity of the brightness and its temperature, the sensor has inherent noise, and the electric circuits connected to the sensor each produce their own proportion of electronic circuit noise.

- Salt-and-pepper noise:

Spike noise which are also called as Salt-and-pepper noise are indicators that fat-tail scattered noise is "impulsive." Through salt-and-pepper noise, black pixels appear in the lively sections of an image, whereas bright pixels appear in the dark areas.

- Read noise:

Any voltage oscillations in the signal distribution chain that cause analogue to digital elements to deviate from the smooth value proportional to the photon total are known as read noise.

- Shot noise:

According to classical theory, the leading noise in an image from an image sensor's brighter areas is caused by numerical quantum oscillations, or variations in the number of photons recognized at a certain contact level. Photon shot noise is the name given to this type of noise.

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International Journal of Early Childhood Special Education (INT-JECSE)
DOI:10.9756/INTJECSE/V14I5.81 ISSN: 1308-5581 Vol 14, Issue 05 2022

COMPREHENSIVE DESIGN ANALYSIS OF DIGITAL MARKETING IN AGRICULTURE SECTOR

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Abstract: Agroculture and Digital Marketing is a web application. It serves as a platform for farmers and retailers or customers to sell and buy their farm-products. Farmers and buyers can register and acquire credentials to login and use this application. This system will act as a unique and secure way to allow farmers to sell their products as direct Suppliers without any mediators. So that, farmers gain optimum rates for his stocks and the customers gets it at lower prices. So, it is useful to both farmers and customers. Farmers upload their product details like product name, cost, quantity and quality, and product images etc. Buyers can view all this product details and purchase them. The buyer can also use a cart to gather all selected products at one place. Users can use Blog section to comment on products. This WebApp is developed by using PHP and MySQL and converts whole offline manual system to online system for Agro System. This website gives information about the bank loans related to farmers and helps the farmers to choose best seeds. Also, educates the farmers about schemes provided by the government for farmers and teaches them about pesticides.

Key Words: Farmer, buyers, farm products, purchase, and farmer schemes, Seed Corporation, PHP.

I. INTRODUCTION

Agriculture is the back bone of the Indian economy[1]. Farmers are the one who serves 66% of the world's food needs. Despite of their contribution, these farmers are the poorest people all over the world. They are facing many challenges like climatic conditions, pests and diseases etc. Even after facing such kind of inconveniences the produce quality food and sell to the mediators, who buys the quality food for low cost. This is because they do not have proper skill to sell their products.

At the same time buyers also faces many problems like high prices and low quality of food as they will not get fresh foods. So, to normalize these problems from buyers and sellers' side, we are introducing application "Digital Marketing[2]" which makes farmers and retailers smarter and overcome their problems.

Agro-Culture is the farmer system where they can plan, monitor and learn the activity of the farmers production. It helps smart farmers become even smarter. This creates relationship with growers and buyers. It motivates farmer to

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Computer Systems Science & Engineering
DOI: 10.32604/csse.2023.031605
Article

Tech Science Press
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Logistic Regression with Elliptical Curve Cryptography to Establish Secure IoT

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Received: 22 April 2022; Accepted: 08 June 2022

Abstract: Nowadays, Wireless Sensor Network (WSN) is a modern technology with a wide range of applications and greatly attractive benefits, for example, self-governing, low expenditure on execution and data communication, long-term function, and unsupervised access to the network. The Internet of Things (IoT) is an attractive, exciting paradigm. By applying communication technologies in sensors and supervising features, WSNs have initiated communication between the IoT devices. Though IoT offers access to the highest amount of information collected through WSNs, it leads to privacy management problems. Hence, this paper provides a Logistic Regression machine learning with the Elliptical Curve Cryptography technique (LRECC) to establish a secure IoT structure for preventing, detecting, and mitigating threats. This approach uses the Elliptical Curve Cryptography (ECC) algorithm to generate and distribute security keys. ECC algorithm is a light weight key; thus, it minimizes the routing overhead. Furthermore, the Logistic Regression machine learning technique selects the transmitter based on intelligent results. The main application of this approach is smart cities. This approach provides continuing reliable routing paths with small overheads. In addition, route nodes cooperate with IoT, and it handles the resources proficiently and minimizes the 29.95% delay.

Keywords: Wireless sensor network; internet of things; security; elliptical curve cryptography; machine learning; regression analysis

1 Introduction

WSN is the leading technology necessary for the execution of the IoT structure. IoT's operational ability and energy established the network communication, cost-effectiveness, dependability, stability, and dynamic function [1]. IoT is talented naturally from the internet. The things associated with the internet differ significantly in terms of characteristics. IoT is promising as a dynamic cyber-physical network that

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060316*

Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 19 Mar 2023

Abstract— This study describes the development of a Field Programmable Gate Array (FPGA)-based Orthogonal Frequency Division Multiplexing (WOFDM) transceiver (FPGA).Utilizing VHDL and XILINX ISE, a Wavelet transform-based Orthogonal Frequency Division Multiplexing (WOFDM) Transceiver Model is created. In order to test a wavelet transform-based orthogonal frequency division multiplexing (WOFDM) transceiver utilising Modelsim, random data was created using a linear-feedback shift register (LFSR).

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Keywords: ***Wavelet transform, Orthogonal Frequency Division Multiplexing, VLSI, VHDL, FPGA, and LFSR***

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Citation: G.Charulatha, Kurtideepa Bhol, B.Kaleeswari, K.Lakshmi Priya, B.Sundari, M.Angeline Flashy. "Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA", Journal of Science, Computing and Engineering Research, 6(3), 81-83, 2023.

I. INTRODUCTION

OFDM is based on the idea of orthogonality. Orthogonality means that it creates orthogonal sub-carriers, avoiding cross-channel contact and eliminating the need for inter-carrier guard bands [1]. The Fast Fourier Transform technique is used in practise to create and detect OFDM signals [2]. Orthogonal frequency division multiplexing is more complicated than Fast Fourier Transformation (FFT) since it requires specialised hardware [3]. Existing wireless communication methods are based on Fourier transform mathematical concepts.The Fourier transform decomposes a signal into elementary waveforms called sines and cosines. The basic functions of the wavelet transform are time compact, but the Fourier sine and cosine functions are not [4].Wavelet transform basis functions are temporal and frequency localized and provide varied resolutions [5].Wavelet basis functions provide adaptability and flexibility that can be adjusted to meet the needs of wireless communication systems. More frequency resources are required in future wireless communication networks for improved communication. Wavelet transform-based systems can manage the interference between adjacent subcarriers in a variety of ways [6] [7].

II. IMPLEMENTATION OF DISCRETE WAVELET TRANSFORM (DWT) OFDM SYSTEM

TRANSFORMS (DWT) OFDM system was modeled with VHDL and built with FPGA. Below is a short description of the model.

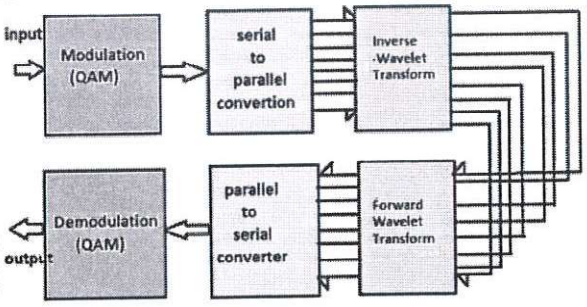


Figure 1 DISCRETE WAVELET

The configuration for a DWT OFDM transmitter and receiver is shown in Fig. 1. A lossless and reversible transform is the discrete wavelet transform. The forward and inverse wavelets transform equations are listed below.

A. Forward Discrete Wavelet transform

$$y(2n+1) = x(2n+1) - \left\lfloor \frac{x(2n) + x(2n+2)}{2} \right\rfloor \quad (1)$$

$$y(2n) = x(2n) + \left\lfloor \frac{y(2n-1) + y(2n+1) + 2}{4} \right\rfloor \quad (2)$$

B. Inverse Discrete Wavelet Transform:

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060319*

Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— the multipliers play a vital role in performance of any electronics system. But the major drawback is it consumes more power and area. There are numerous methods and techniques available to improve performance while reducing power and space usage. The primary goal of any algorithm for multiplying numbers is to reduce the partial product summation. The booth method is one of the most popular and successful algorithms. In this paper, we propose and implement the booth algorithms for radix 4 and radix 8. In the multiplier encoding, the partial products of the radix 4 algorithm are reduced to n/2, while the partial products of the radix 8 algorithm can be reduced to n/3. The Xilinx Vivado tool is used to produce the simulation results.

Keywords: ***Booth algorithm; Booth multiplier; encoding;***

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Citation: Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan. "Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization", Journal of Science, Computing and Engineering Research, 6(3), 96-99, 2023.

I. INTRODUCTION

HIGH performance processors are in high demand in today's industrial market. Arithmetic operations such as addition, multiplication, and subtraction are invoked in many digital circuits to improve processing speed [1-3]. The multiplier is the slowest part in the system, and its performance determines system performance. The multiplier also takes up a lot of space and has a lot of power dissipation, which affects the overall performance of the system. Multipliers are employed in a variety of applications, including digital signal processing, loss applications, artificial neural networks, machine learning, and many more [4-6].

We have several power reduction methods and multipliers to improve the multiplier's performance. Booth algorithm requires reduced processing time, less design space, and consumes extremely little power. However, the main issue is that the delay is greater. The multiplication operation consists of two major phases, which are as follows:

a. Partial products addition

b. Partial products generation

Multiplier speed can be enhanced by reducing partial products and increasing the speed of partial product summation [7-9].

We will provide optimized radix 4 and radix 8 booth methods for arithmetic operations in this research article.

II. BOOTH ALGORITHM

The booth algorithm was developed by Andrew Donald Booth in year of 1950 at Birkbeck College in Bloomsbury, London. This algorithm was an investigation of computer architecture. Using the 2's complement notation, this booth algorithm multiplies two signed binary values. This algorithm was created while conducting crystallographic research. Less additions and subtraction can be seen in the booth algorithm. The Booth multiplier is the multiplier that does calculations more quickly [10–12]. ASIC products frequently use this booth algorithm because of its small size and quick processing time.

There are three main steps in the booth algorithm:

a. Summation of partial products

b. Reduction of partial products

c. Generation of partial products

The production of partial products in the booth algorithm depends on the recoding process. The procedure makes use of the Booths recoding technique, which is based on the idea that partial products can be produced for a collection of 0s and 1s.

Recoding algorithms' primary goal is to provide effective Partial products. Usually, the Radix utilized for recoding determines whether there will be an increase in partial product [13–15]. Less power and space are provided by this recoding process.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060407*

Computer-Aided Design for skin disease Identification and Categorization Using Image Processing

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 09 April 2023

Abstract— One of the many significant prevalent illnesses is skin disease. Features extraction is essential for supporting the categorization of skin illnesses in skin disease detection. The skill of the physicians and the results of skin function tests are particularly dependent on the capacity to diagnose skin illness, which is a laborious process. To improve diagnosis accuracy and prevent inadequate human sources, an automated computer-aided design (CAD) for skin disease identification and categorization via photographs is required. A critical duty is identifying skin conditions from a picture. It mostly depends on the accurately measured and arranged characteristics of the illnesses. Creating usable photos is made more difficult by the same visual characteristics shared by several skin conditions. The diagnosis would be improved by formal investigation into these disorders from the picture.

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Keywords: ***Computer-based system, skin disease system, machine learning, deep learning, Artificial intelligence.***

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Citation: G.Charulatha, R.Dineskkumar, B.Kaleeswari & K.Lakshmipriya. "Computer-Aided Design for skin disease Identification and Categorization Using Image Processing", Journal of Science, Computing and Engineering Research, 6(4), 24-28, 2023.

I. INTRODUCTION

One of the major organs in the human body is the skin. It is made composed of subcutaneous, dermal, and epidermal tissues. The skin senses the environment outside and protects our inside organs and tissues from corrosion, dangerous microbes, and sunshine. The skin can be affected by a variety of internal and external factors. Skin damage can be caused by genetic abnormalities, chemical damage, viruses, the immune system, and artificial harm to the skin. Skin conditions used to have a considerable influence on wellbeing and survival. At times, people try to recover from their skin problems by using their home remedies. If not suitable for this type of skin infection, these techniques can have harmful effects. It can quickly transfer skin conditions from one character to another, so one must manage them early.

The majority of the time, dates and thematic choices made by the doctor are used to infer information regarding the patient's symptoms. The wrong choice might have detrimental effects on people's health. Therefore, it becomes essential to develop improved techniques for detecting and analysing the early signs of skin illnesses. To identify skin infections early on as time goes on, a system for skin monitoring can be developed and implemented. For a full view and sample identification of different skin conditions, more enhancements are offered. One component that can play a crucial role in the precise and practical identification of many skin disorders is machine learning. Disease classification may be done using the type of image that the system can identify. A prototype is qualified to comprehend the class since image type is a topic of supervised study that includes various objective instructions. Based on their categorization, several machine learning and deep learning algorithms can distinguish between and foresee particular groups of skin illnesses.

The trend of skin diseases means the abundance of paperwork, a lack of qualified dermatologists and poor distribution, and the need for modern diagnostic registries for timely and accurate diagnosis. The development of lasers and technologies based primarily on photonics has made it feasible to diagnose skin diseases quickly. However, the cost of such predictions stays limited and costly. Deep learning models are relatively good for classifying images and records. In healthcare diagnostics, accurate X-rays, magnetic resonance imaging (MRI), computed tomography (CT), and signal data such as accurate abnormal identification and error categories. Electrocardiogram (ECG), electroencephalogram (EEG), and electromyography (EMG) are the specific identification of the disease's looks that will help offer better treatment for the patients. The deep learning models can solve fundamental problems by automatically identifying input statistics skills, and in-depth knowledge of models is equivalent to a change in perceived

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 4, July –August 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030401*

Design Analysis of Intelligent Intelligent Private Agro Provincial Report System For Trading Using ICT's

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Article Information

Received : 14 June 2022
Revised : 29 June 2022
Accepted : 24 July 2022
Published : 07 August 2022

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Abstract— The project (PRIVATE AGRO PROVINCIAL REPORT SYSTEM) is a to-day basis by both Admin and supplier of shop. The purpose of developing this Website is to organize the process of selling products of farmers to all. The work of farmers can be reduced. The buyers can buy products at provincial ICT centers. The farmers/Customer users can gain access provincial selling ICT centers for instant gratification for their products One of the best ideas to start experimenting your hands on digital marketing is Customer Satisfaction for a Digital Marketing Agency. Marketing agencies might use different digital marketing strategies to drive sales. Farmers usually are more satisfied when they get instant gratification for their products It provides a platform to the trader to automate their record keeping. The sales management is developed for the sales / purchase organization.. Provincial system is to help farmers by providing all kinds agriculture related information in the for selling their products. Intelligent Private Agro Provincial Report System For Trading Using ICT'sis farmer management website application which helps farmers to give best practice for selling the farming products. It helps. farmers to improve their productivity and profitability. It enables farmers to sell their productions through online/ICT centers.

Keywords: ***Agro, Agriculture, Digital, Profitability.***

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Citation: B.Kaleeswari, S.Dhivyabharathi. "Design Analysis of Intelligent Intelligent Private Agro Provincial Report System For Trading Using ICT's, "Journal of Science, Computing and Engineering Research, 3(4), 01-07, July- August 2022.

I. INTRODUCTION

Provincial system is to help farmers by providing all kinds agriculture related information in the website for selling their products. Intelligent Private Agro Provincial Report System For Trading Using ICT'sis farmer management website application which helps farmers to give best practice for selling the farming products. It helps farmers to improve their productivity and profitability. It enables farmers to sell their productions through online/ICT centers. Farmers can manage their crops and farms better if they can communicate their experiences, both positive and negative, with each other and with experts. Digital agriculture using internet communication technology (ICT) may facilitate the sharing of experiences between farmers themselves and with experts and others interested in agriculture. ICT approaches in agriculture are, however, still out of the reach of many farmers. The reasons are lack of connectivity, missing capacity building and poor usability of ICT applications. We decided to tackle this problem through cost-effective, easy to use ICT approaches, based on infrastructure and services currently available to small-scale producers in developing areas.

An agricultural information system can be defined as a system, in which agricultural information is generated, transformed, transferred, consolidated, received and fed back in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Roling, 1988). Accordingly, an agricultural information system consists of components (subsystems), information related processes (generation, transformation, storage, retrieval, integration, diffusion and utilization), system mechanisms (interfaces and networks) and system operations (control and management). Agricultural information is considered as an essential input to agricultural education, research and development and extension activities. Different kinds of information are required by different kinds of users for different purposes. The potential users of agricultural information include government decision-makers, policy-makers, planners, researchers, teachers and students, program managers, field workers and farmers (Zaman, 2002). Figure 1 gives an illustration of the flow of agricultural information

II. PROPOSED SYSTEM

It will be very effective and Farmers usually are more satisfied when they get instant gratification for their products and selling more easily. Therefore, this ICT centers for agro-products will help the users to make use of resource as ICT centers. It will also be useful to the visitors to understand the trading ICT centers ideology of selling. This is a user friendly and understandable website, which can be used easily by all groups of age people. In this paper, we

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 4, July –August 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030401*

Smart Coastline Alert System Using RSSI

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Abstract— Countries with the International Maritime Boundary Line (IMBL) will always have security problems and continuous life threats for those fishermen whose family's main economic support is fishing. Even in peninsular countries like India have their boundary limit in the ocean, the people of these coastal regions have the main work of fishing, due to carelessness or without knowing their boundary limit of their country they cross the borders. In such a situation the lives of fishermen continue to be difficult. They may face bullets and attacks from the opposite Navy, at the end of attack fishermen are being abducted and their boats are being captured. So, our paper is designed to avoid such kinds of accidents and to alert the fishermen about the border area well before using the latest technology of Received Signal Strength Indicator (RSSI)

Keywords: ***Attacks, boundary, IMBL, RSSI.***

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Citation: S.Dhivyabharathi, B.Kaleeswari. "Smart Coastline Alert System Using RSSI, "Journal of Science, Computing and Engineering Research, 3(4), 08-11, July- August 2022.

I. INTRODUCTION

The people's livelihood in coastal areas purely depends on fishing occupation in the sea. Crossing the border is being treated as a serious offense. Due to lack of unawareness about the coastline boundary limit, the fisherman unknowingly cross the border. Once they cross the border, they are arrested or killed by the relevant navy and they are being abducted and their boats are being captured by the neighboring country's coastal guards. Under such a situation the lives of fishermen continue to be in danger. Thus becoming one of the major issues to fishermen and the economy. To eliminate such difficulties, we have developed a system which saves the lives of the fishermen.

II. RELATED WORKS

In this Section we have studied few papers which show that GPS about the boundary alert system and RSSI concepts.

In this paper, they presented a border alert system using GPRS and RFID. The RFID uses the tag for different locations and they are connected to raspberry pi. The GPRS (General Packet Radio Service) is a packet-switching technology that enables data transfers through cellular networks. This system has two modules. First module is used for authentication of Guard Station using RFID and Second module used for coastal border alert system using GPRS. The proposed system provides life security to the fishermen and also enables the fishing community to serve as a surveillance unit.

Design and Implementation of Low-Cost Maritime Boundary Identification System using Fiber Optic Technology. R Sathya, R Iswarya, V Revathi, R Sathyapriya, Year: 2021. In this paper they proposed a method of fiber optics technology for the border alert system. A laser emits light in a very narrow path. Lasers has high spectral density and emits bright colored lights. Thus laser are used for long distance communication and it is useful of optical communication links.

IOT Based Fisherman Border Alert System using ZIGBEE. Michael Raj S, Lakshmi Sri Devi, Sathish Sridhar, C S Maheshwari, 2018.In this paper, they proposed a ZigBee based border alert system. In this model, the GPS antenna gets the signal from the satellite and the signal stored in the GPS unit is sent to the PIC microcontroller that stores and retrieves the information to the tracking unit ZigBee. Signal coverage is increases by GPS Antenna. Using GPS the signals from this is one reason for the cross-border atrocities.

III. PROPOSED SYSTEM

This is one of the reasons for cross border cruelty. They are being abducted and their boats are being captured. Sometimes, it results in loss of lives also. Major problems are border line measurement manually and communication with the navy.

Main focus of the proposed approach is to Identify the boundaries and alert the fishermen as well as track the range of the boat. In this system, RSSI is used to track the boat location at any time. In this system, RSSI is used to track the boat location at any time. The system also helps identify the boats in the sea zone wise from Harbor or Control room.

In our proposed system, border identification is done using RSSI and an APR Voice system is provided to alert the fishermen. In addition, wireless communication is used to track the location between the boat and control room. Applications include reducing the speed of the engine automatically when it reaches the danger zone.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060301*

A Comprehensive Review of MOSFET Device Scaling Challenges

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Article Information

Received	:	30 Jan 2023
Revised	:	12 Feb 2023
Accepted	:	28 Feb 2023
Published	:	10 Mar 2023

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Abstract— the problems with downscaling MOS devices are briefly discussed in this study. Scaling problems like gate oxide tunneling, high electric field, power supply and threshold voltage scaling, hot carrier degradation, random doping fluctuation, parasitic resistance and capacitance, and short channel effect should be thoroughly understood in order to maintain improvement in device density. To maintain the high-density pace, the microelectronics industry may need to move away from conventional MOSFET-based standards and toward those based on molecular nanostructure devices.

Keywords: *Scaling, Threshold Voltage, Short channel effect, Nanoelectronics, Tunneling,.*

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Citation: M.Durairaj, R.Dinesh Kumar, K.S.Senthil Kumar, S.Dhivya Bharathi, V.Sharanya, T.Sathish. "A Comprehensive view of MOSFET Device Scaling Challenges", Journal of Science, Computing and Engineering Research, 6(3), 01-03, 2023.

I. INTRODUCTION

SCALING of CMOS technology has been a fundamental element of the semiconductor industry's current advancement in silicon-based devices. Since a few decades ago, Moore's Law has provided straightforward guidelines for transistor design in order to maximize circuit density and speed. More complex functionality is made possible by the enhanced circuit performance and density since more transistors may be put onto a single chip. However, it turns out that the historical growth, doubling circuit density, and improved performance predicted by Moore's Law cannot be sustained merely by the conventional scaling hypothesis as device scaling continues into the twenty-first century. Further threshold voltage decrease is not possible with increasing leakage current, which in turn prevents supply voltage scaling for speed increase. Leakage currents get worse and device reliability gets poorer when more electric fields are created inside the transistor. Additionally, the necessary high channel doping creates substantial difficulties such mobility deterioration and threshold voltage variations caused by random dopants [1].

1. SIGNIFICANT DOWNSCALING ISSUES IN MOS DEVICES

In order to achieve improved device performances, MOSFET-based CMOS technology must overcome difficulties, namely those related to low power consumption and high ON-state current. The MOS transistor's size is reduced to produce the increased performance. The size of MOSFETs is decreasing from the submicron to the nano scale range. However, the dramatic dimension reduction raises issues that have not yet been resolved and may not always be compatible with device performance.

2. THRESHOLD VOLTAGE AND POWER SUPPLY

To maintain the electric field and active power within bounds, the MOSFET channel down-scaling typically involves a corresponding reduction in supply voltage. The threshold voltage, however, cannot be significantly reduced. This is owing to the fact that a sizeable amount of the total power dissipation in high performance CMOS products is passive power (caused by transistor off-state leakage). Leakage current through the device is the main cause of the power consumption in this condition. In order to prevent a sharp spike in IOFF, VT scaling has therefore slowed down. In order to generate a big drive current, the gate overdrive (VDD - VT) must be considerable, which slows down VDD scaling and increases active power density [3].

3. HIGH ELECTRIC FIELDS

As stated previously, the supply voltage cannot be decreased proportionally to the length of the channel, hence scaling will increase the electric field strength across the gate oxide. Higher vertical electric fields in the MOSFET channel reduce carrier mobilities, which, in the worst-case scenario, can lead to barrier failure and increased leakage currents that can damage the device.

But as transistor device length is continuously reduced that is of SCEs [10-13]. High-K dielectric material is having the capacity of better gate controllability which further makes it as a best gifted device for the low power applications. HfO2 provide large amount of drain current (ID) and it is chosen for dropping the substrate bias effect.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

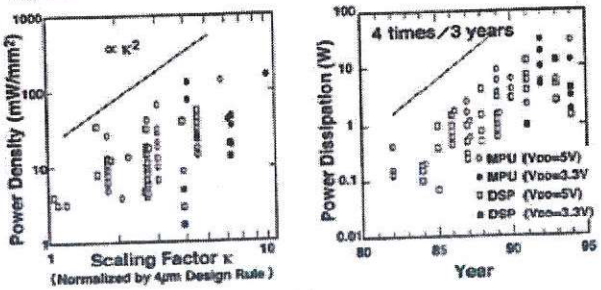


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030205
ISSN: 2708-1079

Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— This paper discusses about the analysis and detection of brain tumor and Alzheimer's disease. A digital MRI scan is used for this purpose. Medical image processing and analysis tasks are complex and diverse at the technical level. There is an array of technologies including reconstruction, enhancement, restoration, classification, detection, segmentation and registration that are combined with multiple image modalities and numerous applications are formed and should be addressed. AI-based tools are developed to support the assessment of disease severity and recently there are tools for assessing treatment and predicting treatment success. Finally, numerous studies in fields like clinical neuroscience have shown that AI-based image evaluation can identify complex imaging patterns that are not perceptible with visual radiologic evaluation.

Keywords: Alzheimers disease, MRI, Feature Extraction, Breast Digital Image, Partioning, Image Processin.

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Citation: M.Renuga and Abirami K. "Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques", Journal of Science, Computing and Engineering Research, 3(2), 253-255, 2022.

I. INTRODUCTION

The brain is the most important organ in our body, which controls the rest of our organs. Brain pathologies have been classified as the second cause of human death in the world, if people have not discovered them early and had the appropriate therapy in time. Computer vision has many applications which make human life much easier and safer. In the medical images field, image processing techniques and machine learning approach aim at facilitating medical diagnosis.

Analysis and evaluation of all MRI images which helps to decide whether it contains brain pathology or not is a time-consuming process. Computer Aided Diagnosis (CAD) of medical images makes early detection of brain pathology faster than the human specialist and is very helpful for them. Brain medical images can be taken by Magnetic Resonance Imaging (MRI), X-ray Computed Tomography (CT), and Positron Emission Tomography (PET) scan. While the MRI and CT expose the structure of the body and the location of the tumor, PET scan reveals body functions like oxygen level and blood supply.

The work presented in this proposal will focus on the MRI image. The MRI is a preferred brain scan image technique due to high resolution and safety. Magnetic Resonance Imaging (MRI) scan is safe for patient and is a painless, non-invasive test that produces high accuracy images of brain and brain stem. It can create two-dimensional (2D), or three-dimensional (3D) scan of the brain. It doesn't need many preparations; instead, it needs just removing all metal staff from the patient body due to the strong magnetic field that will the patient be exposed to. The brain tumor is abnormal growth of unwanted dead cells on the brain that causes confusion to other cells' functionality. Early detection and fast diagnosis of the tumor may help and save the life of the patient.

Alzheimer's disease (AD) is a common form of dementia. It causes memory loss, cognitive decline, and other disabilities that interfere with daily activities. Like other types of dementia, Alzheimer's is caused by dead cells on the brain. With the passage of time, the brain will shrink dramatically affecting approximately all its functions. Unfortunately, there's no therapy for the AD.

However, symptomatic treatments have helped in maintaining mental functions. In the next section, the literature review has been described. After that, the methodology will be explained. Afterwards, an overview of the system, bag of features and segmentation of tumor, results and discussion as well as references will be presented.

A. ALS –MRI Scan Image

An image is an array or a matrix of square pixels (picture elements) arranged in columns and rows. An image (from

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

ENHANCEMENT OF AN OBJECT DIMENSIONS ESTIMATION IN 2D IMAGES BASED ON MULTI-OBJECTIVE RECOGNITION STRATEGY

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ABSTRACT

In this paper, the multi-objective recognition algorithm has introduced to enhance the quality of object dimension measurement. It is carried out by the following constraints such as to determine the weight of an object using 2 dimensional images. It employs Haar like features and cascade classifiers to detect objects. After object detection, the proposed method employs the use of a reference object to find the Conversion Factor (CF), which is used to map the image dimensions (in pixels) to the actual dimensions. Then the true dimensions of the required object are computed. To accomplish the last task, the proposed model uses conventional 3D models like sphere, cuboid, cone, cylinder etc for objects having regular shape. For objects which do not have regular shape, like human beings, other methods are used to estimate the weight depending on the application. The proposed model employs a Haar cascade classifier to extract key patterns defining the object in an image for object recognition. To find the actual size of the object, two views of an object and a onetime calibration technique for each view has been used. Separate methods have been described in the paper for the volume and weight estimation of regular objects and irregular objects. The accuracy of the proposed method of weight calculation is approximately 94% for men's half hand dress, 97% for full hand dress, 93% for ¾ women churidar dress, and 90% for women churidar tops dress a glass of orange juice. Hence, the overall accuracy of the proposed method is 93.69%. By using a better shape recognition method where actual 3D shape of the object can be recognized, the performance of the proposed system can be improved.

keyword: *Body Mass Index, Conversion Factor, Histogram of oriented gradients and camera calibration*

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
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IOT BASED AUTOMATIC VEHICLE ACCIDENT DETECTION AND RESCUE SYSTEM

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ABSTRACT:

The Rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. In this project, an IoT based vehicle accident detection and rescue information system is developed in order to detect vehicle accident and send the location information of the accident place to vehicle owner, nearest hospital and police station through message service. The accident is detected through impact and ultrasonic sensors.The rise in technology has increased the rate of road accidents which causes huge loss of life. The poor emergency facilities available in our country just add to this problem. Our project is going to provide a solution to this problem. According to our project when a vehicle meets with an accident, a sensor situated on the vehicle will detect it immediately and send a message to the microcontroller. The microcontroller then sends the alert message to a police control room or rescue team which will include the location with the help of GPS. Also the alert message containing the location of accident will be send to the relatives of the victim. In case there is no casualty the driver can terminate the alert message by a switch provided in the vehicle.

Keywords: **IoT, Impact sensors, Ultrasonic sensors, GPS module.**

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SMART HOME ENERGY METER USING INTERNET OF THINGS

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ABSTRACT

Enhancement of technology makes the human daily life easier with the help of newly developed smart systems. This paper comprise the details about A Smart Electricity Energy meter using Arduino and ESP8266 Wi-Fi module through which a SMS/E mail is forwarded to the user. The energy used can be monitored at any time and from anywhere through a mobile application (energy meter app).An IFTTT platform is used to link the Wi-Fi and to send SMS/E-mail notifications. MQTT Dashboard Android App is to monitor our Energy uses. In addition to this we can set a threshold value as the level of our daily consumption and when the value is reached, we receive an alert. This helps us in managing our monthly budget.

Index Terms— IOT ,IFTT, MQTT, ESP8266

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

MULTI-SCRIPT-ORIENTED TEXT DETECTION AND RECOGNITION IN VIDEO/SCENE/BORN-DIGITAL IMAGES

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ABSTRACT

Scene text is one of the most common objects in nature, which frequently appears in many practical scenes and contains important information for many applications such as navigation, scene understanding, autonomous driving, etc. Using advanced neural network technology, we detect those texts from the captured image for easier image processing. In this proposed system we use to detect text by directly predicting word bounding boxes with a neural network that is end-to-end trainable. If the input images are color images means we need to convert grayscale from that color images. The binary conversion is applied to the grayscale image it means that the grayscale image turns into black and white. The filter is applied to remove the noise from the image. The Region of Interest (ROI) is applied to the filtered image. It means that it will crop the word by word automatically and chooses the maximum MSB plane. To the output of the ROI module, a deep neural network is applied. It will check the cropped image with a database image and finally, the accuracy is shown in the output.

***Index Terms*— ROI,OCR,CNN, CRF**

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SMART HOME ENERGY METER USING INTERNET OF THINGS

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ABSTRACT

Enhancement of technology makes the human daily life easier with the help of newly developed smart systems. This paper comprise the details about A Smart Electricity Energy meter using Arduino and ESP8266 Wi-Fi module through which a SMS/E mail is forwarded to the user. The energy used can be monitored at any time and from anywhere through a mobile application (energy meter app).An IFTTT platform is used to link the Wi-Fi and to send SMS/E-mail notifications. MQTT Dashboard Android App is to monitor our Energy uses. In addition to this we can set a threshold value as the level of our daily consumption and when the value is reached, we receive an alert. This helps us in managing our monthly budget.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SMART STRETCHER AND INTEGRATED MEDICAL INTELLIGENCE SYSTEMS FOR UNCONSCIOUS PERSON

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Abstract— India is one of the most populous countries of the world. Due to over population, ignorance of health have been remained the major problems in India. For every one minute a death swoops in because of unpredictable and unexpected accidents. To save a life is auspicious as well as precious. The idea here is to provide an intelligent smart health system using some sensors and micro controllers which are implemented in stretcher. The aim of this system is to save many human lives by preparing intensive care unit in hospital, as their physical parameters are updated to hospital before their arrival to hospital.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060305*

Authorized Data Dedupulication Technique In Cloud Storage System

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	17 Mar 2023

Abstract— Data deduplication is one of important data compression techniques for eliminating duplicate copies of repeating data, and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the confidentiality of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this project makes the first attempt to formally address the problem of authorized data deduplication. Different from traditional deduplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new deduplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

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Keywords: ***Data Deduplication, Security, Cloud Computing, Storage.***

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Citation: S.S.Vasantha Raja, Dr R.Palson Kennedy, S. Jonisha, T.Bersikin Libina. "Enhancing Communication Skills of the Learners in Professional Advancement, "Journal of Science, Computing and Engineering Research, 6(3), 18-23, 2023.

I. INTRODUCTION

Cloud computing provides seemingly unlimited "virtualized" resources to users as services across the whole Internet, while hiding platform and implementation details. Today's cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified privileges, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the ever-increasing volume of data. To make data management scalable in cloud computing, de duplication has been a well-known technique and has attracted more and more attention recently.

Data deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage. The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent. Instead of keeping multiple data copies with the same content, deduplication eliminates redundant data by keeping only one physical copy and referring other redundant data to that copy. Deduplication can take place at either the file level or the block level. For filelevel de duplication, it eliminates duplicate copies of the same file. Deduplication can also take place at the block level, which eliminates duplicate blocks of data that occur in non-identical files. Although data deduplication brings a lot of benefits, security and privacy concerns arise as users' sensitive data are susceptible to both inside and outsider attacks. Traditional encryption, while providing data confidentiality, is incompatible with data deduplication.

Specifically, traditional encryption requires different users to encrypt their data with their own keys. Thus, identical data copies of different users will lead to different cipher texts, making deduplication impossible. Convergent encryption has been proposed to enforce data confidentiality while making deduplication feasible.

It encrypts/decrypts a data copy with a convergent key, which is obtained by computing the cryptographic hash value of the content of the data copy. After key generation and data encryption, users retain the keys and send the cipher text to the cloud. Since the encryption operation is Deterministic and is derived from the data content, identical data copies will generate the same convergent key and hence the same cipher text. To prevent unauthorized access, a secure proof of ownership protocol is also needed to provide the proof that the user indeed owns the same file when a duplicate is found. After the proof, subsequent users with the same file will be provided a pointer from the server without needing to upload the same file. A user can

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© July 2022 | IJIRT | Volume 9 Issue 2 | ISSN: 2349-6002

An AC-DC Single Stage Full Bridge Hybrid Converter with Improved Output Characteristics

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Abstract— **This paper explains about a new auxiliary circuit for an ac-dc single-stage power factor corrected (SSPFC) full-bridge type converter. The new auxiliary circuit is simple, handles low power, and is active only when the converter is operating under light load conditions. The operation of a SSPFC converter is briefly reviewed and the main principle behind the auxiliary circuit is explained. The new auxiliary circuit is introduced, and its feasibility in a multilevel SSPFC is confirmed with experimental results. This project proposes a unique standalone hybrid power generation system, applying advanced power control techniques, fed by four power sources: wind power, solar power, storage battery, and diesel engine generator, and which is not connected to a commercial power system. This configuration allows the two sources to supply the load separately or simultaneously depending on the availability of the energy sources. The inherent nature of this converter, additional input filters are not necessary to filter out high frequency harmonics. Harmonic content is detrimental for the generator lifespan, heating issues, and efficiency.**

Index Terms: **Pulse Width Modulation (PWM), MOSFET, Optocoupler, microcontroller, matlab.**

INTRODUCTION

Single-stage power-factor-corrected (SSPFC) ac-dc converters are cheaper and simpler than two-stage converters. This is because the ac-dc front-end and dc-dc backend converters that form the two stages of a two-stage converter are combined and just one controller is used - to regulate the output voltage. Low-power SSPFC converters (< 200 W)are widely used in industry, but not higher power SSPFC full-bridge converters due to problems associated with their operation over an extended load range. The intermediate dc bus voltage (the voltage at the input of the dc-dc section of a SSPFC converter fed by its ac-dc section) is not controlled and can change with input line voltage and output loads, which affects its operation negatively. This can be limited if the load range is constrained, as is done for low power converters, but this cannot be done for higher power converters. The result may thus be a distorted input line current, high dc bus voltage levels and a large amount of ripple in the output inductor current. A new auxiliary circuit was proposed to reduce the amount of output inductor current that can exist when a single-stage power factor corrected (SSPFC) full-bridge converter is operating under heavy load conditions. The new auxiliary circuit is simple and is active only when the converter is operating under light load conditions. In this paper, the operation of a higher power SSPFC full-bridge converter was briefly reviewed, the main principle behind the auxiliary circuit was explained and its feasibility was confirmed with results obtained from an experimental prototype of a multilevel SSPFC that was proposed previously.

The intermediate dc bus voltage (the voltage at the input of the dc-dc section of a SSPFC converter fed by its ac-dc section) is not controlled and can change with input line voltage and output loads, which affects its operation negatively. This can be limited if the load range is constrained, as is done for low power converters, but this cannot be done for higher power converters. The result may thus be a distorted input line current, high dc bus voltage levels and a large amount of ripple in the output inductor current. A new SSPFC converter that does not have these issues was proposed in [10]. This converter does not expose its primary circuit components to the high voltage levels that a two-level SSPFC can because it is a multilevel converter. Issues associated with dc bus voltage variation such as excessive dc bus voltages are reduced and converter operation is improved. Although the output inductor current ripple is less than what is found in other higher power

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

IOT BASED AUTOMATIC VEHICLE ACCIDENT DETECTION AND RESCUE SYSTEM

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ABSTRACT:

The Rapid growth of technology and infrastructure has made our lives easier. The advent of technology has also increased the traffic hazards and the road accidents take place frequently which causes huge loss of life and property because of the poor emergency facilities. In this project, an IoT based vehicle accident detection and rescue information system is developed in order to detect vehicle accident and send the location information of the accident place to vehicle owner, nearest hospital and police station through message service. The accident is detected through impact and ultrasonic sensors.The rise in technology has increased the rate of road accidents which causes huge loss of life. The poor emergency facilities available in our country just add to this problem. Our project is going to provide a solution to this problem. According to our project when a vehicle meets with an accident, a sensor situated on the vehicle will detect it immediately and send a message to the microcontroller. The microcontroller then sends the alert message to a police control room or rescue team which will include the location with the help of GPS. Also the alert message containing the location of accident will be send to the relatives of the victim. In case there is no casualty the driver can terminate the alert message by a switch provided in the vehicle.

***Keywords*: IoT, Impact sensors, Ultrasonic sensors, GPS module.**

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

MAGNETIC INDUCTIONBASED WIRELESS UNDER GROUND SENSOR NETWORKS(WUSN)COMMUNICATION

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1. ABSTRACT

Wireless Underground Sensor Networks (WUSNs) constitute one of the promising application areaof the recently developed wireless sensor networking techniques. WUSN is a specialised kind of WSN that mainly focuses on the use of sensors at the subsurface region of the soil. For a long time, this region has been used to bury sensors, usually targeting irrigation and environment monitoring applications without wireless communication capability. In recent years, the communication in mining places has been suffering interferences. This project is mainly focused in providingcommunication reducingthose interferences. The proposed method provides communication through the underground soil medium. The methodology comprising of MI probes helps in transmission and reception of data (text).

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

INTERFERENCE LIMITED UNDERLAY CR-NOMA NETWORKS

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Abstract— **In this paper we consider downlink underlay cognitive radio non-orthogonal mutliple access (CR-NOMA) system. CR and NOMA are both efficient spectrum utilization techniques. The major challenge in combining both CR and NOMA is to address effect of interferences caused by both. Underlay CR-NOMA network is interference limited system due to the fact that both the primary and secondary transmits simultaneously to its corresponding users. The effect of intra-network interference and inter-user interference is analysed and new architecture is proposed for underlay CR-NOMA to combat the intra-network interference. It is shown that proposed architecture provides greater system throughput than the traditional underlay CR-NOMA network.**

Keywords—**CR, NOMA, spectrum utilizations, interferences**

I. INTRODUCTION

Non-orthogonal Multiple Access (NOMA) has been identified as one of the promising techniques for the upcoming fifth generation (5G) mobile networks [1]. In NOMA multiple signal are superimposed the base station transmitter side and successive interference cancellation is employed at the receiver to decode its corresponding signal. Users near to the transmitter are allocated less power and cell edge users with power. The power allocation for the users are based channel quality between the transmitter and user. NOMA has been recently been incorporated into various standardizations for example, multi-user superposition transmission (MUST) in 3rd-generation partnership project long-term evolution (3GPP-LTE) and layered division multiplexing (LDM) in digital TV standard ATSC 3.0 [2]. Advantages of NOMA over orthogonal multiple access (OMA) schemes are discussed in [3,4].

Cognitive Radio (CR) has been known for more efficient use of wireless spectrum. In CR, secondary users (SUs) try to adapt their operations to access band which has been already occupied by the primary users (PUs) either in an opportunistic or collaborative manner [5,6]. Research activities so far have exploited CR technology to support other emerging applications such as CR based full-duplex, device-to-device and multiple-input multiple-output (MIMO) to further increase spectrum efficiency. Existing research om the combination of CR and NOMA [7-11] has shown the possibility to meet the 5G requirements such as massive connectivity, low latency and high throughput. Three CR architecture is present up-to-date [5].

1. Underlay: Primary and secondary transmission occur simultaneously under the condition that interference from secondary network to primary network should be lower than the controllable level.
2. Overlay: A Secondary user (SU) acts as relay to the primary network while transmitting its own signal.
3. Interweave: A SU transmits only in the absence of PU in the licensed spectrum.

CR and NOMA aims to achieve efficient spectrum utilization from different perspectives. In CR the secondary users performs operations in an opportunistic manner i.e., underlay mode or overlay mode or collaborative mode. On the other hand NOMA enables simultaneous multiple users transmission by differentiating users power levels. Thus, the combination of CR and NOMA aims to provide more intelligent spectrum utilization in a constructive way. CR NOMA provides improved spectrum efficiency, massive connectivity [9], low latency [2] and better quality of service [9]. Considering the merits of these two technologies, incorporating CR with NOMA needs to address the challenging issues in practice, because both CR

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

ENHANCEMENT OF AN OBJECT DIMENSIONS ESTIMATION IN 2D IMAGES BASED ON MULTI-OBJECTIVE RECOGNITION STRATEGY

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ABSTRACT

In this paper, the multi-objective recognition algorithm has introduced to enhance the quality of object dimension measurement. It is carried out by the following constraints such as to determine the weight of an object using 2 dimensional images. It employs Haar like features and cascade classifiers to detect objects. After object detection, the proposed method employs the use of a reference object to find the Conversion Factor (CF), which is used to map the image dimensions (in pixels) to the actual dimensions. Then the true dimensions of the required object are computed. To accomplish the last task, the proposed model uses conventional 3D models like sphere, cuboid, cone, cylinder etc for objects having regular shape. For objects which do not have regular shape, like human beings, other methods are used to estimate the weight depending on the application. The proposed model employs a Haar cascade classifier to extract key patterns defining the object in an image for object recognition. To find the actual size of the object, two views of an object and a onetime calibration technique for each view has been used. Separate methods have been described in the paper for the volume and weight estimation of regular objects and irregular objects. The accuracy of the proposed method of weight calculation is approximately 94% for men's half hand dress, 97% for full hand dress, 93% for ¾ women churidar dress, and 90% for women churidar tops dress a glass of orange juice. Hence, the overall accuracy of the proposed method is 93.69%. By using a better shape recognition method where actual 3D shape of the object can be recognized, the performance of the proposed system can be improved.

keyword: *Body Mass Index, Conversion Factor, Histogram of oriented gradients and camera calibration*

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

MULTI-SCRIPT-ORIENTED TEXT DETECTION AND RECOGNITION IN VIDEO/SCENE/BORN-DIGITAL IMAGES

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ABSTRACT

Scene text is one of the most common objects in nature, which frequently appears in many practical scenes and contains important information for many applications such as navigation, scene understanding, autonomous driving, etc. Using advanced neural network technology, we detect those texts from the captured image for easier image processing. In this proposed system we use to detect text by directly predicting word bounding boxes with a neural network that is end-to-end trainable. If the input images are color images means we need to convert grayscale from that color images. The binary conversion is applied to the grayscale image it means that the grayscale image turns into black and white. The filter is applied to remove the noise from the image. The Region of Interest (ROI) is applied to the filtered image. It means that it will crop the word by word automatically and chooses the maximum MSB plane. To the output of the ROI module, a deep neural network is applied. It will check the cropped image with a database image and finally, the accuracy is shown in the output.

***Index Terms*— ROI,OCR,CNN, CRF**

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

PLANT LEAF DISEASE DETECTION AND AUTOMATICFERTILIZATION USING ARDUINO CONTROLLER

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ABSTRACT:

Terrace gardening is the modern implementation in city side. City people may not aware of inflected plants. This paper is to explore the leaf disease detection. Plant diseases can be detected by image processing technique. We propose an enhanced k-mean clustering algorithm to predict the infected area of the leaves. Disease detection involves steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. The main challenge is to detect the disease and improve the quality and quantity of the product by giving correct pesticide and its name.

Keywords: **K-mean clustering, image acquisition, image preprocessing, image segmentation, classification**

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SUPERVISION OF AIR TOXINS

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ABSTRACT

Air pollution affects our day to day activities and the quality of life. The gases present in the air are highly flammable and affect the human health to a great extent. It poses a threat to the ecosystem and the quality of life on the planet. We aim at using IOT and Android software along with mobile computing to make the services real-time and faster. The level of each hazardous pollutant is monitored at periodic intervals. The Air Quality Index (AQI) for the observed pollutants is determined and awareness is created among the public through an android app which displays the level of each observed pollutant and also the air quality index in that particular location. The quality of air in an area can be understood by the public by viewing the concentration of the gases in both numerical and graphical format. Allowing the public to register themselves in an application which pushes weekly or monthly air quality report through message which reaches the user as a notification that is more comfortable in access. This prediction of air quality determines if life is feasible or not in terms of research activities.

Index Terms— PPM ,CO,AQI,DHT

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030205
JSCER
ISSN: 2708-1079

Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— This paper discusses about the analysis and detection of brain tumor and Alzheimer's disease. A digital MRI scan is used for this purpose. Medical image processing and analysis tasks are complex and diverse at the technical level. There is an array of technologies including reconstruction, enhancement, restoration, classification, detection, segmentation and registration that are combined with multiple image modalities and numerous applications are formed and should be addressed. AI-based tools are developed to support the assessment of disease severity and recently there are tools for assessing treatment and predicting treatment success. Finally, numerous studies in fields like clinical neuroscience have shown that AI-based image evaluation can identify complex imaging patterns that are not perceptible with visual radiologic evaluation.

Keywords: Alzheimers disease, MRI, Feature Extraction, Breast Digital Image, Partioning, Image Processin.

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Citation: M.Renuga and Abirami K. "Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques", Journal of Science, Computing and Engineering Research, 3(2), 253-255, 2022.

I. INTRODUCTION

The brain is the most important organ in our body, which controls the rest of our organs. Brain pathologies have been classified as the second cause of human death in the world, if people have not discovered them early and had the appropriate therapy in time. Computer vision has many applications which make human life much easier and safer. In the medical images field, image processing techniques and machine learning approach aim at facilitating medical diagnosis.

Analysis and evaluation of all MRI images which helps to decide whether it contains brain pathology or not is a time-consuming process. Computer Aided Diagnosis (CAD) of medical images makes early detection of brain pathology faster than the human specialist and is very helpful for them. Brain medical images can be taken by Magnetic Resonance Imaging (MRI), X-ray Computed Tomography (CT), and Positron Emission Tomography (PET) scan. While the MRI and CT expose the structure of the body and the location of the tumor, PET scan reveals body functions like oxygen level and blood supply.

The work presented in this proposal will focus on the MRI image. The MRI is a preferred brain scan image technique due to high resolution and safety. Magnetic Resonance Imaging (MRI) scan is safe for patient and is a painless, non-invasive test that produces high accuracy images of brain and brain stem. It can create two-dimensional (2D), or three-dimensional (3D) scan of the brain. It doesn't need many preparations; instead, it needs just removing all metal staff from the patient body due to the strong magnetic field that will the patient be exposed to. The brain tumor is abnormal growth of unwanted dead cells on the brain that causes confusion to other cells' functionality. Early detection and fast diagnosis of the tumor may help and save the life of the patient.

Alzheimer's disease (AD) is a common form of dementia. It causes memory loss, cognitive decline, and other disabilities that interfere with daily activities. Like other types of dementia, Alzheimer's is caused by dead cells on the brain. With the passage of time, the brain will shrink dramatically affecting approximately all its functions. Unfortunately, there's no therapy for the AD.

However, symptomatic treatments have helped in maintaining mental functions. In the next section, the literature review has been described. After that, the methodology will be explained. Afterwards, an overview of the system, bag of features and segmentation of tumor, results and discussion as well as references will be presented.

A. ALS –MRI Scan Image

An image is an array or a matrix of square pixels (picture elements) arranged in columns and rows. An image (from

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030204
JSCER
ISSN: 2708-1079

Mobile Application to Detect Brain Tumor Using Transfer Learning

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— In this paper, Classification of Brain Tumor (BT) is a vital obligation for assessing Tumors and making a suitable treatment. There exist numerous imaging modalities that are utilized to identify tumors in the brain. Magnetic Resonance Imaging (MRI) is generally utilized for such a task because of its unrivalled quality of the image and the reality that it does not depend on ionizing radiations. The relevance of Artificial Intelligence (AI) in the form of Deep Learning (DL) in the area of medical imaging has paved the path to extraordinary developments in categorizing and detecting intricate pathological conditions, like brain tumor, cancer etc. Deep learning has demonstrated an astounding appearance, particularly in segmenting and classifying brain tumors. In this work, the AI-based classification of BT using Deep Learning Algorithms is proposed for the classifying types of brain tumors utilizing openly accessible datasets. These datasets classify BTs into (malignant and benign). The datasets comprise 696 images on T1-weighted images for testing purposes. The projected arrangement accomplishes a noteworthy performance with the finest accuracy of 99.04%. The achieved outcome signifies the capacity of the proposed algorithm for the classification of brain tumors.

Keywords: Artificial Intelligence, CNN model, Deep Learning, Image classification, Image processing, Transfer Learning

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Citation: Dr.G.Charulatha and C.Bharath Balaji. "Mobile Application to Detect Brain Tumor Using Transfer Learning", Journal of Science, Computing and Engineering Research, 3(2), 247-252, 2022.

I. INTRODUCTION

Brain cancer (tumor) can be characterized as abnormal and unrestrained development in the synapses. As the individual head is an inflexible and volume constrained, any startling development in the brain may influence a human capacity; besides, it might bulge into various body parts and influence individual capacities (DeAngelis, 2001). As indicated by the WHO, in its cancer report Brain Tumor (BT) represents less than 2% of cancers in humans; nevertheless, serious austerity and difficulties are reported (Stewart & Wild, 2014). United Kingdom's cancer research corporation referenced that there are around five thousand two hundred causalities reported every year due to brain diseases and tumors within the skull in the United Kingdom (Brain, other CNS and intracranial tumors statistics | Cancer Research UK. (n.d.), 2020).

BTs are arranged under two significant heads; The one that is developed within the brain, termed as a primary brain tumor corresponds to 70% of all BTs and the other tumors that swells into the brain from some other body parts, called secondary brain tumors form the residual 30%, with majority belonging to malignant type (Tandel et al., 2019). The tumor area, its type as well as where it is situated in the brain decides the type of treatment required. As a rule, surgery of the brain is deemed as the way of handling tumors (American Brain Tumor Association, Chicago, I.L., U.S.A., 2015). Most frequently occurring brain tumors are of Glioma types that incorporate approximately 30% of all BTs, attack Central Nervous System, and around 80% of these are harmful BTs (Gooden Berger).

Amid various clinical advances, MRI gives data about the location and tumor size. Its working depends upon the activity of protons contained in an enormous magnetic field, by maneuvering radiofrequency waves and reclamation of their stable state (Pereira et al., 2016) To decisively separate delicate tissues with high precision MRI technology is quite proficient and is increasingly responsive to change in tissue solidity,requisite for pathological consultation. The MRI images are classified into T1-weighted (T1-w) that are frequently utilized in non-invasive brain investigations. Since they portray high contrast and less fragments, they are referred for anatomy purposes. Whereas, T2-weighted (T2-w) are significant MRI slices that are reasonable for perceiving the boundary structures of the medical images (Zimny et al., 2015). The major downside of the T2-weighted pact is that tumors in the brain, cerebrospinal fluid (CSF), and Gray Matter (GM) bind together. Pathologically, the

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

VEHICLE AND LICENSE AUTHENTICATION USING FINGER PRINT USING IOT

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ABSTRACT

A vehicle identification and drivers authentication system as a part of smart city devolopment. It consist of a TCP/IP where centralized database of authorized vehicles is stored and also it has RFID vehicle tags, RFID tag reader and RFID tag writer. The RFID tag is placed in a vehicle. The RFID tag reader is used to get the data from the RFID tags. For programming the RFID tags, the RFID tag writer is used. By reading the serial number in the RFID tag. Vehicle identification can be easily done. Driving license system is a huge task for the government to monitor. The crime will be done by both the side (people and police). To overcome that problem by implementing one more portable fingerprint sensor module that is given to the traffic police, which is integrated in database where the person license information is stored. If the person places his finger on the sensor then the device will tell you whether they have license or not. This can be done by interlinking the vehicle details by using IoT.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

WATER QUALITY ANALYSER USING IOT

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ABSTRACT

In the modern world, Water pollution is one of the major causes for various types of water-borne diseases such as dengue, cholera and malaria etc., for human beings. 40% of deaths in worldwide are caused by water pollutions. So, the quality of the drinking water needs to be measured in real time while it is supplied to consumers. In this article, author offered a design and expansion of a real time water quality measuring system at reduced cost using Internet of Things (IoT). To compute the physical and chemical parameters of the water such as water flow, water leak detector used. The centralized system receives the measured values from various sensors over a period of time. Thorough the Wi-Fi system, the sensor output data is sent to the concern authority for further steps to improve the water quality. These sensor values are continuously uploaded into cloud using Wi-Fi module. The water quality test carried out in the samples collected from various parts of the Coimbatore district.

Index Terms— IOT ,IFTT, MQTT, ESP8266

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

AUTOMATION OF LEVEL CROSSING SYSTEM USING ARDUINO UNO

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ABSTRACT

The objective of this project is to control the railway accident due to carelessness of manual operation. So, we design an Automatic control of railroad crossing system using Arduino UNO (Microcontroller), Ultrasonic sensor, Speaker, LED, Buzzer and Servo motor, in order to control the gate. We design the project for dual line level crossings. i.e., the train can arrive either in forward or reverse direction on any of the tracks, the sensor detects and sends the control signal to the microcontroller by which, the opening and closing operation of the gates are being controlled. The sensors are designed to monitor the activity 24/7. If any malfunction occurs, it is sensed by the feedback loop and we can fix the problem successfully. The Sensors, Speaker, LED, Buzzer are implemented on basis of the calculated range to alert the approaching of train.

Keywords— Arduino UNO, Ultrasonic sensors, Servomotors, Speaker, LED's, Buzzer, GSM Module.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

MAGNETIC INDUCTIONBASED WIRELESS UNDER GROUND SENSOR NETWORKS(WUSN)COMMUNICATION

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1. ABSTRACT

Wireless Underground Sensor Networks (WUSNs) constitute one of the promising application areaof the recently developed wireless sensor networking techniques. WUSN is a specialised kind of WSN that mainly focuses on the use of sensors at the subsurface region of the soil. For a long time, this region has been used to bury sensors, usually targeting irrigation and environment monitoring applications without wireless communication capability. In recent years, the communication in mining places has been suffering interferences. This project is mainly focused in providingcommunication reducingthose interferences. The proposed method provides communication through the underground soil medium. The methodology comprising of MI probes helps in transmission and reception of data (text).

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

PLANT LEAF DISEASE DETECTION AND AUTOMATICFERTILIZATION USING ARDUINO CONTROLLER

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ABSTRACT:

Terrace gardening is the modern implementation in city side. City people may not aware of inflected plants. This paper is to explore the leaf disease detection. Plant diseases can be detected by image processing technique. We propose an enhanced k-mean clustering algorithm to predict the infected area of the leaves. Disease detection involves steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. The main challenge is to detect the disease and improve the quality and quantity of the product by giving correct pesticide and its name.

Keywords: **K-mean clustering, image acquisition, image preprocessing, image segmentation, classification**

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030204
ISSN: 2708-1079

Mobile Application to Detect Brain Tumor Using Transfer Learning

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Keywords: Artificial Intelligence, CNN model, Deep Learning, Image classification, Image processing, Transfer Learning

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Citation: Dr.G.Charulatha and C.Bharath Balaji. "Mobile Application to Detect Brain Tumor Using Transfer Learning", Journal of Science, Computing and Engineering Research, 3(2), 247-252, 2022.

I. INTRODUCTION

Brain cancer (tumor) can be characterized as abnormal and unrestrained development in the synapses. As the individual head is an inflexible and volume constrained, any startling development in the brain may influence a human capacity; besides, it might bulge into various body parts and influence individual capacities (DeAngelis, 2001). As indicated by the WHO, in its cancer report Brain Tumor (BT) represents less than 2% of cancers in humans; nevertheless, serious austerity and difficulties are reported (Stewart & Wild, 2014). United Kingdom's cancer research corporation referenced that there are around five thousand two hundred causalities reported every year due to brain diseases and tumors within the skull in the United Kingdom (Brain, other CNS and intracranial tumors statistics | Cancer Research UK. (n.d.), 2020).

BTs are arranged under two significant heads; The one that is developed within the brain, termed as a primary brain tumor corresponds to 70% of all BTs and the other tumors that swells into the brain from some other body parts, called secondary brain tumors form the residual 30%, with majority belonging to malignant type (Tandel et al., 2019). The tumor area, its type as well as where it is situated in the brain decides the type of treatment required. As a rule, surgery of the brain is deemed as the way of handling tumors (American Brain Tumor Association, Chicago, I.L., U.S.A., 2015). Most frequently occurring brain tumors are of Glioma types that incorporate approximately 30% of all BTs, attack Central Nervous System, and around 80% of these are harmful BTs (Gooden Berger).

Amid various clinical advances, MRI gives data about the location and tumor size. Its working depends upon the activity of protons contained in an enormous magnetic field, by maneuvering radiofrequency waves and reclamation of their stable state (Pereira et al., 2016) To decisively separate delicate tissues with high precision MRI technology is quite proficient and is increasingly responsive to change in tissue solidity,requisite for pathological consultation. The MRI images are classified into T1-weighted (T1-w) that are frequently utilized in non-invasive brain investigations. Since they portray high contrast and less fragments, they are referred for anatomy purposes. Whereas, T2-weighted (T2-w) are significant MRI slices that are reasonable for perceiving the boundary structures of the medical images (Zimny et al., 2015). The major downside of the T2-weighted pact is that tumors in the brain, cerebrospinal fluid (CSF), and Gray Matter (GM) bind together. Pathologically, the

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

VEHICLE AND LICENSE AUTHENTICATION USING FINGER PRINT USING IOT

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ABSTRACT

A vehicle identification and drivers authentication system as a part of smart city devolopment. It consist of a TCP/IP where centralized database of authorized vehicles is stored and also it has RFID vehicle tags, RFID tag reader and RFID tag writer. The RFID tag is placed in a vehicle. The RFID tag reader is used to get the data from the RFID tags. For programming the RFID tags, the RFID tag writer is used. By reading the serial number in the RFID tag. Vehicle identification can be easily done. Driving license system is a huge task for the government to monitor. The crime will be done by both the side (people and police). To overcome that problem by implementing one more portable fingerprint sensor module that is given to the traffic police, which is integrated in database where the person license information is stored. If the person places his finger on the sensor then the device will tell you whether they have license or not. This can be done by interlinking the vehicle details by using IoT.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

WATER QUALITY ANALYSER USING IOT

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ABSTRACT

In the modern world, Water pollution is one of the major causes for various types of water-borne diseases such as dengue, cholera and malaria etc., for human beings. 40% of deaths in worldwide are caused by water pollutions. So, the quality of the drinking water needs to be measured in real time while it is supplied to consumers. In this article, author offered a design and expansion of a real time water quality measuring system at reduced cost using Internet of Things (IoT). To compute the physical and chemical parameters of the water such as water flow, water leak detector used. The centralized system receives the measured values from various sensors over a period of time. Thorough the Wi-Fi system, the sensor output data is sent to the concern authority for further steps to improve the water quality. These sensor values are continuously uploaded into cloud using Wi-Fi module. The water quality test carried out in the samples collected from various parts of the Coimbatore district.

Index Terms— IOT ,IFTT, MQTT, ESP8266

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

WOMEN AND CHILD SAFETY SYSTEM USING RASPBERRY PI

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ABSTRACT

Children and women are facing many security problems nowadays. So in such cases they feel handicap and need help to protect them. Hence there must be a system which can protect them in such difficult situation. This paper suggests a new technology for a women safety with one touch system using GSM & GPS so that women never feel helpless while facing such social problems or challenges. Here we introduce a device which ensures the protection of women. The problems we have overcome here using RASPBERRY Pi 3 model B, RASPBERRY Pi CAMERA, GSM, GPS, PULSE SENSOR, BUZZER and PUSH BUTTON. Anytime when women or child sense danger, then they can press the button or with help of pulse sensor on the device. In such case GPS tracks the location of the women or child and RASPBERRY Pi CAMERA captures the accuse image then sends emergency message using GSM to saved contacts & police control room.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060301*

A Comprehensive Review of MOSFET Device Scaling Challenges

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Article Information

Received	:	30 Jan 2023
Revised	:	12 Feb 2023
Accepted	:	28 Feb 2023
Published	:	10 Mar 2023

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Abstract— the problems with downscaling MOS devices are briefly discussed in this study. Scaling problems like gate oxide tunneling, high electric field, power supply and threshold voltage scaling, hot carrier degradation, random doping fluctuation, parasitic resistance and capacitance, and short channel effect should be thoroughly understood in order to maintain improvement in device density. To maintain the high-density pace, the microelectronics industry may need to move away from conventional MOSFET-based standards and toward those based on molecular nanostructure devices.

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Citation: M.Durairaj, R.Dinesh Kumar, K.S.Senthil Kumar, S.Dhivya Bharathi, V.Sharanya, T.Sathish. "A Comprehensive view of MOSFET Device Scaling Challenges", Journal of Science, Computing and Engineering Research, 6(3), 01-03, 2023.

I. INTRODUCTION

SCALING of CMOS technology has been a fundamental element of the semiconductor industry's current advancement in silicon-based devices. Since a few decades ago, Moore's Law has provided straightforward guidelines for transistor design in order to maximize circuit density and speed. More complex functionality is made possible by the enhanced circuit performance and density since more transistors may be put onto a single chip. However, it turns out that the historical growth, doubling circuit density, and improved performance predicted by Moore's Law cannot be sustained merely by the conventional scaling hypothesis as device scaling continues into the twenty-first century. Further threshold voltage decrease is not possible with increasing leakage current, which in turn prevents supply voltage scaling for speed increase. Leakage currents get worse and device reliability gets poorer when more electric fields are created inside the transistor. Additionally, the necessary high channel doping creates substantial difficulties such mobility deterioration and threshold voltage variations caused by random dopants [1].

1. SIGNIFICANT DOWNSCALING ISSUES IN MOS DEVICES

In order to achieve improved device performances, MOSFET-based CMOS technology must overcome difficulties, namely those related to low power consumption and high ON-state current. The MOS transistor's size is reduced to produce the increased performance. The size of MOSFETs is decreasing from the submicron to the nano scale range. However, the dramatic dimension reduction raises issues that have not yet been resolved and may not always be compatible with device performance.

2. THRESHOLD VOLTAGE AND POWER SUPPLY

To maintain the electric field and active power within bounds, the MOSFET channel down-scaling typically involves a corresponding reduction in supply voltage. The threshold voltage, however, cannot be significantly reduced. This is owing to the fact that a sizeable amount of the total power dissipation in high performance CMOS products is passive power (caused by transistor off-state leakage). Leakage current through the device is the main cause of the power consumption in this condition. In order to prevent a sharp spike in IOFF, VT scaling has therefore slowed down. In order to generate a big drive current, the gate overdrive (VDD - VT) must be considerable, which slows down VDD scaling and increases active power density [3].

3. HIGH ELECTRIC FIELDS

As stated previously, the supply voltage cannot be decreased proportionally to the length of the channel, hence scaling will increase the electric field strength across the gate oxide. Higher vertical electric fields in the MOSFET channel reduce carrier mobilities, which, in the worst-case scenario, can lead to barrier failure and increased leakage currents that can damage the device.

But as transistor device length is continuously reduced that is of SCEs [10-13]. High-K dielectric material is having the capacity of better gate controllability which further makes it as a best gifted device for the low power applications. HfO2 provide large amount of drain current (ID) and it is chosen for dropping the substrate bias effect.

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AGRICULTURAL PRODUCT PRICE AND CROP CULTIVATION PREDICTION BASED ON DATA SCIENCE TECHNIQUE

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ABSTRACT

Among worldwide, agriculture has the major responsibility for improving the economic contribution of the nation. However, still the most agricultural fields are under developed due to the lack of deployment of ecosystem control technologies. Due to these problems, the crop production is not improved which affects the agriculture economy. Hence a development of agricultural productivity is enhanced based on the plant yield prediction. To prevent this problem, Agricultural sectors have to predict the crop from given dataset using machine learning techniques. The analysis of dataset by supervised machine learning technique(SMLT) to capture several information's like, variable identification, uni-variate analysis, bi-variate and multi-variate analysis, missing value treatments etc. A comparative study between machine learning algorithms had been carried out in order to determine which algorithm is the most accurate in predicting the best crop. The results show that the effectiveness of the proposed machine learning algorithm technique can be compared with best accuracy with entropy calculation, precision, Recall, F1 Score, Sensitivity, Specificity and Entropy.

INTRODUCTION

Data science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data, and apply knowledge and actionable insights from data across a broad range of application domains.The term "data science" has been traced back to 1974, when Peter Naur proposed it as an alternative name for computer science. In 1996, the International Federation of Classification Societies became the first conference to specifically feature data science as a topic. However, the definition was still in flux.The term "data science" was first coined in 2008 by D.J. Patil, and Jeff Hammerbacher, the pioneer leads of data and analytics efforts at

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060319*

Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization

Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— the multipliers play a vital role in performance of any electronics system. But the major drawback is it consumes more power and area. There are numerous methods and techniques available to improve performance while reducing power and space usage. The primary goal of any algorithm for multiplying numbers is to reduce the partial product summation. The booth method is one of the most popular and successful algorithms. In this paper, we propose and implement the booth algorithms for radix 4 and radix 8. In the multiplier encoding, the partial products of the radix 4 algorithm are reduced to n/2, while the partial products of the radix 8 algorithm can be reduced to n/3. The Xilinx Vivado tool is used to produce the simulation results.

Keywords: ***Booth algorithm; Booth multiplier; encoding;***

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Citation: Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan. "Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization", Journal of Science, Computing and Engineering Research, 6(3), 96-99, 2023.

I. INTRODUCTION

HIGH performance processors are in high demand in today's industrial market. Arithmetic operations such as addition, multiplication, and subtraction are invoked in many digital circuits to improve processing speed [1-3]. The multiplier is the slowest part in the system, and its performance determines system performance. The multiplier also takes up a lot of space and has a lot of power dissipation, which affects the overall performance of the system. Multipliers are employed in a variety of applications, including digital signal processing, loss applications, artificial neural networks, machine learning, and many more [4-6].

We have several power reduction methods and multipliers to improve the multiplier's performance. Booth algorithm requires reduced processing time, less design space, and consumes extremely little power. However, the main issue is that the delay is greater. The multiplication operation consists of two major phases, which are as follows:

a. Partial products addition

b. Partial products generation

Multiplier speed can be enhanced by reducing partial products and increasing the speed of partial product summation [7-9].

We will provide optimized radix 4 and radix 8 booth methods for arithmetic operations in this research article.

II. BOOTH ALGORITHM

The booth algorithm was developed by Andrew Donald Booth in year of 1950 at Birkbeck College in Bloomsbury, London. This algorithm was an investigation of computer architecture. Using the 2's complement notation, this booth algorithm multiplies two signed binary values. This algorithm was created while conducting crystallographic research. Less additions and subtraction can be seen in the booth algorithm. The Booth multiplier is the multiplier that does calculations more quickly [10–12]. ASIC products frequently use this booth algorithm because of its small size and quick processing time.

There are three main steps in the booth algorithm:

a. Summation of partial products

b. Reduction of partial products

c. Generation of partial products

The production of partial products in the booth algorithm depends on the recoding process. The procedure makes use of the Booths recoding technique, which is based on the idea that partial products can be produced for a collection of 0s and 1s.

Recoding algorithms' primary goal is to provide effective Partial products. Usually, the Radix utilized for recoding determines whether there will be an increase in partial product [13–15]. Less power and space are provided by this recoding process.

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030204
ISSN: 2708-1079

Mobile Application to Detect Brain Tumor Using Transfer Learning

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— In this paper, Classification of Brain Tumor (BT) is a vital obligation for assessing Tumors and making a suitable treatment. There exist numerous imaging modalities that are utilized to identify tumors in the brain. Magnetic Resonance Imaging (MRI) is generally utilized for such a task because of its unrivalled quality of the image and the reality that it does not depend on ionizing radiations. The relevance of Artificial Intelligence (AI) in the form of Deep Learning (DL) in the area of medical imaging has paved the path to extraordinary developments in categorizing and detecting intricate pathological conditions, like brain tumor, cancer etc. Deep learning has demonstrated an astounding appearance, particularly in segmenting and classifying brain tumors. In this work, the AI-based classification of BT using Deep Learning Algorithms is proposed for the classifying types of brain tumors utilizing openly accessible datasets. These datasets classify BTs into (malignant and benign). The datasets comprise 696 images on T1-weighted images for testing purposes. The projected arrangement accomplishes a noteworthy performance with the finest accuracy of 99.04%. The achieved outcome signifies the capacity of the proposed algorithm for the classification of brain tumors.

Keywords: Artificial Intelligence, CNN model, Deep Learning, Image classification, Image processing, Transfer Learning

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

PUBLIC KEY INTEGRITY VERIFICATION AGAINST THIRD PARTY AUDITORS

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ABSTRACT:

The sending of distributed storage administrations has critical advantages in overseeing information for clients. Be that as it may, it likewise causes numerous security concerns, and one of them is information uprightness. Open check methods can empower a client to utilize an outsider evaluator to confirm the information honesty for the benefit of the organization, while existing open confirmation plans are defenseless examiners who may not perform confirmations clearly. In this paper we propose a third-party auditor delegated for the background verification process which is done on the part of every organization. In our project a novel way of verification introduced which implements the block chain technology. By usage of block chain each and every data about the candidate which is available in the database will remains secured. We use this technology to access the related previous data about a candidate who is going to be verified by the auditor, by providing a unique identity for the each entity involved in the verification process. After the process gets over, the auditor will update the results status into the database and then the candidate will be available to the organization for further process. By the usage of this block chain technology the background details of the persons will stored in a confidential manner.

Keywords : Block chain , Unique Key

I.INTRODUCTION

WITH cloud storage services, users outsource their data to cloud servers and access that data remotely over the Internet [1], [2]. These services provide users an effificient and flflexible way to manage their data, while users are free from heavy local storage costs [3], [4], [5]. Although users enjoy great benefifits from these services, data outsourcinghas also incurred critical security issues [6], [7], [8]. One of the most important security concerns is data integrity [9],[10]. Unlike traditional data management paradigm, where users store their data locally, users would not physically own their data once having outsourced the data to cloud servers. Therefore, users

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Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060301*

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Article Information

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3. HIGH ELECTRIC FIELDS

As stated previously, the supply voltage cannot be decreased proportionally to the length of the channel, hence scaling will increase the electric field strength across the gate oxide. Higher vertical electric fields in the MOSFET channel reduce carrier mobilities, which, in the worst-case scenario, can lead to barrier failure and increased leakage currents that can damage the device.

But as transistor device length is continuously reduced that is of SCEs [10-13]. High-K dielectric material is having the capacity of better gate controllability which further makes it as a best gifted device for the low power applications. HfO2 provide large amount of drain current (ID) and it is chosen for dropping the substrate bias effect.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

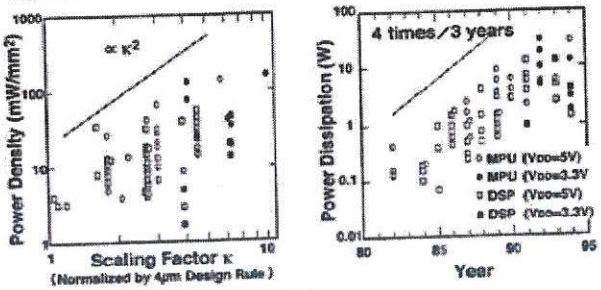


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060407*

Computer-Aided Design for skin disease Identification and Categorization Using Image Processing

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Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 09 April 2023

Abstract— One of the many significant prevalent illnesses is skin disease. Features extraction is essential for supporting the categorization of skin illnesses in skin disease detection. The skill of the physicians and the results of skin function tests are particularly dependent on the capacity to diagnose skin illness, which is a laborious process. To improve diagnosis accuracy and prevent inadequate human sources, an automated computer-aided design (CAD) for skin disease identification and categorization via photographs is required. A critical duty is identifying skin conditions from a picture. It mostly depends on the accurately measured and arranged characteristics of the illnesses. Creating usable photos is made more difficult by the same visual characteristics shared by several skin conditions. The diagnosis would be improved by formal investigation into these disorders from the picture.

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Keywords: ***Computer-based system, skin disease system, machine learning, deep learning, Artificial intelligence.***

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Citation: G.Charulatha, R.Dineskkumar, B.Kaleeswari & K.Lakshmipriya. "Computer-Aided Design for skin disease Identification and Categorization Using Image Processing", Journal of Science, Computing and Engineering Research, 6(4), 24-28, 2023.

I. INTRODUCTION

One of the major organs in the human body is the skin. It is made composed of subcutaneous, dermal, and epidermal tissues. The skin senses the environment outside and protects our inside organs and tissues from corrosion, dangerous microbes, and sunshine. The skin can be affected by a variety of internal and external factors. Skin damage can be caused by genetic abnormalities, chemical damage, viruses, the immune system, and artificial harm to the skin. Skin conditions used to have a considerable influence on wellbeing and survival. At times, people try to recover from their skin problems by using their home remedies. If not suitable for this type of skin infection, these techniques can have harmful effects. It can quickly transfer skin conditions from one character to another, so one must manage them early.

The majority of the time, dates and thematic choices made by the doctor are used to infer information regarding the patient's symptoms. The wrong choice might have detrimental effects on people's health. Therefore, it becomes essential to develop improved techniques for detecting and analysing the early signs of skin illnesses. To identify skin infections early on as time goes on, a system for skin monitoring can be developed and implemented. For a full view and sample identification of different skin conditions,149 more enhancements are offered. One component that can play a crucial role in the precise and practical identification of many skin disorders is machine learning. Disease classification may be done using the type of image that the system can identify. A prototype is qualified to comprehend the class since image type is a topic of supervised study that includes various objective instructions. Based on their categorization, several machine learning and deep learning algorithms can distinguish between and foresee particular groups of skin illnesses.

The trend of skin diseases means the abundance of paperwork, a lack of qualified dermatologists and poor distribution, and the need for modern diagnostic registries for timely and accurate diagnosis. The development of lasers and technologies based primarily on photonics has made it feasible to diagnose skin diseases quickly. However, the cost of such predictions stays limited and costly. Deep learning models are relatively good for classifying images and records. In healthcare diagnostics, accurate X-rays, magnetic resonance imaging (MRI), computed tomography (CT), and signal data such as accurate abnormal identification and error categories. Electrocardiogram (ECG), electroencephalogram (EEG), and electromyography (EMG) are the specific identification of the disease's looks that will help offer better treatment for the patients. The deep learning models can solve fundamental problems by automatically identifying input statistics skills, and in-depth knowledge of models is equivalent to a change in perceived

International Journal of Communication Networks and Information Security

ISSN: 2073-607X, 2076-0930

Volume 14 Issue 03 Year 2022 Page 176:186

Linguistic Based Emotion Detection from Live Social Media Data Classification Using Metaheuristic Deep Learning Techniques

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Article History

Received: xx xxx xxxx
Revised: xx xxx xxxx
Accepted: xx xxx xxxx

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Abstract

A crucial area of research that can reveal numerous useful insights is emotional recognition. Several visible ways, including speech, gestures, written material, and facial expressions, can be used to portray emotion. Natural language processing (NLP) and DL concepts are utilised in the content-based categorization problem that is at the core of emotion recognition in text documents.This research propose novel technique in linguistic based emotion detection by social media using metaheuristic deep learning architectures. Here the input has been collected as live social media data and processed for noise removal, smoothening and dimensionality reduction. Processed data has been extracted and classified using metaheuristic swarm regressive adversarial kernel component analysis. Experimental analysis has been carried out in terms of precision, accuracy, recall, F-1 score, RMSE and MAP for various social media dataset.

Keywords:linguistic, emotion detection, social media, metaheuristic deep learning, kernel component analysis

1. Introduction

Natural language communication has lately emerged as a new trend in a world where people have long had to modify their communication style in order to be "understood" by computers. There are a

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International Journal of
INTELLIGENT SYSTEMS AND APPLICATIONS IN ENGINEERING

ISSN:2147-6799 www.ijisae.org Original Research Paper

Wireless Sensor Network Security with the Probability Based Neighbourhood Estimation

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Submitted: 25/08/2022 **Accepted:** 24/11/2022

Abstract: Wireless Sensor Network (WSN) is considered as the ad hic network environment in the resource-limited devices for the energy, storage, bandwidth, and computation. In WSN environment security is a significant contribution for more computation and power in the nodes. Sensor node comprises of the hostile environment for the remote management of network topology. The captured node exhibits the fundamental characteristics in the security of the WSN. The security constraints in the WSN derives significant attention towards the vast range of application for traffic monitoring in the network. Another challenge in the WSN is the mobility of the sensor nodes in which nodes are located far away between the nodes each other with the one-hop neighbors. In this paper proposed a Probability Neighbourhood Estimation (PNE) model for improved security in the WSN environment. The proposed PNE mode estimates the neighborhood estimation of the node. With the computation of the threshold value in the neighboring nodes, the probability features of the nodes are computed. The performance of the proposed PNE model is comparatively examined with the existing Pworm and RTT based approach. The analysis of the results expressed that the proposed PNE model achieves the effective performance for the throughput and PDF value of 0.99 which is a significantly higher value than the 0.91 and 0.98. The analysis expressed that the proposed model~6 – 7% than the existing models..

Keywords: *Wireless Sensor Network, Probability, Neighbourhood value, threshold value*

1. Introduction

Sensor nodes are distributed in a given area for monitoring real world environmental or physical conditions such as location, pressure, temperature, motion, sound etc [1]. It is widely used by military applications. Normally the environment is hostile or disaster area. Due to the presence of malicious nodes in the sensor network, it has to face various security problems [2]. Major research issues in wireless sensor networks include energy, self-management, hardware and software issues, MAC layer issues, data collection and transmission, deployment, decentralized management, multimedia communication, synchronization and real time operations [3] Due to the fundamental characteristics of sensor nodes, security is the important and crucial issue. This study focuses on security attacks in wireless sensor networks.

Each node in the wireless sensor network contains power supply (battery), radio transceiver, analog-to-digital converter and microprocessor [4]. Each node sends data to the neighboring nodes and the neighboring nodes forward it to the next neighboring nodes and at last it reaches to the sink node. Major applications of wireless sensor networks are divided into two parts: event detection applications and data collection applications [5]. Sensor nodes are deployed in the field. When any event occurs, the information is routed to the base station or sink node [6]. User can access base station through internet or satellite. Security is effective parameter in the resource constraint environment based on the fundamental operation. The vulnerability of the WSN subjected to the different attacks such as wormhole, sinkhole, blackhole, selective forwarding, sybil and so on [7].

Among the different security model, the wormhole is challenging in the network with the consideration of the gateway model [8]. The gateway model comprises of the different attack parameters that are very difficult to handle without the implementation of the cryptographic process in the network. The malicious node attack computes the location traffic in the network based on the consideration of the different locations those are distributed in the routing process [9]. Recently, the wormhole network is considered as the more challenging to the WSN environment for the network security. This paper presented a probability-based neighbourhood estimation model in the network. The developed model PNE is estimated the neighbourhood estimation of the WSN variables for the prevention of the security in the network.

2. Related Works

In [10] developed a distance vector routing algorithm for the computation of the periodic node transmission in the routing table

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International Journal of
INTELLIGENT SYSTEMS AND APPLICATIONS IN ENGINEERING

ISSN:2147-6799 www.ijisae.org Original Research Paper

Energy Efficient Weighted Probability Model Integrated Cloud-IoT Network to Increase Lifetime of the Network with Layered Architecture

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Submitted: 26/08/2022 **Accepted:** 24/11/2022

Abstract: IoT-based wireless communication technology is an emerging technology involved in the provision of advanced communication for ubiquitous services. The drastic development of sensor devices leads to the effective realization of IoT technology based on the sensor environment. The IoT uses the cloud platform to process and manage a vast range of data. The integration of the cloud in the IoT platform leads to the acquisition of data, parallel processing, and dynamic resources. The implementation of the cloud in the IoT platform is subjected to a vast range of energy utilization. Hence, it is necessary to develop an appropriate scheme for secure communication in the IoT cloud environment. This paper proposed an LSTM-based cloud server IoT model for energy reduction in the IoT environment with the weighted probability estimation features. The proposed model is termed as the LSTMwpm for the estimation of the features in the IoT environment. Based on the computation of the energy level of the nodes the data transmission path is computed. Upon the estimated data transmission path the messages are transferred with the CH layer and base layer. The simulation analysis expressed that the proposed LSTMwpm model exhibits a higher alive node count of 1000 and a reduced dead node count. The estimated a number of a message transmitted in the layer expressed that base layer exhibits the value of 1000 messages in the network.

Keywords: *Internet of Things (IoT), Weighted Probability, Base layer, CH layer, Cloud Server, LSTM*

1. Introduction

Cloud computing technology comprises connected cloud servers to provide Information technology (IT) services by means of network devices, and servers [1]. The cloud computing platform uses the data center for the computation circumstance for the Quality of Service (QoS). The energy cost is higher for the cloud server for the cloud system with the higher performance with the Service Level Agreements (SLA) between the server and cloud for effective energy utilization [2]. The framework comprises accurate innovation with the implementation of the IoT system. The environment server demand storage, control, security, and time for the prerequisite clients. With the IoT with cloud environment to the development of various smart devices, actuators, and sensors that are capable of sensing ubiquitous data in real time [4]. Moreover, these small-sized, battery-powered, and internet-enabled devices have the ability to transmit data from remote locations in a matter of milliseconds with high efficacy [5]. Even though hardware and software specifications of these IoT devices vary from one another, but the overall objective of data acquisition, and transmission is analogous.

IoT has been a keen area of research over the past few years due to its high effectivity in provisioning time-sensitive results[6]. Moreover, the abrupt adoption of IoT in industrial organizations has made a global buzz about this innovative technology. As predicted by Cisco, number of IoT devices are expected to cross 50 billion by the year 2020 [7]. In fact, according to a survey report, more than 86% of industrial sectors around the world have been equipped with IoT technology, out of which 84% have depicted significant enhancements in delivering user-specific services [8]. As a result, over the past few years IoT technology has been considered as a pivotal area of modern era's research. Even though numerous definitions have been presented by researchers around the world.

The revolutionizing technology of cloud computing is around from sometimes. The world has transformed towards developing software for millions of users to consume-as-aservice rather than to purchase and execute on individual computers [9]. Extending from providing real-time computing power to online storage facility, cloud computing has been a pivotal division of research for researchers, and innovators. Moreover, with a well-established networking infrastructure representing cloud, both business organizations and individual users are able to access resources, platforms, and applications from anywhere in seamless manner. This paper proposed a LSTM based weighted probability model for the estimation of the energy level in the path of the network. The developed LSTMwpm estimates the distance between the nodes and perform the data transmission with the reduced energy consumption with the increased lifetime of the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060316*

Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 19 Mar 2023

Abstract— This study describes the development of a Field Programmable Gate Array (FPGA)-based Orthogonal Frequency Division Multiplexing (WOFDM) transceiver (FPGA).Utilizing VHDL and XILINX ISE, a Wavelet transform-based Orthogonal Frequency Division Multiplexing (WOFDM) Transceiver Model is created. In order to test a wavelet transform-based orthogonal frequency division multiplexing (WOFDM) transceiver utilising Modelsim, random data was created using a linear-feedback shift register (LFSR).

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Keywords: ***Wavelet transform, Orthogonal Frequency Division Multiplexing, VLSI, VHDL, FPGA, and LFSR***

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Citation: G.Charulatha, Kurtideepa Bhol, B.Kaleeswari, K.Lakshmi Priya, B.Sundari, M.Angeline Flashy. "Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA", Journal of Science, Computing and Engineering Research, 6(3), 81-83, 2023.

I. INTRODUCTION

OFDM is based on the idea of orthogonality. Orthogonality means that it creates orthogonal sub-carriers, avoiding cross-channel contact and eliminating the need for inter-carrier guard bands [1]. The Fast Fourier Transform technique is used in practise to create and detect OFDM signals [2]. Orthogonal frequency division multiplexing is more complicated than Fast Fourier Transformation (FFT) since it requires specialised hardware [3]. Existing wireless communication methods are based on Fourier transform mathematical concepts.The Fourier transform decomposes a signal into elementary waveforms called sines and cosines. The basic functions of the wavelet transform are time compact, but the Fourier sine and cosine functions are not [4].Wavelet transform basis functions are temporal and frequency localized and provide varied resolutions [5].Wavelet basis functions provide adaptability and flexibility that can be adjusted to meet the needs of wireless communication systems. More frequency resources are required in future wireless communication networks for improved communication. Wavelet transform-based systems can manage the interference between adjacent subcarriers in a variety of ways [6] [7].

II. IMPLEMENTATION OF DISCRETE WAVELET TRANSFORM (DWT) OFDM SYSTEM

TRANSFORMS (DWT) OFDM system was modeled with VHDL and built with FPGA. Below is a short description of the model.

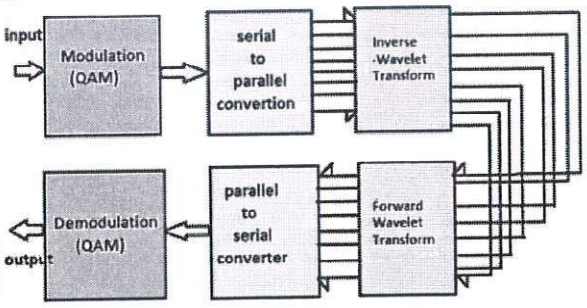


Figure 1 DISCRETE WAVELET

The configuration for a DWT OFDM transmitter and receiver is shown in Fig. 1. A lossless and reversible transform is the discrete wavelet transform. The forward and inverse wavelets transform equations are listed below.

A. Forward Discrete Wavelet transform

$$y(2n+1) = x(2n+1) - \left\lfloor \frac{x(2n) + x(2n+2)}{2} \right\rfloor \quad (1)$$

$$y(2n) = x(2n) + \left\lfloor \frac{y(2n-1) + y(2n+1) + 2}{4} \right\rfloor \quad (2)$$

B. Inverse Discrete Wavelet Transform:

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Journal of Survey in Fisheries Sciences 10(2S) 1454-1458 2023

Unmasking unbalanced network traffic by intruders based on Machine-learning Algorithms.

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Abstract

Obtrusion unmasking involves identifying and detecting malicious or anomalous network activity. Imbalanced network traffic refers to a scenario where the ratio of normal to abnormal traffic is significantly skewed, with one type of traffic significantly outweighing the other. Machine learning and deep learningtechniques can be used to analyze network traffic and identify patterns and characteristics that may indicate the presence of obtrusions or anomalies. These techniques can be applied to various types of network data, including packets, flows, and logs, and can be trained on large datasets to improve their accuracy and effectiveness. For the purpose of predicting the intrusion in imbalance network traffic, this research employs a variety of categorization techniques. The classification algorithms are Random Forest, Support Vector Machine, convolution neural network, and principal component analysis. The dataset, which included several meteorological parameters, was obtained via the UCI repo. With a testing data ratio of 70:30. Based on precision, accuracy, recall, f1-score, and execution time, the efficacy of the classification algorithms was assessed.

Keywords—Machine learning, Deep learning, Principal component analysis, Convolutional neural network, Random Forest.

I. INTRODUCTION

Obtrusion unmasking in imbalanced network traffic refers to the process of detecting and identifying malicious or anomalous activity within a network environment where the distribution of normal and abnormal traffic is unbalanced. This can be a challenging task, as traditional machine learning algorithms are often designed to perform well on balanced datasets and may struggle to accurately classify anomalous traffic in an imbalanced setting. To overcome this issue, advanced ML and deep learning techniques can be utilized to analyze network traffic and identify patterns and characteristics that may indicate the presence of obtrusions or anomalies. These techniques can be applied to various types of network data, including packets, flows, and logs, and can bc trained on large datasets to improve their accuracy and effectiveness. The use of ML and DL techniques for obtrusion unmasking in imbalanced network traffic can play a critical role in improving the security and reliability of networks by detecting and mitigating the impact of malicious activity and other types of anomalous behavior. This can be especially important in today's interconnected world, where networks are constantly under attack and the risk of cyber threats is constantly evolving. When employing machine learning and deep learning techniques to perform obtrusion unmasking in unbalanced network traffic, a number of difficulties may occur. These difficulties include:

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060407*

Computer-Aided Design for skin disease Identification and Categorization Using Image Processing

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 09 April 2023

Abstract— One of the many significant prevalent illnesses is skin disease. Features extraction is essential for supporting the categorization of skin illnesses in skin disease detection. The skill of the physicians and the results of skin function tests are particularly dependent on the capacity to diagnose skin illness, which is a laborious process. To improve diagnosis accuracy and prevent inadequate human sources, an automated computer-aided design (CAD) for skin disease identification and categorization via photographs is required. A critical duty is identifying skin conditions from a picture. It mostly depends on the accurately measured and arranged characteristics of the illnesses. Creating usable photos is made more difficult by the same visual characteristics shared by several skin conditions. The diagnosis would be improved by formal investigation into these disorders from the picture.

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Keywords: ***Computer-based system, skin disease system, machine learning, deep learning, Artificial intelligence.***

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Citation: G.Charulatha, R.Dineskkumar, B.Kaleeswari & K.Lakshmipriya. "Computer-Aided Design for skin disease Identification and Categorization Using Image Processing", Journal of Science, Computing and Engineering Research, 6(4), 24-28, 2023.

I. INTRODUCTION

One of the major organs in the human body is the skin. It is made composed of subcutaneous, dermal, and epidermal tissues. The skin senses the environment outside and protects our inside organs and tissues from corrosion, dangerous microbes, and sunshine. The skin can be affected by a variety of internal and external factors. Skin damage can be caused by genetic abnormalities, chemical damage, viruses, the immune system, and artificial harm to the skin. Skin conditions used to have a considerable influence on wellbeing and survival. At times, people try to recover from their skin problems by using their home remedies. If not suitable for this type of skin infection, these techniques can have harmful effects. It can quickly transfer skin conditions from one character to another, so one must manage them early.

The majority of the time, dates and thematic choices made by the doctor are used to infer information regarding the patient's symptoms. The wrong choice might have detrimental effects on people's health. Therefore, it becomes essential to develop improved techniques for detecting and analysing the early signs of skin illnesses. To identify skin infections early on as time goes on, a system for skin monitoring can be developed and implemented. For a full view and sample identification of different skin conditions, more enhancements are offered. One component that can play a crucial role in the precise and practical identification of many skin disorders is machine learning. Disease classification may be done using the type of image that the system can identify. A prototype is qualified to comprehend the class since image type is a topic of supervised study that includes various objective instructions. Based on their categorization, several machine learning and deep learning algorithms can distinguish between and foresee particular groups of skin illnesses.

The trend of skin diseases means the abundance of paperwork, a lack of qualified dermatologists and poor distribution, and the need for modern diagnostic registries for timely and accurate diagnosis. The development of lasers and technologies based primarily on photonics has made it feasible to diagnose skin diseases quickly. However, the cost of such predictions stays limited and costly. Deep learning models are relatively good for classifying images and records. In healthcare diagnostics, accurate X-rays, magnetic resonance imaging (MRI), computed tomography (CT), and signal data such as accurate abnormal identification and error categories. Electrocardiogram (ECG), electroencephalogram (EEG), and electromyography (EMG) are the specific identification of the disease's looks that will help offer better treatment for the patients. The deep learning models can solve fundamental problems by automatically identifying input statistics skills, and in-depth knowledge of models is equivalent to a change in perceived

Computer Systems Science & Engineering
DOI: 10.32604/csse.2023.031605
Article

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Logistic Regression with Elliptical Curve Cryptography to Establish Secure IoT

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Received: 22 April 2022; Accepted: 08 June 2022

Abstract: Nowadays, Wireless Sensor Network (WSN) is a modern technology with a wide range of applications and greatly attractive benefits, for example, self-governing, low expenditure on execution and data communication, long-term function, and unsupervised access to the network. The Internet of Things (IoT) is an attractive, exciting paradigm. By applying communication technologies in sensors and supervising features, WSNs have initiated communication between the IoT devices. Though IoT offers access to the highest amount of information collected through WSNs, it leads to privacy management problems. Hence, this paper provides a Logistic Regression machine learning with the Elliptical Curve Cryptography technique (LRECC) to establish a secure IoT structure for preventing, detecting, and mitigating threats. This approach uses the Elliptical Curve Cryptography (ECC) algorithm to generate and distribute security keys. ECC algorithm is a light weight key; thus, it minimizes the routing overhead. Furthermore, the Logistic Regression machine learning technique selects the transmitter based on intelligent results. The main application of this approach is smart cities. This approach provides continuing reliable routing paths with small overheads. In addition, route nodes cooperate with IoT, and it handles the resources proficiently and minimizes the 29.95% delay.

Keywords: Wireless sensor network; internet of things; security; elliptical curve cryptography; machine learning; regression analysis

1 Introduction

WSN is the leading technology necessary for the execution of the IoT structure. IoT's operational ability and energy established the network communication, cost-effectiveness, dependability, stability, and dynamic function [1]. IoT is talented naturally from the internet. The things associated with the internet differ significantly in terms of characteristics. IoT is promising as a dynamic cyber-physical network that

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030204

JSCER
ISSN: 2708-1079

Mobile Application to Detect Brain Tumor Using Transfer Learning

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— In this paper, Classification of Brain Tumor (BT) is a vital obligation for assessing Tumors and making a suitable treatment. There exist numerous imaging modalities that are utilized to identify tumors in the brain. Magnetic Resonance Imaging (MRI) is generally utilized for such a task because of its unrivalled quality of the image and the reality that it does not depend on ionizing radiations. The relevance of Artificial Intelligence (AI) in the form of Deep Learning (DL) in the area of medical imaging has paved the path to extraordinary developments in categorizing and detecting intricate pathological conditions, like brain tumor, cancer etc. Deep learning has demonstrated an astounding appearance, particularly in segmenting and classifying brain tumors. In this work, the AI-based classification of BT using Deep Learning Algorithms is proposed for the classifying types of brain tumors utilizing openly accessible datasets. These datasets classify BTs into (malignant and benign). The datasets comprise 696 images on T1-weighted images for testing purposes. The projected arrangement accomplishes a noteworthy performance with the finest accuracy of 99.04%. The achieved outcome signifies the capacity of the proposed algorithm for the classification of brain tumors.

Keywords: Artificial Intelligence, CNN model, Deep Learning, Image classification, Image processing, Transfer Learning

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Citation: Dr.G.Charulatha and C.Bharath Balaji. "Mobile Application to Detect Brain Tumor Using Transfer Learning", Journal of Science, Computing and Engineering Research, 3(2), 247-252, 2022.

I. INTRODUCTION

Brain cancer (tumor) can be characterized as abnormal and unrestrained development in the synapses. As the individual head is an inflexible and volume constrained, any startling development in the brain may influence a human capacity; besides, it might bulge into various body parts and influence individual capacities (DeAngelis, 2001). As indicated by the WHO, in its cancer report Brain Tumor (BT) represents less than 2% of cancers in humans; nevertheless, serious austerity and difficulties are reported (Stewart & Wild, 2014). United Kingdom's cancer research corporation referenced that there are around five thousand two hundred causalities reported every year due to brain diseases and tumors within the skull in the United Kingdom (Brain, other CNS and intracranial tumors statistics | Cancer Research UK. (n.d.), 2020).

BTs are arranged under two significant heads; The one that is developed within the brain, termed as a primary brain tumor corresponds to 70% of all BTs and the other tumors that swells into the brain from some other body parts, called secondary brain tumors form the residual 30%, with majority belonging to malignant type (Tandel et al., 2019). The tumor area, its type as well as where it is situated in the brain decides the type of treatment required. As a rule, surgery of the brain is deemed as the way of handling tumors (American Brain Tumor Association, Chicago, I.L., U.S.A., 2015). Most frequently occurring brain tumors are of Glioma types that incorporate approximately 30% of all BTs, attack Central Nervous System, and around 80% of these are harmful BTs (Gooden Berger).

Amid various clinical advances, MRI gives data about the location and tumor size. Its working depends upon the activity of protons contained in an enormous magnetic field, by maneuvering radiofrequency waves and reclamation of their stable state (Pereira et al., 2016) To decisively separate delicate tissues with high precision MRI technology is quite proficient and is increasingly responsive to change in tissue solidity,requisite for pathological consultation. The MRI images are classified into T1-weighted (T1-w) that are frequently utilized in non-invasive brain investigations. Since they portray high contrast and less fragments, they are referred for anatomy purposes. Whereas, T2-weighted (T2-w) are significant MRI slices that are reasonable for perceiving the boundary structures of the medical images (Zimny et al., 2015). The major downside of the T2-weighted pact is that tumors in the brain, cerebrospinal fluid (CSF), and Gray Matter (GM) bind together. Pathologically, the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060316*

Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA

G.Charulatha, Kurtideepa Bhol, B.Kaleeswari, K.Lakshmi Priya, B.Sundari, M.Angeline Flashy

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 19 Mar 2023

Abstract— This study describes the development of a Field Programmable Gate Array (FPGA)-based Orthogonal Frequency Division Multiplexing (WOFDM) transceiver (FPGA).Utilizing VHDL and XILINX ISE, a Wavelet transform-based Orthogonal Frequency Division Multiplexing (WOFDM) Transceiver Model is created. In order to test a wavelet transform-based orthogonal frequency division multiplexing (WOFDM) transceiver utilising Modelsim, random data was created using a linear-feedback shift register (LFSR).

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Keywords: ***Wavelet transform, Orthogonal Frequency Division Multiplexing, VLSI, VHDL, FPGA, and LFSR***

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Citation: G.Charulatha, Kurtideepa Bhol, B.Kaleeswari, K.Lakshmi Priya, B.Sundari, M.Angeline Flashy. "Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA", Journal of Science, Computing and Engineering Research, 6(3), 81-83, 2023.

I. INTRODUCTION

OFDM is based on the idea of orthogonality. Orthogonality means that it creates orthogonal sub-carriers, avoiding cross-channel contact and eliminating the need for inter-carrier guard bands [1]. The Fast Fourier Transform technique is used in practise to create and detect OFDM signals [2]. Orthogonal frequency division multiplexing is more complicated than Fast Fourier Transformation (FFT) since it requires specialised hardware [3]. Existing wireless communication methods are based on Fourier transform mathematical concepts.The Fourier transform decomposes a signal into elementary waveforms called sines and cosines. The basic functions of the wavelet transform are time compact, but the Fourier sine and cosine functions are not [4].Wavelet transform basis functions are temporal and frequency localized and provide varied resolutions [5].Wavelet basis functions provide adaptability and flexibility that can be adjusted to meet the needs of wireless communication systems. More frequency resources are required in future wireless communication networks for improved communication. Wavelet transform-based systems can manage the interference between adjacent subcarriers in a variety of ways [6] [7].

II. IMPLEMENTATION OF DISCRETE WAVELET TRANSFORM (DWT) OFDM SYSTEM

TRANSFORMS (DWT) OFDM system was modeled with VHDL and built with FPGA. Below is a short description of the model.

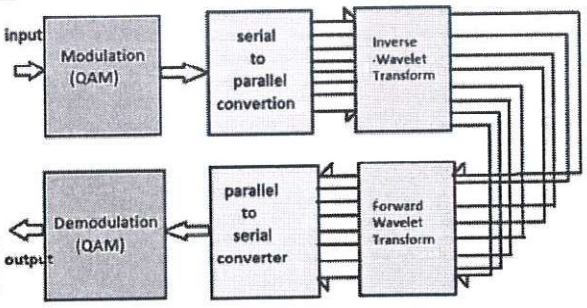


Figure 1 DISCRETE WAVELET

The configuration for a DWT OFDM transmitter and receiver is shown in Fig. 1. A lossless and reversible transform is the discrete wavelet transform. The forward and inverse wavelets transform equations are listed below.

A. Forward Discrete Wavelet transform

$$y(2n+1) = x(2n+1) - \left\lfloor \frac{x(2n) + x(2n+2)}{2} \right\rfloor \quad (1)$$

$$y(2n) = x(2n) + \left\lfloor \frac{y(2n-1) + y(2n+1) + 2}{4} \right\rfloor \quad (2)$$

B. Inverse Discrete Wavelet Transform:

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

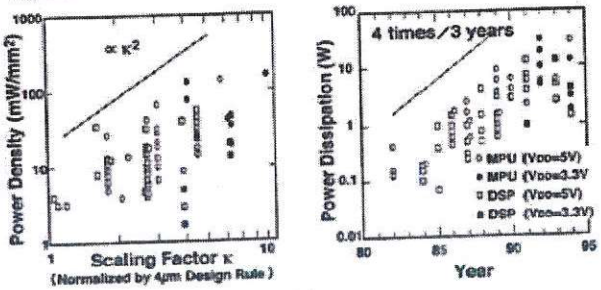


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060407*

Computer-Aided Design for skin disease Identification and Categorization Using Image Processing

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	09 April 2023

Abstract— One of the many significant prevalent illnesses is skin disease. Features extraction is essential for supporting the categorization of skin illnesses in skin disease detection. The skill of the physicians and the results of skin function tests are particularly dependent on the capacity to diagnose skin illness, which is a laborious process. To improve diagnosis accuracy and prevent inadequate human sources, an automated computer-aided design (CAD) for skin disease identification and categorization via photographs is required. A critical duty is identifying skin conditions from a picture. It mostly depends on the accurately measured and arranged characteristics of the illnesses. Creating usable photos is made more difficult by the same visual characteristics shared by several skin conditions. The diagnosis would be improved by formal investigation into these disorders from the picture.

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Keywords: ***Computer-based system, skin disease system, machine learning, deep learning, Artificial intelligence.***

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Citation: G.Charulatha, R.Dineskkumar, B.Kaleeswari & K.Lakshmipriya. "Computer-Aided Design for skin disease Identification and Categorization Using Image Processing", Journal of Science, Computing and Engineering Research, 6(4), 24-28, 2023.

I. INTRODUCTION

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The majority of the time, dates and thematic choices made by the doctor are used to infer information regarding the patient's symptoms. The wrong choice might have detrimental effects on people's health. Therefore, it becomes essential to develop improved techniques for detecting and analysing the early signs of skin illnesses. To identify skin infections early on as time goes on, a system for skin monitoring can be developed and implemented. For a full view and sample identification of different skin conditions, more enhancements are offered. One component that can play a crucial role in the precise and practical identification of many skin disorders is machine learning. Disease classification may be done using the type of image that the system can identify. A prototype is qualified to comprehend the class since image type is a topic of supervised study that includes various objective instructions. Based on their categorization, several machine learning and deep learning algorithms can distinguish between and foresee particular groups of skin illnesses.

The trend of skin diseases means the abundance of paperwork, a lack of qualified dermatologists and poor distribution, and the need for modern diagnostic registries for timely and accurate diagnosis. The development of lasers and technologies based primarily on photonics has made it feasible to diagnose skin diseases quickly. However, the cost of such predictions stays limited and costly. Deep learning models are relatively good for classifying images and records. In healthcare diagnostics, accurate X-rays, magnetic resonance imaging (MRI), computed tomography (CT), and signal data such as accurate abnormal identification and error categories. Electrocardiogram (ECG), electroencephalogram (EEG), and electromyography (EMG) are the specific identification of the disease's looks that will help offer better treatment for the patients. The deep learning models can solve fundamental problems by automatically identifying input statistics skills, and in-depth knowledge of models is equivalent to a change in perceived

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030205
JSCER
ISSN: 2708-1079

Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— This paper discusses about the analysis and detection of brain tumor and Alzheimer's disease. A digital MRI scan is used for this purpose. Medical image processing and analysis tasks are complex and diverse at the technical level. There is an array of technologies including reconstruction, enhancement, restoration, classification, detection, segmentation and registration that are combined with multiple image modalities and numerous applications are formed and should be addressed. AI-based tools are developed to support the assessment of disease severity and recently there are tools for assessing treatment and predicting treatment success. Finally, numerous studies in fields like clinical neuroscience have shown that AI-based image evaluation can identify complex imaging patterns that are not perceptible with visual radiologic evaluation.

Keywords: Alzheimers disease, MRI, Feature Extraction, Breast Digital Image, Partioning, Image Processin.

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Citation: M.Renuga and Abirami K. "Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques", Journal of Science, Computing and Engineering Research, 3(2), 253-255, 2022.

I. INTRODUCTION

The brain is the most important organ in our body, which controls the rest of our organs. Brain pathologies have been classified as the second cause of human death in the world, if people have not discovered them early and had the appropriate therapy in time. Computer vision has many applications which make human life much easier and safer. In the medical images field, image processing techniques and machine learning approach aim at facilitating medical diagnosis.

Analysis and evaluation of all MRI images which helps to decide whether it contains brain pathology or not is a time-consuming process. Computer Aided Diagnosis (CAD) of medical images makes early detection of brain pathology faster than the human specialist and is very helpful for them. Brain medical images can be taken by Magnetic Resonance Imaging (MRI), X-ray Computed Tomography (CT), and Positron Emission Tomography (PET) scan. While the MRI and CT expose the structure of the body and the location of the tumor, PET scan reveals body functions like oxygen level and blood supply.

The work presented in this proposal will focus on the MRI image. The MRI is a preferred brain scan image technique due to high resolution and safety. Magnetic Resonance Imaging (MRI) scan is safe for patient and is a painless, non-invasive test that produces high accuracy images of brain and brain stem. It can create two-dimensional (2D), or three-dimensional (3D) scan of the brain. It doesn't need many preparations; instead, it needs just removing all metal staff from the patient body due to the strong magnetic field that will the patient be exposed to. The brain tumor is abnormal growth of unwanted dead cells on the brain that causes confusion to other cells' functionality. Early detection and fast diagnosis of the tumor may help and save the life of the patient.

Alzheimer's disease (AD) is a common form of dementia. It causes memory loss, cognitive decline, and other disabilities that interfere with daily activities. Like other types of dementia, Alzheimer's is caused by dead cells on the brain. With the passage of time, the brain will shrink dramatically affecting approximately all its functions. Unfortunately, there's no therapy for the AD.

However, symptomatic treatments have helped in maintaining mental functions. In the next section, the literature review has been described. After that, the methodology will be explained. Afterwards, an overview of the system, bag of features and segmentation of tumor, results and discussion as well as references will be presented.

A. ALS –MRI Scan Image

An image is an array or a matrix of square pixels (picture elements) arranged in columns and rows. An image (from

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

AUTOMATION OF LEVEL CROSSING SYSTEM USING ARDUINO UNO

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ABSTRACT

The objective of this project is to control the railway accident due to carelessness of manual operation. So, we design an Automatic control of railroad crossing system using Arduino UNO (Microcontroller), Ultrasonic sensor, Speaker, LED, Buzzer and Servo motor, in order to control the gate. We design the project for dual line level crossings. i.e., the train can arrive either in forward or reverse direction on any of the tracks, the sensor detects and sends the control signal to the microcontroller by which, the opening and closing operation of the gates are being controlled. The sensors are designed to monitor the activity 24/7. If any malfunction occurs, it is sensed by the feedback loop and we can fix the problem successfully. The Sensors, Speaker, LED, Buzzer are implemented on basis of the calculated range to alert the approaching of train.

Keywords— Arduino UNO, Ultrasonic sensors, Servomotors, Speaker, LED's, Buzzer, GSM Module.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060316*

Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA

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Article Information

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Citation: G.Charulatha, Kurtideepa Bhol, B.Kaleeswari, K.Lakshmi Priya, B.Sundari, M.Angeline Flashy. "Implementation of Orthogonal Frequency Division Multiplexing based on Discrete Wavelet Transforms in FPGA", Journal of Science, Computing and Engineering Research, 6(3), 81-83, 2023.

I. INTRODUCTION

OFDM is based on the idea of orthogonality. Orthogonality means that it creates orthogonal sub-carriers, avoiding cross-channel contact and eliminating the need for inter-carrier guard bands [1]. The Fast Fourier Transform technique is used in practise to create and detect OFDM signals [2]. Orthogonal frequency division multiplexing is more complicated than Fast Fourier Transformation (FFT) since it requires specialised hardware [3]. Existing wireless communication methods are based on Fourier transform mathematical concepts.The Fourier transform decomposes a signal into elementary waveforms called sines and cosines. The basic functions of the wavelet transform are time compact, but the Fourier sine and cosine functions are not [4].Wavelet transform basis functions are temporal and frequency localized and provide varied resolutions [5].Wavelet basis functions provide adaptability and flexibility that can be adjusted to meet the needs of wireless communication systems. More frequency resources are required in future wireless communication networks for improved communication. Wavelet transform-based systems can manage the interference between adjacent subcarriers in a variety of ways [6] [7].

II. IMPLEMENTATION OF DISCRETE WAVELET TRANSFORM (DWT) OFDM SYSTEM

TRANSFORMS (DWT) OFDM system was modeled with VHDL and built with FPGA. Below is a short description of the model.

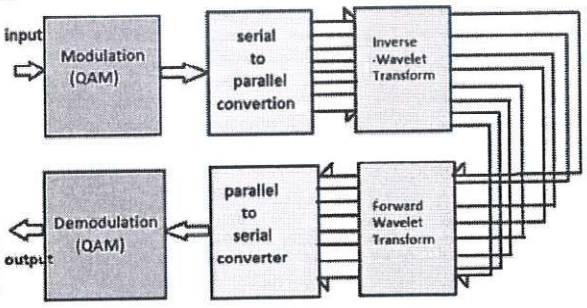


Figure 1 DISCRETE WAVELET

The configuration for a DWT OFDM transmitter and receiver is shown in Fig. 1. A lossless and reversible transform is the discrete wavelet transform. The forward and inverse wavelets transform equations are listed below.

A. Forward Discrete Wavelet transform

$$y(2n+1) = x(2n+1) - \left\lfloor \frac{x(2n) + x(2n+2)}{2} \right\rfloor \quad (1)$$

$$y(2n) = x(2n) + \left\lfloor \frac{y(2n-1) + y(2n+1) + 2}{4} \right\rfloor \quad (2)$$

B. Inverse Discrete Wavelet Transform:

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060319*

Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— the multipliers play a vital role in performance of any electronics system. But the major drawback is it consumes more power and area. There are numerous methods and techniques available to improve performance while reducing power and space usage. The primary goal of any algorithm for multiplying numbers is to reduce the partial product summation. The booth method is one of the most popular and successful algorithms. In this paper, we propose and implement the booth algorithms for radix 4 and radix 8. In the multiplier encoding, the partial products of the radix 4 algorithm are reduced to n/2, while the partial products of the radix 8 algorithm can be reduced to n/3. The Xilinx Vivado tool is used to produce the simulation results.

Keywords: ***Booth algorithm; Booth multiplier; encoding;***

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Citation: Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan. "Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization", Journal of Science, Computing and Engineering Research, 6(3), 96-99, 2023.

I. INTRODUCTION

HIGH performance processors are in high demand in today's industrial market. Arithmetic operations such as addition, multiplication, and subtraction are invoked in many digital circuits to improve processing speed [1-3]. The multiplier is the slowest part in the system, and its performance determines system performance. The multiplier also takes up a lot of space and has a lot of power dissipation, which affects the overall performance of the system. Multipliers are employed in a variety of applications, including digital signal processing, loss applications, artificial neural networks, machine learning, and many more [4-6].

We have several power reduction methods and multipliers to improve the multiplier's performance. Booth algorithm requires reduced processing time, less design space, and consumes extremely little power. However, the main issue is that the delay is greater. The multiplication operation consists of two major phases, which are as follows:

a. Partial products addition

b. Partial products generation

Multiplier speed can be enhanced by reducing partial products and increasing the speed of partial product summation [7-9].

We will provide optimized radix 4 and radix 8 booth methods for arithmetic operations in this research article.

II. BOOTH ALGORITHM

The booth algorithm was developed by Andrew Donald Booth in year of 1950 at Birkbeck College in Bloomsbury, London. This algorithm was an investigation of computer architecture. Using the 2's complement notation, this booth algorithm multiplies two signed binary values. This algorithm was created while conducting crystallographic research. Less additions and subtraction can be seen in the booth algorithm. The Booth multiplier is the multiplier that does calculations more quickly [10–12]. ASIC products frequently use this booth algorithm because of its small size and quick processing time.

There are three main steps in the booth algorithm:

a. Summation of partial products

b. Reduction of partial products

c. Generation of partial products

The production of partial products in the booth algorithm depends on the recoding process. The procedure makes use of the Booths recoding technique, which is based on the idea that partial products can be produced for a collection of 0s and 1s.

Recoding algorithms' primary goal is to provide effective Partial products. Usually, the Radix utilized for recoding determines whether there will be an increase in partial product [13–15]. Less power and space are provided by this recoding process.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604014*

Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 12 April 2023

Abstract— The present paper has introduced an innovative, efficient and real-time cost beneficial technique that enables users to hear the contents of text images instead of reading through them. It combines the concept of Optical Character Recognition (OCR) and Text to Speech Synthesizer (TTS) using a webcam. The major problem faced by visually impaired people these days is that they are unable to do text recognition on their own, which forces them to depend on others for their day to day activities such as reading newspapers, letters sent through post, referring books etc. The ultimate aim of the project is to help the visually impaired people to recognize the text. When a printed text is shown in front of the webcam it has to capture the image, extract the text from the image and should read out the text either through computer audio or headphones. Text-to-Speech (TTS) is the ability of a computer to produce spoken words by converting text to voice. In other words Text-to-Speech software is a speech synthesizer that vocalizes text in real time in a natural way. This paper describes the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module.

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Keywords: ***OCR, TTS, Speech, webcam, voices.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired", Journal of Science, Computing and Engineering Research, 6(4), 68-73, 2023.

I. INTRODUCTION

Languages are the oldest way of communication between human beings whether they are in spoken or written forms. In the recent era, visual text in natural or manmade scenes might carry very important and useful information. Therefore, the scientists have started to digitize these images, extract and interpret the data by using specific techniques, and then perform text-to-speech synthesis (TTS). It is done in order to read the information aloud for the benefit and ease of the user.

Text extraction and TTS can be utilized together to help people with reading disabilities and visual impairment to listen to written information by a computer system. Optical character recognition is employed to recognize and extract the words and finally the extracted text is converted to appropriate speech using text-to-speech synthesizer. The proposed algorithm is tested on images representing different scenes ranging from documents to natural scenes. Promising results have been reported which prove the accuracy and robustness of the proposed algorithm and encourage its practical implementation in real world scenarios. This project has represented the innovative idea as well as a low cost technique that is used to hear the contents of the text image without reading them. It combines the concept of OCR and TTS. This system is used to help the blind people to interact with computers effectively through a vocal interface.

OCR is defined as the electronic or mechanical conversion of handwritten script or printed text images into machine-encoded text. A character recognizer would recognize the segmented characters one by one. This technique is referred to as "segmentation-based" OCR. Optical Character Recognition emanates from technologies involving telegraphy and creating reading devices for the blind.

An OCR system is made up of both hardware and software. The service aims to analyze a physical document's content and convert the elements into a script that can subsequently be utilized for processing data. For example, consider postal and mail sorting services. OCR is critical to their capacity to rapidly process source and return addresses so that correspondence may be sorted more efficiently. Optical character recognition has been applied to a number of applications. In other words, OCR systems transform a two-dimensional image of text, that could contain machine printed or handwritten text from its image representation into machine-readable text. OCR as a process generally consists of several sub-processes to perform as accurately as possible.

IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SMART STRETCHER AND INTEGRATED MEDICAL INTELLIGENCE SYSTEMS FOR UNCONSCIOUS PERSON

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Abstract— India is one of the most populous countries of the world. Due to over population, ignorance of health have been remained the major problems in India. For every one minute a death swoops in because of unpredictable and unexpected accidents. To save a life is auspicious as well as precious. The idea here is to provide an intelligent smart health system using some sensors and micro controllers which are implemented in stretcher. The aim of this system is to save many human lives by preparing intensive care unit in hospital, as their physical parameters are updated to hospital before their arrival to hospital.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

WOMEN AND CHILD SAFETY SYSTEM USING RASPBERRY PI

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ABSTRACT

Children and women are facing many security problems nowadays. So in such cases they feel handicap and need help to protect them. Hence there must be a system which can protect them in such difficult situation. This paper suggests a new technology for a women safety with one touch system using GSM & GPS so that women never feel helpless while facing such social problems or challenges. Here we introduce a device which ensures the protection of women. The problems we have overcome here using RASPBERRY Pi 3 model B, RASPBERRY Pi CAMERA, GSM, GPS, PULSE SENSOR, BUZZER and PUSH BUTTON. Anytime when women or child sense danger, then they can press the button or with help of pulse sensor on the device. In such case GPS tracks the location of the women or child and RASPBERRY Pi CAMERA captures the accuse image then sends emergency message using GSM to saved contacts & police control room.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 4, July –August 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030401*

Design Analysis of Intelligent Intelligent Private Agro Provincial Report System For Trading Using ICT's

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Article Information

Received : 14 June 2022
Revised : 29 June 2022
Accepted : 24 July 2022
Published : 07 August 2022

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Abstract— The project (PRIVATE AGRO PROVINCIAL REPORT SYSTEM) is a to-day basis by both Admin and supplier of shop. The purpose of developing this Website is to organize the process of selling products of farmers to all. The work of farmers can be reduced. The buyers can buy products at provincial ICT centers. The farmers/Customer users can gain access provincial selling ICT centers for instant gratification for their products One of the best ideas to start experimenting your hands on digital marketing is Customer Satisfaction for a Digital Marketing Agency. Marketing agencies might use different digital marketing strategies to drive sales. Farmers usually are more satisfied when they get instant gratification for their products It provides a platform to the trader to automate their record keeping. The sales management is developed for the sales / purchase organization.. Provincial system is to help farmers by providing all kinds agriculture related information in the for selling their products. Intelligent Private Agro Provincial Report System For Trading Using ICT'sis farmer management website application which helps farmers to give best practice for selling the farming products. It helps. farmers to improve their productivity and profitability. It enables farmers to sell their productions through online/ICT centers.

Keywords: ***Agro, Agriculture, Digital, Profitability.***

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Citation: B.Kaleeswari, S.Dhivyabharathi. "Design Analysis of Intelligent Intelligent Private Agro Provincial Report System For Trading Using ICT's, "Journal of Science, Computing and Engineering Research, 3(4), 01-07, July- August 2022.

I. INTRODUCTION

Provincial system is to help farmers by providing all kinds agriculture related information in the website for selling their products. Intelligent Private Agro Provincial Report System For Trading Using ICT'sis farmer management website application which helps farmers to give best practice for selling the farming products. It helps farmers to improve their productivity and profitability. It enables farmers to sell their productions through online/ICT centers. Farmers can manage their crops and farms better if they can communicate their experiences, both positive and negative, with each other and with experts. Digital agriculture using internet communication technology (ICT) may facilitate the sharing of experiences between farmers themselves and with experts and others interested in agriculture. ICT approaches in agriculture are, however, still out of the reach of many farmers. The reasons are lack of connectivity, missing capacity building and poor usability of ICT applications. We decided to tackle this problem through cost-effective, easy to use ICT approaches, based on infrastructure and services currently available to small-scale producers in developing areas.

An agricultural information system can be defined as a system, in which agricultural information is generated, transformed, transferred, consolidated, received and fed back in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Roling, 1988). Accordingly, an agricultural information system consists of components (subsystems), information related processes (generation, transformation, storage, retrieval, integration, diffusion and utilization), system mechanisms (interfaces and networks) and system operations (control and management). Agricultural information is considered as an essential input to agricultural education, research and development and extension activities. Different kinds of information are required by different kinds of users for different purposes. The potential users of agricultural information include government decision-makers, policy-makers, planners, researchers, teachers and students, program managers, field workers and farmers (Zaman, 2002). Figure 1 gives an illustration of the flow of agricultural information

II. PROPOSED SYSTEM

It will be very effective and Farmers usually are more satisfied when they get instant gratification for their products and selling more easily. Therefore, this ICT centers for agro-products will help the users to make use of resource as ICT centers. It will also be useful to the visitors to understand the trading ICT centers ideology of selling. This is a user friendly and understandable website, which can be used easily by all groups of age people. In this paper, we

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 4, July –August 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030401*

Smart Coastline Alert System Using RSSI

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Article Information

Received : 24 July 2022
Revised : 02 August 2022
Accepted : 15August 2022
Published : 22 August 2022

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Abstract— Countries with the International Maritime Boundary Line (IMBL) will always have security problems and continuous life threats for those fishermen whose family's main economic support is fishing. Even in peninsular countries like India have their boundary limit in the ocean, the people of these coastal regions have the main work of fishing, due to carelessness or without knowing their boundary limit of their country they cross the borders. In such a situation the lives of fishermen continue to be difficult. They may face bullets and attacks from the opposite Navy, at the end of attack fishermen are being abducted and their boats are being captured. So, our paper is designed to avoid such kinds of accidents and to alert the fishermen about the border area well before using the latest technology of Received Signal Strength Indicator (RSSI)

Keywords: ***Attacks, boundary, IMBL, RSSI.***

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Citation: S.Dhivyabharathi, B.Kaleeswari. "Smart Coastline Alert System Using RSSI, "Journal of Science, Computing and Engineering Research, 3(4), 08-11, July- August 2022.

I. INTRODUCTION

The people's livelihood in coastal areas purely depends on fishing occupation in the sea. Crossing the border is being treated as a serious offense. Due to lack of unawareness about the coastline boundary limit, the fisherman unknowingly cross the border. Once they cross the border, they are arrested or killed by the relevant navy and they are being abducted and their boats are being captured by the neighboring country's coastal guards. Under such a situation the lives of fishermen continue to be in danger. Thus becoming one of the major issues to fishermen and the economy. To eliminate such difficulties, we have developed a system which saves the lives of the fishermen.

II. RELATED WORKS

In this Section we have studied few papers which show that GPS about the boundary alert system and RSSI concepts.

In this paper, they presented a border alert system using GPRS and RFID. The RFID uses the tag for different locations and they are connected to raspberry pi. The GPRS (General Packet Radio Service) is a packet-switching technology that enables data transfers through cellular networks. This system has two modules. First module is used for authentication of Guard Station using RFID and Second module used for coastal border alert system using GPRS. The proposed system provides life security to the fishermen and also enables the fishing community to serve as a surveillance unit.

Design and Implementation of Low-Cost Maritime Boundary Identification System using Fiber Optic Technology. R Sathya, R Iswarya, V Revathi, R Sathyapriya, Year: 2021. In this paper they proposed a method of fiber optics technology for the border alert system. A laser emits light in a very narrow path. Lasers has high spectral density and emits bright colored lights. Thus laser are used for long distance communication and it is useful of optical communication links.

IOT Based Fisherman Border Alert System using ZIGBEE. Michael Raj S, Lakshmi Sri Devi, Sathish Sridhar, C S Maheshwari, 2018.In this paper, they proposed a ZigBee based border alert system. In this model, the GPS antenna gets the signal from the satellite and the signal stored in the GPS unit is sent to the PIC microcontroller that stores and retrieves the information to the tracking unit ZigBee. Signal coverage is increases by GPS Antenna. Using GPS the signals from this is one reason for the cross-border atrocities.

III. PROPOSED SYSTEM

This is one of the reasons for cross border cruelty. They are being abducted and their boats are being captured. Sometimes, it results in loss of lives also. Major problems are border line measurement manually and communication with the navy.

Main focus of the proposed approach is to Identify the boundaries and alert the fishermen as well as track the range of the boat. In this system, RSSI is used to track the boat location at any time. In this system, RSSI is used to track the boat location at any time. The system also helps identify the boats in the sea zone wise from Harbor or Control room.

In our proposed system, border identification is done using RSSI and an APR Voice system is provided to alert the fishermen. In addition, wireless communication is used to track the location between the boat and control room. Applications include reducing the speed of the engine automatically when it reaches the danger zone.

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030204
ISSN: 2708-1079

Mobile Application to Detect Brain Tumor Using Transfer Learning

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— In this paper, Classification of Brain Tumor (BT) is a vital obligation for assessing Tumors and making a suitable treatment. There exist numerous imaging modalities that are utilized to identify tumors in the brain. Magnetic Resonance Imaging (MRI) is generally utilized for such a task because of its unrivalled quality of the image and the reality that it does not depend on ionizing radiations. The relevance of Artificial Intelligence (AI) in the form of Deep Learning (DL) in the area of medical imaging has paved the path to extraordinary developments in categorizing and detecting intricate pathological conditions, like brain tumor, cancer etc. Deep learning has demonstrated an astounding appearance, particularly in segmenting and classifying brain tumors. In this work, the AI-based classification of BT using Deep Learning Algorithms is proposed for the classifying types of brain tumors utilizing openly accessible datasets. These datasets classify BTs into (malignant and benign). The datasets comprise 696 images on T1-weighted images for testing purposes. The projected arrangement accomplishes a noteworthy performance with the finest accuracy of 99.04%. The achieved outcome signifies the capacity of the proposed algorithm for the classification of brain tumors.

Keywords: Artificial Intelligence, CNN model, Deep Learning, Image classification, Image processing, Transfer Learning

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Citation: Dr.G.Charulatha and C.Bharath Balaji. "Mobile Application to Detect Brain Tumor Using Transfer Learning", Journal of Science, Computing and Engineering Research, 3(2), 247-252, 2022.

I. INTRODUCTION

Brain cancer (tumor) can be characterized as abnormal and unrestrained development in the synapses. As the individual head is an inflexible and volume constrained, any startling development in the brain may influence a human capacity; besides, it might bulge into various body parts and influence individual capacities (DeAngelis, 2001). As indicated by the WHO, in its cancer report Brain Tumor (BT) represents less than 2% of cancers in humans; nevertheless, serious austerity and difficulties are reported (Stewart & Wild, 2014). United Kingdom's cancer research corporation referenced that there are around five thousand two hundred causalities reported every year due to brain diseases and tumors within the skull in the United Kingdom (Brain, other CNS and intracranial tumors statistics | Cancer Research UK. (n.d.), 2020).

BTs are arranged under two significant heads; The one that is developed within the brain, termed as a primary brain tumor corresponds to 70% of all BTs and the other tumors that swells into the brain from some other body parts, called secondary brain tumors form the residual 30%, with majority belonging to malignant type (Tandel et al., 2019). The tumor area, its type as well as where it is situated in the brain decides the type of treatment required. As a rule, surgery of the brain is deemed as the way of handling tumors (American Brain Tumor Association, Chicago, I.L., U.S.A., 2015). Most frequently occurring brain tumors are of Glioma types that incorporate approximately 30% of all BTs, attack Central Nervous System, and around 80% of these are harmful BTs (Gooden Berger).

Amid various clinical advances, MRI gives data about the location and tumor size. Its working depends upon the activity of protons contained in an enormous magnetic field, by maneuvering radiofrequency waves and reclamation of their stable state (Pereira et al., 2016) To decisively separate delicate tissues with high precision MRI technology is quite proficient and is increasingly responsive to change in tissue solidity,requisite for pathological consultation. The MRI images are classified into T1-weighted (T1-w) that are frequently utilized in non-invasive brain investigations. Since they portray high contrast and less fragments, they are referred for anatomy purposes. Whereas, T2-weighted (T2-w) are significant MRI slices that are reasonable for perceiving the boundary structures of the medical images (Zimny et al., 2015). The major downside of the T2-weighted pact is that tumors in the brain, cerebrospinal fluid (CSF), and Gray Matter (GM) bind together. Pathologically, the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060301*

A Comprehensive Review of MOSFET Device Scaling Challenges

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Article Information

Received	:	30 Jan 2023
Revised	:	12 Feb 2023
Accepted	:	28 Feb 2023
Published	:	10 Mar 2023

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Abstract— the problems with downscaling MOS devices are briefly discussed in this study. Scaling problems like gate oxide tunneling, high electric field, power supply and threshold voltage scaling, hot carrier degradation, random doping fluctuation, parasitic resistance and capacitance, and short channel effect should be thoroughly understood in order to maintain improvement in device density. To maintain the high-density pace, the microelectronics industry may need to move away from conventional MOSFET-based standards and toward those based on molecular nanostructure devices.

Keywords: *Scaling, Threshold Voltage, Short channel effect, Nanoelectronics, Tunneling,.*

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Citation: M.Durairaj, R.Dinesh Kumar, K.S.Senthil Kumar, S.Dhivya Bharathi, V.Sharanya, T.Sathish. "A Comprehensive view of MOSFET Device Scaling Challenges", Journal of Science, Computing and Engineering Research, 6(3), 01-03, 2023.

I. INTRODUCTION

SCALING of CMOS technology has been a fundamental element of the semiconductor industry's current advancement in silicon-based devices. Since a few decades ago, Moore's Law has provided straightforward guidelines for transistor design in order to maximize circuit density and speed. More complex functionality is made possible by the enhanced circuit performance and density since more transistors may be put onto a single chip. However, it turns out that the historical growth, doubling circuit density, and improved performance predicted by Moore's Law cannot be sustained merely by the conventional scaling hypothesis as device scaling continues into the twenty-first century. Further threshold voltage decrease is not possible with increasing leakage current, which in turn prevents supply voltage scaling for speed increase. Leakage currents get worse and device reliability gets poorer when more electric fields are created inside the transistor. Additionally, the necessary high channel doping creates substantial difficulties such mobility deterioration and threshold voltage variations caused by random dopants [1].

1. SIGNIFICANT DOWNSCALING ISSUES IN MOS DEVICES

In order to achieve improved device performances, MOSFET-based CMOS technology must overcome difficulties, namely those related to low power consumption and high ON-state current. The MOS transistor's size is reduced to produce the increased performance. The size of MOSFETs is decreasing from the submicron to the nano scale range. However, the dramatic dimension reduction raises issues that have not yet been resolved and may not always be compatible with device performance.

2. THRESHOLD VOLTAGE AND POWER SUPPLY

To maintain the electric field and active power within bounds, the MOSFET channel down-scaling typically involves a corresponding reduction in supply voltage. The threshold voltage, however, cannot be significantly reduced. This is owing to the fact that a sizeable amount of the total power dissipation in high performance CMOS products is passive power (caused by transistor off-state leakage). Leakage current through the device is the main cause of the power consumption in this condition. In order to prevent a sharp spike in IOFF, VT scaling has therefore slowed down. In order to generate a big drive current, the gate overdrive (VDD - VT) must be considerable, which slows down VDD scaling and increases active power density [3].

3. HIGH ELECTRIC FIELDS

As stated previously, the supply voltage cannot be decreased proportionally to the length of the channel, hence scaling will increase the electric field strength across the gate oxide. Higher vertical electric fields in the MOSFET channel reduce carrier mobilities, which, in the worst-case scenario, can lead to barrier failure and increased leakage currents that can damage the device.

But as transistor device length is continuously reduced that is of SCEs [10-13]. High-K dielectric material is having the capacity of better gate controllability which further makes it as a best gifted device for the low power applications. HfO2 provide large amount of drain current (ID) and it is chosen for dropping the substrate bias effect.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060319*

Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— the multipliers play a vital role in performance of any electronics system. But the major drawback is it consumes more power and area. There are numerous methods and techniques available to improve performance while reducing power and space usage. The primary goal of any algorithm for multiplying numbers is to reduce the partial product summation. The booth method is one of the most popular and successful algorithms. In this paper, we propose and implement the booth algorithms for radix 4 and radix 8. In the multiplier encoding, the partial products of the radix 4 algorithm are reduced to n/2, while the partial products of the radix 8 algorithm can be reduced to n/3. The Xilinx Vivado tool is used to produce the simulation results.

Keywords: ***Booth algorithm; Booth multiplier; encoding;***

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Citation: Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan. "Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization", Journal of Science, Computing and Engineering Research, 6(3), 96-99, 2023.

I. INTRODUCTION

HIGH performance processors are in high demand in today's industrial market. Arithmetic operations such as addition, multiplication, and subtraction are invoked in many digital circuits to improve processing speed [1-3]. The multiplier is the slowest part in the system, and its performance determines system performance. The multiplier also takes up a lot of space and has a lot of power dissipation, which affects the overall performance of the system. Multipliers are employed in a variety of applications, including digital signal processing, loss applications, artificial neural networks, machine learning, and many more [4-6].

We have several power reduction methods and multipliers to improve the multiplier's performance. Booth algorithm requires reduced processing time, less design space, and consumes extremely little power. However, the main issue is that the delay is greater. The multiplication operation consists of two major phases, which are as follows:

a. Partial products addition

b. Partial products generation

Multiplier speed can be enhanced by reducing partial products and increasing the speed of partial product summation [7-9].

We will provide optimized radix 4 and radix 8 booth methods for arithmetic operations in this research article.

II. BOOTH ALGORITHM

The booth algorithm was developed by Andrew Donald Booth in year of 1950 at Birkbeck College in Bloomsbury, London. This algorithm was an investigation of computer architecture. Using the 2's complement notation, this booth algorithm multiplies two signed binary values. This algorithm was created while conducting crystallographic research. Less additions and subtraction can be seen in the booth algorithm. The Booth multiplier is the multiplier that does calculations more quickly [10–12]. ASIC products frequently use this booth algorithm because of its small size and quick processing time.

There are three main steps in the booth algorithm:

a. Summation of partial products

b. Reduction of partial products

c. Generation of partial products

The production of partial products in the booth algorithm depends on the recoding process. The procedure makes use of the Booths recoding technique, which is based on the idea that partial products can be produced for a collection of 0s and 1s.

Recoding algorithms' primary goal is to provide effective Partial products. Usually, the Radix utilized for recoding determines whether there will be an increase in partial product [13–15]. Less power and space are provided by this recoding process.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

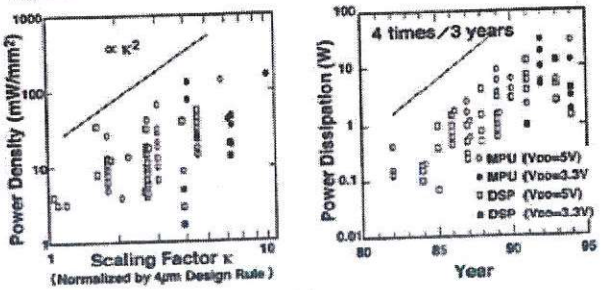


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 2, Mar - April 2022.
DOI: https://doi.org/10.46379/jscer.2022.030205
JSCER
ISSN: 2708-1079

Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques

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Article Information

Received : March 10 2022
Revised : April 11 2022
Accepted : April 20 2022
Published : April 28 2022

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Abstract— This paper discusses about the analysis and detection of brain tumor and Alzheimer's disease. A digital MRI scan is used for this purpose. Medical image processing and analysis tasks are complex and diverse at the technical level. There is an array of technologies including reconstruction, enhancement, restoration, classification, detection, segmentation and registration that are combined with multiple image modalities and numerous applications are formed and should be addressed. AI-based tools are developed to support the assessment of disease severity and recently there are tools for assessing treatment and predicting treatment success. Finally, numerous studies in fields like clinical neuroscience have shown that AI-based image evaluation can identify complex imaging patterns that are not perceptible with visual radiologic evaluation.

Keywords: Alzheimers disease, MRI, Feature Extraction, Breast Digital Image, Partioning, Image Processin.

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Citation: M.Renuga and Abirami K. "Analysis of Neuro-Imaging and Prediction of Alzheimer's Syndrome and Brian Tumor using Machine Learning Techniques", Journal of Science, Computing and Engineering Research, 3(2), 253-255, 2022.

I. INTRODUCTION

The brain is the most important organ in our body, which controls the rest of our organs. Brain pathologies have been classified as the second cause of human death in the world, if people have not discovered them early and had the appropriate therapy in time. Computer vision has many applications which make human life much easier and safer. In the medical images field, image processing techniques and machine learning approach aim at facilitating medical diagnosis.

Analysis and evaluation of all MRI images which helps to decide whether it contains brain pathology or not is a time-consuming process. Computer Aided Diagnosis (CAD) of medical images makes early detection of brain pathology faster than the human specialist and is very helpful for them. Brain medical images can be taken by Magnetic Resonance Imaging (MRI), X-ray Computed Tomography (CT), and Positron Emission Tomography (PET) scan. While the MRI and CT expose the structure of the body and the location of the tumor, PET scan reveals body functions like oxygen level and blood supply.

The work presented in this proposal will focus on the MRI image. The MRI is a preferred brain scan image technique due to high resolution and safety. Magnetic Resonance Imaging (MRI) scan is safe for patient and is a painless, non-invasive test that produces high accuracy images of brain and brain stem. It can create two-dimensional (2D), or three-dimensional (3D) scan of the brain. It doesn't need many preparations; instead, it needs just removing all metal staff from the patient body due to the strong magnetic field that will the patient be exposed to. The brain tumor is abnormal growth of unwanted dead cells on the brain that causes confusion to other cells' functionality. Early detection and fast diagnosis of the tumor may help and save the life of the patient.

Alzheimer's disease (AD) is a common form of dementia. It causes memory loss, cognitive decline, and other disabilities that interfere with daily activities. Like other types of dementia, Alzheimer's is caused by dead cells on the brain. With the passage of time, the brain will shrink dramatically affecting approximately all its functions. Unfortunately, there's no therapy for the AD.

However, symptomatic treatments have helped in maintaining mental functions. In the next section, the literature review has been described. After that, the methodology will be explained. Afterwards, an overview of the system, bag of features and segmentation of tumor, results and discussion as well as references will be presented.

A. ALS –MRI Scan Image

An image is an array or a matrix of square pixels (picture elements) arranged in columns and rows. An image (from

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060301*

A Comprehensive Review of MOSFET Device Scaling Challenges

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Article Information

Received	:	30 Jan 2023
Revised	:	12 Feb 2023
Accepted	:	28 Feb 2023
Published	:	10 Mar 2023

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Abstract— the problems with downscaling MOS devices are briefly discussed in this study. Scaling problems like gate oxide tunneling, high electric field, power supply and threshold voltage scaling, hot carrier degradation, random doping fluctuation, parasitic resistance and capacitance, and short channel effect should be thoroughly understood in order to maintain improvement in device density. To maintain the high-density pace, the microelectronics industry may need to move away from conventional MOSFET-based standards and toward those based on molecular nanostructure devices.

Keywords: *Scaling, Threshold Voltage, Short channel effect, Nanoelectronics, Tunneling,.*

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Citation: M.Durairaj, R.Dinesh Kumar, K.S.Senthil Kumar, S.Dhivya Bharathi, V.Sharanya, T.Sathish. "A Comprehensive view of MOSFET Device Scaling Challenges", Journal of Science, Computing and Engineering Research, 6(3), 01-03, 2023.

I. INTRODUCTION

SCALING of CMOS technology has been a fundamental element of the semiconductor industry's current advancement in silicon-based devices. Since a few decades ago, Moore's Law has provided straightforward guidelines for transistor design in order to maximize circuit density and speed. More complex functionality is made possible by the enhanced circuit performance and density since more transistors may be put onto a single chip. However, it turns out that the historical growth, doubling circuit density, and improved performance predicted by Moore's Law cannot be sustained merely by the conventional scaling hypothesis as device scaling continues into the twenty-first century. Further threshold voltage decrease is not possible with increasing leakage current, which in turn prevents supply voltage scaling for speed increase. Leakage currents get worse and device reliability gets poorer when more electric fields are created inside the transistor. Additionally, the necessary high channel doping creates substantial difficulties such mobility deterioration and threshold voltage variations caused by random dopants [1].

1. SIGNIFICANT DOWNSCALING ISSUES IN MOS DEVICES

In order to achieve improved device performances, MOSFET-based CMOS technology must overcome difficulties, namely those related to low power consumption and high ON-state current. The MOS transistor's size is reduced to produce the increased performance. The size of MOSFETs is decreasing from the submicron to the nano scale range. However, the dramatic dimension reduction raises issues that have not yet been resolved and may not always be compatible with device performance.

2. THRESHOLD VOLTAGE AND POWER SUPPLY

To maintain the electric field and active power within bounds, the MOSFET channel down-scaling typically involves a corresponding reduction in supply voltage. The threshold voltage, however, cannot be significantly reduced. This is owing to the fact that a sizeable amount of the total power dissipation in high performance CMOS products is passive power (caused by transistor off-state leakage). Leakage current through the device is the main cause of the power consumption in this condition. In order to prevent a sharp spike in IOFF, VT scaling has therefore slowed down. In order to generate a big drive current, the gate overdrive (VDD - VT) must be considerable, which slows down VDD scaling and increases active power density [3].

3. HIGH ELECTRIC FIELDS

As stated previously, the supply voltage cannot be decreased proportionally to the length of the channel, hence scaling will increase the electric field strength across the gate oxide. Higher vertical electric fields in the MOSFET channel reduce carrier mobilities, which, in the worst-case scenario, can lead to barrier failure and increased leakage currents that can damage the device.

But as transistor device length is continuously reduced that is of SCEs [10-13]. High-K dielectric material is having the capacity of better gate controllability which further makes it as a best gifted device for the low power applications. HfO2 provide large amount of drain current (ID) and it is chosen for dropping the substrate bias effect.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060319*

Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— the multipliers play a vital role in performance of any electronics system. But the major drawback is it consumes more power and area. There are numerous methods and techniques available to improve performance while reducing power and space usage. The primary goal of any algorithm for multiplying numbers is to reduce the partial product summation. The booth method is one of the most popular and successful algorithms. In this paper, we propose and implement the booth algorithms for radix 4 and radix 8. In the multiplier encoding, the partial products of the radix 4 algorithm are reduced to n/2, while the partial products of the radix 8 algorithm can be reduced to n/3. The Xilinx Vivado tool is used to produce the simulation results.

Keywords: ***Booth algorithm; Booth multiplier; encoding;***

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Citation: Krutideepa Bhol, M.Durairaj, L.Saravanan, B.Kaleeswari, M.Renuga, K.Kannadasan. "Optimization of the Radix 4 and Radix 8 Booth Algorithms and Their FPGA Realization", Journal of Science, Computing and Engineering Research, 6(3), 96-99, 2023.

I. INTRODUCTION

HIGH performance processors are in high demand in today's industrial market. Arithmetic operations such as addition, multiplication, and subtraction are invoked in many digital circuits to improve processing speed [1-3]. The multiplier is the slowest part in the system, and its performance determines system performance. The multiplier also takes up a lot of space and has a lot of power dissipation, which affects the overall performance of the system. Multipliers are employed in a variety of applications, including digital signal processing, loss applications, artificial neural networks, machine learning, and many more [4-6].

We have several power reduction methods and multipliers to improve the multiplier's performance. Booth algorithm requires reduced processing time, less design space, and consumes extremely little power. However, the main issue is that the delay is greater. The multiplication operation consists of two major phases, which are as follows:

a. Partial products addition

b. Partial products generation

Multiplier speed can be enhanced by reducing partial products and increasing the speed of partial product summation [7-9].

We will provide optimized radix 4 and radix 8 booth methods for arithmetic operations in this research article.

II. BOOTH ALGORITHM

The booth algorithm was developed by Andrew Donald Booth in year of 1950 at Birkbeck College in Bloomsbury, London. This algorithm was an investigation of computer architecture. Using the 2's complement notation, this booth algorithm multiplies two signed binary values. This algorithm was created while conducting crystallographic research. Less additions and subtraction can be seen in the booth algorithm. The Booth multiplier is the multiplier that does calculations more quickly [10–12]. ASIC products frequently use this booth algorithm because of its small size and quick processing time.

There are three main steps in the booth algorithm:

a. Summation of partial products

b. Reduction of partial products

c. Generation of partial products

The production of partial products in the booth algorithm depends on the recoding process. The procedure makes use of the Booths recoding technique, which is based on the idea that partial products can be produced for a collection of 0s and 1s.

Recoding algorithms' primary goal is to provide effective Partial products. Usually, the Radix utilized for recoding determines whether there will be an increase in partial product [13–15]. Less power and space are provided by this recoding process.

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ISSN (Online): 2583-7052

International Journal of Advanced Trends in Engineering and Management (IJATEM)
Vol. 2 (08), August 2023, pp. 12-22

Article Title: PV Fed SEPIC Converter for Grid Tied System with Ultra Capacitor

PV Fed SEPIC Converter for Grid Tied System with Ultra Capacitor

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ABSTRACT

Recent years have seen a rise in the popularity of photovoltaic (PV) energy as a next-generation energy source that can combat both global warming and the energy fatigue brought on by rising energy demand. Due to their environmental friendliness and economical operation, renewable energy sources including photovoltaic (PV) energy are popular for home and commercial uses. This paper suggests a grid-tied system with an ultra-capacitor that uses a PV fed Sepic converter. Through a SEPIC converter, the solar system delivers voltage to the inverter. To regulate the converter by current and the DC by voltage, an energy management strategy is given. Super capacitor is attached to the bidirectional converter's output. According to many quick charge/discharge cycles, supercapacitor are used in place of long-term compact energy storage. The single phase grid is linked to the LC filter. It links to the PWM and PI controller via the sepic converter. The findings show that the suggested strategy performs better with increased efficiency and less harmonics. DSPIC30F4011 controller is used in the hardware development.

Keywords: Renewable energy sources, photovoltaic (PV) energy, Sepic converter, LC filter, Bidirectional converter.

1 Introduction

One of the cleanest forms of energy is solar energy, since it is pollution-free and favourable to the environment. India, a tropical nation, has a lot of potential to deploy technology to harvest this energy [1]. Switched reluctance motor (SRM) drives are becoming more and more

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

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Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

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Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 23 Mar 2023

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Abstract— An asymmetrical three state switching step up converter combining the benefits of magnetic coupling and voltage multiplier techniques is presented in this paper. The derivation procedure for the proposed topology is depicted. The new converter can achieve very high voltage gain and very low voltage stress on the power devices without high turn ratio and extreme duty cycles. Thus, the low voltage rated MOSFETs with low resistance can be selected to reduce the switching losses and cost. Moreover, the usage of voltage multiplier technique not only raises the voltage gain but also offers lossless passive clamp performance, so the voltage spikes across the main switches are alleviated and the leakage-inductor energy of the coupled-inductors can be recycled; Also, the interleaved structure is employed in the input side, which not only reduces the current stress through each power switch, but also constrains the input current ripple. In addition, the reverse-recovery problem of the diodes is alleviated, and the efficiency can be further improved. The operating principles and the steady-state analysis of the presented converter are discussed in detail. Finally, a prototype circuit with 400W nominal rating is implemented in the laboratory to verify the performance of the proposed converter.

Keywords: ***Three state switching, high gain, step up converter, magnetic coupling voltage multiplier.***

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Citation: S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa, Mr.A.Antonycharles. "Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion", Journal of Science, Computing and Engineering Research, 6(3), 107-111, 2023.

I. INTRODUCTION

The high step-up voltage gain dc-dc converters are widely used as an interface between the available low voltage sources and the output loads which are operated at much higher voltage of such applications include high intensity discharge lamp for automotives, DC back-up energy systems for uninterruptible power supplies (UPS), fuel-cell energy-conversion systems, photovoltaic generation systems, telecom back-up facilities, electric vehicles and fuel cell vehicles in above industrial applications, the high step-up dc-dc converters can be non-isolated but they should be operated at high efficiency while taking high currents from low-voltage dc sources at their inputs. Generally, the classical step up is a popular choice for non-isolated applications because of a simple structure and a continuous input current. However, it will be operated at extreme duty cycle, and the rectifier diode must sustain a short pulse current with high amplitude when an extreme high-voltage gain is required. This leads to severe reverse recovery and the electromagnetic interference (EMI) problems. Moreover, the step up switch has to block a high-output voltage and hence the ON-state resistance, which varies almost proportionally with the square of blocking voltage, will be very high so that low-voltage-rated MOSFETs may not be adopted. For those reasons, it is hard for a basic step up converter to achieve both high voltage conversion ratio and high efficiency at the same time.

Some single-switch high step-up step up converters were recently presented in many literatures. From the references Use of cascade of converters is a feasible method for getting desired voltage gain. In addition, previous single-switch converters with high gain also include quadratic step up type, voltage-lift type , switched capacitor or switchedinductor type, and diode-capacitor voltage-multiplier type . Although these converters can achieve higher voltage gain than basic step up converter, the voltage gain of the converters is determined only by the duty cycle of the active switch.

Thus, these converters must cascade more power stages to obtain higher voltage gain, which will result in the complex circuit and low efficiency. Many Converters have been developed to achieve a high step-up voltage ratio without using extreme duty cycle by using tapped-inductor or coupled-inductor. However, the leakage inductor energy of the coupled inductor may cause higher voltage stress on

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

Abstract— This paper concerns the automatic smart solar radiation tracker dedicated to photovoltaic panels. The proposed tracking system ensures optimum generation of electrical power by proper orientation of PV panels while consuming minimal energy. The design criteria are based on controlling the panel's position by automatic rotation throughout two DC motors only at certain times during the day. The followed methodology uses a microcontroller algorithm to redirect the solar panels in accordance with the actual coordinates of the sun. The idea is applicable to any PV system at any geographical location as panel rotation is changed according to the tilt and azimuth angles. This leads to capturing maximum radiation at any given time. Moreover, its power consumption is low due to its working mechanism and automatic sleep mode feature while not in use. Results have proved its cost-effectiveness, energy- efficiency, simplicity, and reliability in operation under different weather conditions.

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Keywords: ***photovoltaic, solar cells, sun tracker, solar energy, tracking mechanism.***

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

I. INTRODUCTION

The fact that conventional energy sources are unsustainable, environmentally harmful, and expected to diminish within a few years, placed deploying renewable eco-friendly energy sources at the center of public interest. "Solar energy is the cleanest and most abundant renewable energy source available. Solar energy is harnessed and converted into electricity using different technologies in which photovoltaic cells are the most popular and efficient one. Nonetheless, researchers are experiencing many challenges to optimize the efficiency of photovoltaic cells. According to a report published in 2019 by Fraunhofer Institute of Solar Energy Systems ISE, the maximum efficiency reached of a mono-crystalline and multi-junction cells are 26.7% and 46% respectively.

One of the main reasons for low-efficiency values is that the energy output of the PV cell is directly proportional to the sunlight concentration. PV power plant productivity is boosted when the solar panel is mounted perpendicularly to. Due to sun continuous position changing in the skydome, this orientation can only be achieved by implementing a movable tracker that follows the sun's position. In contrast, the absorption efficiency of an immobile solar panel would be significantly less. Researchers have compared the power output of a static solar panel to a one that has a tracking system and has observed improvement in efficiency by 40% on average. Thus, the solar tracking system comes into play to maximize the reception of sunlight by automatically altering the position of the solar module according to the sun incident on the earth at any time.

The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

A single-axis mode with tilted installation of the PV panels resulted in inaccuracy and less electrical output. Likewise, manually adjustment of the tilt angle seasonally to compensate for the absence of second axis tracker, lacks practicality and accuracy. Consequently, dual-axis autonomous tracker the optimum solution. The most popular technique is using light-detecting resistor (LDR). Although methodologies may differ in controlling strategy and/or sensors number and alignment, their theory is based on the same concept. Another approach uses small-scale photovoltaic cells to act as sensors, besides the main photovoltaic panel used to generate electricity. The above-

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

High Efficiency Bridgeless Single-Power-Conversion Battery Charger for Light Electric Vehicle

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Abstract - **This paper explains the charging batteries of light electric vehicles require chargers with high efficiency and a high-power factor. To meet this need, this paper presents a bridgeless single-power-conversion battery charger composed of an isolated step-up AC-DC converter with a series resonance circuit. The bridgeless configuration reduces the conduction losses associated with the input diode rectifier, and the series-resonance circuit reduces the reverse recovery losses of the output diodes by providing zero current switching. In addition, direct and series-resonance current injection enables bidirectional core excitation by the transformer, thereby allowing high power capability. The control algorithm derived from feedback linearization is also developed, which allows the proposed charger to correct the power factor and regulate the output power in a single-stage power conversion. This simple circuit structure leads to high efficiency and a high-power factor. The theoretical concepts of the proposed charger are verified experimentally using a 1.7 kW prototype.**

Index Terms - **Full-bridge converters, input current shaping, low-distortion input current, single-stage power factor correctors (PFCs).**

INTRODUCTION

Recent years, there has been increasing interest in various eco-friendly vehicles such as electric vehicles (EVs) and plug-in hybrid EVs, which have a significant potential to reduce environmental pollution. EVs are entirely powered by propulsion batteries charged from the grid through an on-board charger, which makes such chargers a very important part of an EV. The performance of the charger is evaluated by its power-conversion efficiency and power quality (i.e., total harmonic distortion and power factor). In addition, because the charger is installed in the EV, it must be small, lightweight, and have a long lifetime. Conventional on-board chargers for EVs are based on isolated AC-DC converters with a two-stage structure consisting of a power-factor-correction (PFC) stage and a DC-DC power-conversion stage. The PFC stage, which is usually a boost converter, converts input AC voltage to DC-link voltage with a unity power factor, whereas the DC-DC power-conversion stage, which is usually an isolated high-frequency DC-DC converter, regulates the output power and provides galvanic isolation for user safety. This structure has advantages such as accepting wide input voltage, providing a high-power factor and well-regulated output power. However, the two-stage structure also has many disadvantages, such as low efficiency and circuit complexity because of its two power-processing stages. Another major drawback is a bulky intermediate dc-link capacitor that filters power fluctuations. The high current flowing through the intermediate dc-link capacitor also causes significant power loss and considerably reduces the capacitor lifetime, leading to capacitor failure.

To eliminate the PFC stage and reduce the dc-link capacitance, single-stage approach is being investigated to replace the two-stage structures. In single-stage converters with a DC-link capacitor, the PFC stage and the DC-DC stage are merged by sharing the switches. However, because the DC-link voltage is not controlled in this scheme, it can be more than twice the grid voltage, leading to requirement of high voltage rating switches which causes high switching and conduction losses. In addition, because PFC is achieved based on the operation principle of the circuit without an additional PFC controller, the power factor is affected by changes in the grid voltage or load condition. To achieve a high-power factor without a PFC stage and a DC-link capacitor, single-stage resonance converters with inherent PFC and current-fed full-bridge converters have been introduced. These converters do not require a DC-link capacitor, thereby eliminating the associated problems. Also, almost unity power factor can be achieved using the appropriate PFC-control techniques. However, these

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com.
1st online international conference on informatics, robotics, construction & communication, 2020

AN ISOLATED POWER FACTOR CORRECTED POWER SUPPLY UTILIZING THE TRANSFORMER LEAKAGE INDUCTANCE

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Abstract—The widespread use of electronic devices increases the need for compact power factor corrected power supplies. The use of electronic equipment has increased in last few years. AC rectification is a very inefficient process, resulting in waveform distortion of the current which is drawn from the source. This produces a large spectrum of harmonic signals that may interfere with other equipment. In input rectifier bridge the conventional boost PFC suffers from the high conduction loss This project describes an isolated power factor corrected power supply that utilizes the leakage inductance of the isolation transformer to provide boost inductor functionality. The bulk capacitor is in the isolated part of the power supply allowing for controlled startup without dedicated surge limiting components. A control method based on switch timing and input/output voltage measurements is developed to jointly achieve voltage regulation and input power factor control. A simulation and prototype design is implemented with detailed measurements and waveforms shown to confirm the desired functionality.

Keywords - DCM-discontinuous conduction mode, CCM - continuous conduction mode, THD - total harmonic distortion, PFC - power factor correction, PF - power factor, led - light emitted diode.

I.INTRODUCTION

One type of power factor correction (PFC) involves passive correction, where the reactive power of a system is compensated by adding a component that will use an equal but opposite amount of reactive power. For example, if a load is inductive with a reactive power of 1.754 kVAR, then the system would require a capacitive load with a reactive power of 1.754 kVAR to oppose the inductance. This type of power factor correction works well for linear loads on large scales where the cost of the power factor correction system can be absorbed by the size and cost of the overall system.

A. Active correction:

In active power factor correction, we must use an active power factor circuit that forces the AC current to track the AC voltage. One of the most common active PFC circuits is called the boost PFC converter. The boost PFC circuit cycles rapidly between two states, switch closed and switch open. During this states the inductor and capacitor charges and discharges.

B..Passive correction:

One type of power factor correction (PFC) involves passive correction, where the reactive power of a system is compensated by adding a component that will use an equal but opposite amount of reactive power. For example, if a load is inductive with a reactive power of 1.754 kVAR, then the system would require a capacitive load with a reactive power of 1.754 kVAR to oppose the inductance. This type of power factor correction works well for linear loads on large scales where the cost of the power factor correction system can be absorbed by the size and cost of the overall system.Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as "3.5-inch disk drive".

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CAR LANE DETECTION USING NUMPY WITH OPENCV PYTHON

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Abstract

Driver support system is one of the most important features of the modern vehicles to ensure driver safety and decrease vehicle accident on roads. Apparently, the road lane detection or road boundaries detection is the complex and most challenging tasks. It is including the localization of the road and the determination of the relative position between vehicle and road. A vision system using onboard camera looking outwards from the windshield is presented in this paper. The system acquires the front view using a camera mounted on the vehicle and detects the lanes by applying few processes. The lanes are extracted using Hough transform through a pair of hyperbolas which are fitted to the edges of the lanes. The proposed lane detection system can be applied on both painted and unpainted roads as well as curved and straight road in different weather conditions. The proposed system does not require any extra information such as lane width, time to lane crossing and offset between the center of the lanes. In addition, camera calibration and coordinate transformation are also not required. The system was investigated under various situations of changing illumination, and shadows effects in various road types without speed limits. The system has demonstrated a robust performance for detecting the road lanes under different conditions.

Keywords—Image processing, Hough Transform, Python, Deep learning.

Introduction

The emergence of vehicles has liberated human feet from long journeys. In a modern society where almost every household has a car, people enjoy the convenience of travel, but also face many traffic hazards. To help make the driving safer and more intelligent, intelligent driving uses various sensing and detection equipment along with advanced algorithms to acquire, process and analyse the collected data promptly, so that driver can be alert to potential dangers and vehicles can be controlled automatically.

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Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 03, March -2018

Automatic Load Frequency Control of Three Area Power System Using ANFIS Based Controller

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Abstract-*Load frequency control (LFC) is critical for the task and outline of current electric power frameworks. Corresponding necessary (PI) and relative basic subsidiary (PID) controllers are utilized to control the different parameters of multi zone control framework. Because of high pinnacle overshoot and settling time, ordinary PI and PID controllers are not favoured for extensive power framework. The principle inspiration of this task is to control the yield recurrence reaction with least pinnacle overshoot and settling time. This task introduces an ANFIS based wise load recurrence control approach for three region control framework with three control territories. The value of the proposed controlling method is that it is speedier than the programmed traditional control systems and can deal with the non linearities all the while. Additionally the most extreme overshoot and the settling time of ANFIS based controller are lesser when contrasted with the ordinary controllers, subsequently decreasing the motions locally and of between region. This adequacy of the proposed controller in enhancing the dynamic reaction is appeared and approved in three region between associated frameworks. Examination in exhibitions of PI, PID control system and ANFIS control approach is done in MATLAB/SIMULINK programming. The outcomes approves that the ANFIS based smart controller is quicker than the customary controller and have enhanced dynamic reaction.*

Keywords- *Load Frequency Control (LFC), Area Control Error (ACE), Proportional-Integral (PI), Proportional-Integral Derivative (PID), Adaptive Neuro-Fuzzy Inference System (ANFIS), Membership Functions (mFs).*

I. INTRODUCTION

Power system is system of electricity generation, transmission and distribution. Due to increasing the enormous load demand, power system has become more and more complex. Now generation is not sufficient to full fill the load demand. Therefore due to mismatch between load demand and generation, frequency control has become a very important issue. Today many researchers are trying to find out the best solution for frequency control because synchronism of all generators in a particular control area and the proper matching between load demand and generation in power system greatly depend on the frequency.Frequency is function of active power and voltage is a function of reactive power [1]. Therefore two control loop are used in power system. One is active power-frequency (P-f) control loop. Second is reactive power-voltage (Q-V) control loop. Attention of active power frequency (P-f) control is very important in comparison to reactive power-voltage (Q-V) control because of mechanical inertia constant. For any power system, reliability and quality are two important factors.Load frequency control plays an important role to maintain the reliability and quality of power system. Manually control of large power system is not feasible. So therefore automatically generation and voltage controller equipment's are installed on each generator.

For small load, they tackle the change in load demand without changing in frequency limits but if change in load demand is very large then controller should be retune either manually or automatically. For automatically control of active power and frequency in power system, controllers are used. There are two main targets of the load frequency control - i) to maintain the frequency deviations in each control arca within specified limits and ii) to maintain the tie line power exchanges between the control areas within the specified limits. Any imbalance between the generated power and load demand can lead to subsequent deviations in the plant frequency (f) from the value specified. This deviation in frequency is undesirable and can lead to system failure.

II. EXPLAINATIONS BEHIND THE LIMITS ON FREQUENCY

Following are the explanations behind keeping a strict cut off on the framework recurrence variety:

1. The speed of the substituting current engines relies upon the recurrence of the power supply. There are circumstances where speed consistency is required to be of high request.
2. The electric timekeepers are driven by the synchronous engines. The precision of the timekeepers are reliant on the recurrence as well as is an indispensable of this recurrence mistake.
3. On the off chance that the typical recurrence is 50 Hertz and the framework recurrence falls beneath 47.5 Hertz or goes up over 52.5 Hertz then the cutting edges of the turbine are probably going to get harmed in order to keep the slowing down of the generator.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received	:	01 Jan 2023
Revised	:	15 Feb 2023
Accepted	:	03 Mar 2023
Published	:	12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

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Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 23 Mar 2023

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Abstract— An asymmetrical three state switching step up converter combining the benefits of magnetic coupling and voltage multiplier techniques is presented in this paper. The derivation procedure for the proposed topology is depicted. The new converter can achieve very high voltage gain and very low voltage stress on the power devices without high turn ratio and extreme duty cycles. Thus, the low voltage rated MOSFETs with low resistance can be selected to reduce the switching losses and cost. Moreover, the usage of voltage multiplier technique not only raises the voltage gain but also offers lossless passive clamp performance, so the voltage spikes across the main switches are alleviated and the leakage-inductor energy of the coupled-inductors can be recycled; Also, the interleaved structure is employed in the input side, which not only reduces the current stress through each power switch, but also constrains the input current ripple. In addition, the reverse-recovery problem of the diodes is alleviated, and the efficiency can be further improved. The operating principles and the steady-state analysis of the presented converter are discussed in detail. Finally, a prototype circuit with 400W nominal rating is implemented in the laboratory to verify the performance of the proposed converter.

Keywords: ***Three state switching, high gain, step up converter, magnetic coupling voltage multiplier.***

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Citation: S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa, Mr.A.Antonycharles. "Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion", Journal of Science, Computing and Engineering Research, 6(3), 107-111, 2023.

I. INTRODUCTION

The high step-up voltage gain dc-dc converters are widely used as an interface between the available low voltage sources and the output loads which are operated at much higher voltage of such applications include high intensity discharge lamp for automotives, DC back-up energy systems for uninterruptible power supplies (UPS), fuel-cell energy-conversion systems, photovoltaic generation systems, telecom back-up facilities, electric vehicles and fuel cell vehicles in above industrial applications, the high step-up dc-dc converters can be non-isolated but they should be operated at high efficiency while taking high currents from low-voltage dc sources at their inputs. Generally, the classical step up is a popular choice for non-isolated applications because of a simple structure and a continuous input current. However, it will be operated at extreme duty cycle, and the rectifier diode must sustain a short pulse current with high amplitude when an extreme high-voltage gain is required. This leads to severe reverse recovery and the electromagnetic interference (EMI) problems. Moreover, the step up switch has to block a high-output voltage and hence the ON-state resistance, which varies almost proportionally with the square of blocking voltage, will be very high so that low-voltage-rated MOSFETs may not be adopted. For those reasons, it is hard for a basic step up converter to achieve both high voltage conversion ratio and high efficiency at the same time.

Some single-switch high step-up step up converters were recently presented in many literatures. From the references Use of cascade of converters is a feasible method for getting desired voltage gain. In addition, previous single-switch converters with high gain also include quadratic step up type, voltage-lift type , switched capacitor or switchedinductor type, and diode-capacitor voltage-multiplier type . Although these converters can achieve higher voltage gain than basic step up converter, the voltage gain of the converters is determined only by the duty cycle of the active switch.

Thus, these converters must cascade more power stages to obtain higher voltage gain, which will result in the complex circuit and low efficiency. Many Converters have been developed to achieve a high step-up voltage ratio without using extreme duty cycle by using tapped-inductor or coupled-inductor. However, the leakage inductor energy of the coupled inductor may cause higher voltage stress on

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Keywords: ***photovoltaic, solar cells, sun tracker, solar energy, tracking mechanism.***

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

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The fact that conventional energy sources are unsustainable, environmentally harmful, and expected to diminish within a few years, placed deploying renewable eco-friendly energy sources at the center of public interest. "Solar energy is the cleanest and most abundant renewable energy source available. Solar energy is harnessed and converted into electricity using different technologies in which photovoltaic cells are the most popular and efficient one. Nonetheless, researchers are experiencing many challenges to optimize the efficiency of photovoltaic cells. According to a report published in 2019 by Fraunhofer Institute of Solar Energy Systems ISE, the maximum efficiency reached of a mono-crystalline and multi-junction cells are 26.7% and 46% respectively.

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The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

A single-axis mode with tilted installation of the PV panels resulted in inaccuracy and less electrical output. Likewise, manually adjustment of the tilt angle seasonally to compensate for the absence of second axis tracker, lacks practicality and accuracy. Consequently, dual-axis autonomous tracker the optimum solution. The most popular technique is using light-detecting resistor (LDR). Although methodologies may differ in controlling strategy and/or sensors number and alignment, their theory is based on the same concept. Another approach uses small-scale photovoltaic cells to act as sensors, besides the main photovoltaic panel used to generate electricity. The above-

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received : 01 Jan 2023
Revised : 15 Feb 2023
Accepted : 03 Mar 2023
Published : 12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

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Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 23 Mar 2023

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Abstract— An asymmetrical three state switching step up converter combining the benefits of magnetic coupling and voltage multiplier techniques is presented in this paper. The derivation procedure for the proposed topology is depicted. The new converter can achieve very high voltage gain and very low voltage stress on the power devices without high turn ratio and extreme duty cycles. Thus, the low voltage rated MOSFETs with low resistance can be selected to reduce the switching losses and cost. Moreover, the usage of voltage multiplier technique not only raises the voltage gain but also offers lossless passive clamp performance, so the voltage spikes across the main switches are alleviated and the leakage-inductor energy of the coupled-inductors can be recycled; Also, the interleaved structure is employed in the input side, which not only reduces the current stress through each power switch, but also constrains the input current ripple. In addition, the reverse-recovery problem of the diodes is alleviated, and the efficiency can be further improved. The operating principles and the steady-state analysis of the presented converter are discussed in detail. Finally, a prototype circuit with 400W nominal rating is implemented in the laboratory to verify the performance of the proposed converter.

Keywords: ***Three state switching, high gain, step up converter, magnetic coupling voltage multiplier.***

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I. INTRODUCTION

The high step-up voltage gain dc-dc converters are widely used as an interface between the available low voltage sources and the output loads which are operated at much higher voltage of such applications include high intensity discharge lamp for automotives, DC back-up energy systems for uninterruptible power supplies (UPS), fuel-cell energy-conversion systems, photovoltaic generation systems, telecom back-up facilities, electric vehicles and fuel cell vehicles in above industrial applications, the high step-up dc-dc converters can be non-isolated but they should be operated at high efficiency while taking high currents from low-voltage dc sources at their inputs. Generally, the classical step up is a popular choice for non-isolated applications because of a simple structure and a continuous input current. However, it will be operated at extreme duty cycle, and the rectifier diode must sustain a short pulse current with high amplitude when an extreme high-voltage gain is required. This leads to severe reverse recovery and the electromagnetic interference (EMI) problems. Moreover, the step up switch has to block a high-output voltage and hence the ON-state resistance, which varies almost proportionally with the square of blocking voltage, will be very high so that low-voltage-rated MOSFETs may not be adopted. For those reasons, it is hard for a basic step up converter to achieve both high voltage conversion ratio and high efficiency at the same time.

Some single-switch high step-up step up converters were recently presented in many literatures. From the references Use of cascade of converters is a feasible method for getting desired voltage gain. In addition, previous single-switch converters with high gain also include quadratic step up type, voltage-lift type , switched capacitor or switchedinductor type, and diode-capacitor voltage-multiplier type . Although these converters can achieve higher voltage gain than basic step up converter, the voltage gain of the converters is determined only by the duty cycle of the active switch.

Thus, these converters must cascade more power stages to obtain higher voltage gain, which will result in the complex circuit and low efficiency. Many Converters have been developed to achieve a high step-up voltage ratio without using extreme duty cycle by using tapped-inductor or coupled-inductor. However, the leakage inductor energy of the coupled inductor may cause higher voltage stress on

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

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The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received	:	01 Jan 2023
Revised	:	15 Feb 2023
Accepted	:	03 Mar 2023
Published	:	12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

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Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	23 Mar 2023

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Abstract— An asymmetrical three state switching step up converter combining the benefits of magnetic coupling and voltage multiplier techniques is presented in this paper. The derivation procedure for the proposed topology is depicted. The new converter can achieve very high voltage gain and very low voltage stress on the power devices without high turn ratio and extreme duty cycles. Thus, the low voltage rated MOSFETs with low resistance can be selected to reduce the switching losses and cost. Moreover, the usage of voltage multiplier technique not only raises the voltage gain but also offers lossless passive clamp performance, so the voltage spikes across the main switches are alleviated and the leakage-inductor energy of the coupled-inductors can be recycled; Also, the interleaved structure is employed in the input side, which not only reduces the current stress through each power switch, but also constrains the input current ripple. In addition, the reverse-recovery problem of the diodes is alleviated, and the efficiency can be further improved. The operating principles and the steady-state analysis of the presented converter are discussed in detail. Finally, a prototype circuit with 400W nominal rating is implemented in the laboratory to verify the performance of the proposed converter.

Keywords: ***Three state switching, high gain, step up converter, magnetic coupling voltage multiplier.***

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Citation: S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa, Mr.A.Antonycharles. "Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion", Journal of Science, Computing and Engineering Research, 6(3), 107-111, 2023.

I. INTRODUCTION

The high step-up voltage gain dc-dc converters are widely used as an interface between the available low voltage sources and the output loads which are operated at much higher voltage of such applications include high intensity discharge lamp for automotives, DC back-up energy systems for uninterruptible power supplies (UPS), fuel-cell energy-conversion systems, photovoltaic generation systems, telecom back-up facilities, electric vehicles and fuel cell vehicles in above industrial applications, the high step-up dc-dc converters can be non-isolated but they should be operated at high efficiency while taking high currents from low-voltage dc sources at their inputs. Generally, the classical step up is a popular choice for non-isolated applications because of a simple structure and a continuous input current. However, it will be operated at extreme duty cycle, and the rectifier diode must sustain a short pulse current with high amplitude when an extreme high-voltage gain is required. This leads to severe reverse recovery and the electromagnetic interference (EMI) problems. Moreover, the step up switch has to block a high-output voltage and hence the ON-state resistance, which varies almost proportionally with the square of blocking voltage, will be very high so that low-voltage-rated MOSFETs may not be adopted. For those reasons, it is hard for a basic step up converter to achieve both high voltage conversion ratio and high efficiency at the same time.

Some single-switch high step-up step up converters were recently presented in many literatures. From the references Use of cascade of converters is a feasible method for getting desired voltage gain. In addition, previous single-switch converters with high gain also include quadratic step up type, voltage-lift type , switched capacitor or switchedinductor type, and diode-capacitor voltage-multiplier type . Although these converters can achieve higher voltage gain than basic step up converter, the voltage gain of the converters is determined only by the duty cycle of the active switch.

Thus, these converters must cascade more power stages to obtain higher voltage gain, which will result in the complex circuit and low efficiency. Many Converters have been developed to achieve a high step-up voltage ratio without using extreme duty cycle by using tapped-inductor or coupled-inductor. However, the leakage inductor energy of the coupled inductor may cause higher voltage stress on

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

Abstract— This paper concerns the automatic smart solar radiation tracker dedicated to photovoltaic panels. The proposed tracking system ensures optimum generation of electrical power by proper orientation of PV panels while consuming minimal energy. The design criteria are based on controlling the panel's position by automatic rotation throughout two DC motors only at certain times during the day. The followed methodology uses a microcontroller algorithm to redirect the solar panels in accordance with the actual coordinates of the sun. The idea is applicable to any PV system at any geographical location as panel rotation is changed according to the tilt and azimuth angles. This leads to capturing maximum radiation at any given time. Moreover, its power consumption is low due to its working mechanism and automatic sleep mode feature while not in use. Results have proved its cost-effectiveness, energy- efficiency, simplicity, and reliability in operation under different weather conditions.

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Keywords: ***photovoltaic, solar cells, sun tracker, solar energy, tracking mechanism.***

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

I. INTRODUCTION

The fact that conventional energy sources are unsustainable, environmentally harmful, and expected to diminish within a few years, placed deploying renewable eco-friendly energy sources at the center of public interest. "Solar energy is the cleanest and most abundant renewable energy source available. Solar energy is harnessed and converted into electricity using different technologies in which photovoltaic cells are the most popular and efficient one. Nonetheless, researchers are experiencing many challenges to optimize the efficiency of photovoltaic cells. According to a report published in 2019 by Fraunhofer Institute of Solar Energy Systems ISE, the maximum efficiency reached of a mono-crystalline and multi-junction cells are 26.7% and 46% respectively.

One of the main reasons for low-efficiency values is that the energy output of the PV cell is directly proportional to the sunlight concentration. PV power plant productivity is boosted when the solar panel is mounted perpendicularly to. Due to sun continuous position changing in the skydome, this orientation can only be achieved by implementing a movable tracker that follows the sun's position. In contrast, the absorption efficiency of an immobile solar panel would be significantly less. Researchers have compared the power output of a static solar panel to a one that has a tracking system and has observed improvement in efficiency by 40% on average. Thus, the solar tracking system comes into play to maximize the reception of sunlight by automatically altering the position of the solar module according to the sun incident on the earth at any time.

The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

A single-axis mode with tilted installation of the PV panels resulted in inaccuracy and less electrical output. Likewise, manually adjustment of the tilt angle seasonally to compensate for the absence of second axis tracker, lacks practicality and accuracy. Consequently, dual-axis autonomous tracker the optimum solution. The most popular technique is using light-detecting resistor (LDR). Although methodologies may differ in controlling strategy and/or sensors number and alignment, their theory is based on the same concept. Another approach uses small-scale photovoltaic cells to act as sensors, besides the main photovoltaic panel used to generate electricity. The above-

© July 2022 | IJIRT | Volume 9 Issue 2 | ISSN: 2349-6002

An AC-DC Single Stage Full Bridge Hybrid Converter with Improved Output Characteristics

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Abstract— **This paper explains about a new auxiliary circuit for an ac-dc single-stage power factor corrected (SSPFC) full-bridge type converter. The new auxiliary circuit is simple, handles low power, and is active only when the converter is operating under light load conditions. The operation of a SSPFC converter is briefly reviewed and the main principle behind the auxiliary circuit is explained. The new auxiliary circuit is introduced, and its feasibility in a multilevel SSPFC is confirmed with experimental results. This project proposes a unique standalone hybrid power generation system, applying advanced power control techniques, fed by four power sources: wind power, solar power, storage battery, and diesel engine generator, and which is not connected to a commercial power system. This configuration allows the two sources to supply the load separately or simultaneously depending on the availability of the energy sources. The inherent nature of this converter, additional input filters are not necessary to filter out high frequency harmonics. Harmonic content is detrimental for the generator lifespan, heating issues, and efficiency.**

Index Terms: **Pulse Width Modulation (PWM), MOSFET, Optocoupler, microcontroller, matlab.**

INTRODUCTION

Single-stage power-factor-corrected (SSPFC) ac-dc converters are cheaper and simpler than two-stage converters. This is because the ac-dc front-end and dc-dc backend converters that form the two stages of a two-stage converter are combined and just one controller is used - to regulate the output voltage. Low-power SSPFC converters (< 200 W)are widely used in industry, but not higher power SSPFC full-bridge converters due to problems associated with their operation over an extended load range. The intermediate dc bus voltage (the voltage at the input of the dc-dc section of a SSPFC converter fed by its ac-dc section) is not controlled and can change with input line voltage and output loads, which affects its operation negatively. This can be limited if the load range is constrained, as is done for low power converters, but this cannot be done for higher power converters. The result may thus be a distorted input line current, high dc bus voltage levels and a large amount of ripple in the output inductor current. A new auxiliary circuit was proposed to reduce the amount of output inductor current that can exist when a single-stage power factor corrected (SSPFC) full-bridge converter is operating under heavy load conditions. The new auxiliary circuit is simple and is active only when the converter is operating under light load conditions. In this paper, the operation of a higher power SSPFC full-bridge converter was briefly reviewed, the main principle behind the auxiliary circuit was explained and its feasibility was confirmed with results obtained from an experimental prototype of a multilevel SSPFC that was proposed previously.

The intermediate dc bus voltage (the voltage at the input of the dc-dc section of a SSPFC converter fed by its ac-dc section) is not controlled and can change with input line voltage and output loads, which affects its operation negatively. This can be limited if the load range is constrained, as is done for low power converters, but this cannot be done for higher power converters. The result may thus be a distorted input line current, high dc bus voltage levels and a large amount of ripple in the output inductor current. A new SSPFC converter that does not have these issues was proposed in [10]. This converter does not expose its primary circuit components to the high voltage levels that a two-level SSPFC can because it is a multilevel converter. Issues associated with dc bus voltage variation such as excessive dc bus voltages are reduced and converter operation is improved. Although the output inductor current ripple is less than what is found in other higher power

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

High Efficiency Bridgeless Single-Power-Conversion Battery Charger for Light Electric Vehicle

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Abstract - **This paper explains the charging batteries of light electric vehicles require chargers with high efficiency and a high-power factor. To meet this need, this paper presents a bridgeless single-power-conversion battery charger composed of an isolated step-up AC-DC converter with a series resonance circuit. The bridgeless configuration reduces the conduction losses associated with the input diode rectifier, and the series-resonance circuit reduces the reverse recovery losses of the output diodes by providing zero current switching. In addition, direct and series-resonance current injection enables bidirectional core excitation by the transformer, thereby allowing high power capability. The control algorithm derived from feedback linearization is also developed, which allows the proposed charger to correct the power factor and regulate the output power in a single-stage power conversion. This simple circuit structure leads to high efficiency and a high-power factor. The theoretical concepts of the proposed charger are verified experimentally using a 1.7 kW prototype.**

Index Terms - **Full-bridge converters, input current shaping, low-distortion input current, single-stage power factor correctors (PFCs).**

INTRODUCTION

Recent years, there has been increasing interest in various eco-friendly vehicles such as electric vehicles (EVs) and plug-in hybrid EVs, which have a significant potential to reduce environmental pollution. EVs are entirely powered by propulsion batteries charged from the grid through an on-board charger, which makes such chargers a very important part of an EV. The performance of the charger is evaluated by its power-conversion efficiency and power quality (i.e., total harmonic distortion and power factor). In addition, because the charger is installed in the EV, it must be small, lightweight, and have a long lifetime. Conventional on-board chargers for EVs are based on isolated AC-DC converters with a two-stage structure consisting of a power-factor-correction (PFC) stage and a DC-DC power-conversion stage. The PFC stage, which is usually a boost converter, converts input AC voltage to DC-link voltage with a unity power factor, whereas the DC-DC power-conversion stage, which is usually an isolated high-frequency DC-DC converter, regulates the output power and provides galvanic isolation for user safety. This structure has advantages such as accepting wide input voltage, providing a high-power factor and well-regulated output power. However, the two-stage structure also has many disadvantages, such as low efficiency and circuit complexity because of its two power-processing stages. Another major drawback is a bulky intermediate dc-link capacitor that filters power fluctuations. The high current flowing through the intermediate dc-link capacitor also causes significant power loss and considerably reduces the capacitor lifetime, leading to capacitor failure.

To eliminate the PFC stage and reduce the dc-link capacitance, single-stage approach is being investigated to replace the two-stage structures. In single-stage converters with a DC-link capacitor, the PFC stage and the DC-DC stage are merged by sharing the switches. However, because the DC-link voltage is not controlled in this scheme, it can be more than twice the grid voltage, leading to requirement of high voltage rating switches which causes high switching and conduction losses. In addition, because PFC is achieved based on the operation principle of the circuit without an additional PFC controller, the power factor is affected by changes in the grid voltage or load condition. To achieve a high-power factor without a PFC stage and a DC-link capacitor, single-stage resonance converters with inherent PFC and current-fed full-bridge converters have been introduced. These converters do not require a DC-link capacitor, thereby eliminating the associated problems. Also, almost unity power factor can be achieved using the appropriate PFC-control techniques. However, these

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received	:	01 Jan 2023
Revised	:	15 Feb 2023
Accepted	:	03 Mar 2023
Published	:	12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

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Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060321*

Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion

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Article Information

Received : 09 Jan 2023
Revised : 22 Feb 2023
Accepted : 03 Mar 2023
Published : 23 Mar 2023

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Abstract— An asymmetrical three state switching step up converter combining the benefits of magnetic coupling and voltage multiplier techniques is presented in this paper. The derivation procedure for the proposed topology is depicted. The new converter can achieve very high voltage gain and very low voltage stress on the power devices without high turn ratio and extreme duty cycles. Thus, the low voltage rated MOSFETs with low resistance can be selected to reduce the switching losses and cost. Moreover, the usage of voltage multiplier technique not only raises the voltage gain but also offers lossless passive clamp performance, so the voltage spikes across the main switches are alleviated and the leakage-inductor energy of the coupled-inductors can be recycled; Also, the interleaved structure is employed in the input side, which not only reduces the current stress through each power switch, but also constrains the input current ripple. In addition, the reverse-recovery problem of the diodes is alleviated, and the efficiency can be further improved. The operating principles and the steady-state analysis of the presented converter are discussed in detail. Finally, a prototype circuit with 400W nominal rating is implemented in the laboratory to verify the performance of the proposed converter.

Keywords: ***Three state switching, high gain, step up converter, magnetic coupling voltage multiplier.***

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Citation: S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa, Mr.A.Antonycharles. "Switching State Step up Converter Mixed with Magnetic Coupling and Voltage Multiplier Techniques for High Gain Conversion", Journal of Science, Computing and Engineering Research, 6(3), 107-111, 2023.

I. INTRODUCTION

The high step-up voltage gain dc-dc converters are widely used as an interface between the available low voltage sources and the output loads which are operated at much higher voltage of such applications include high intensity discharge lamp for automotives, DC back-up energy systems for uninterruptible power supplies (UPS), fuel-cell energy-conversion systems, photovoltaic generation systems, telecom back-up facilities, electric vehicles and fuel cell vehicles in above industrial applications, the high step-up dc-dc converters can be non-isolated but they should be operated at high efficiency while taking high currents from low-voltage dc sources at their inputs. Generally, the classical step up is a popular choice for non-isolated applications because of a simple structure and a continuous input current. However, it will be operated at extreme duty cycle, and the rectifier diode must sustain a short pulse current with high amplitude when an extreme high-voltage gain is required. This leads to severe reverse recovery and the electromagnetic interference (EMI) problems. Moreover, the step up switch has to block a high-output voltage and hence the ON-state resistance, which varies almost proportionally with the square of blocking voltage, will be very high so that low-voltage-rated MOSFETs may not be adopted. For those reasons, it is hard for a basic step up converter to achieve both high voltage conversion ratio and high efficiency at the same time.

Some single-switch high step-up step up converters were recently presented in many literatures. From the references Use of cascade of converters is a feasible method for getting desired voltage gain. In addition, previous single-switch converters with high gain also include quadratic step up type, voltage-lift type , switched capacitor or switchedinductor type, and diode-capacitor voltage-multiplier type . Although these converters can achieve higher voltage gain than basic step up converter, the voltage gain of the converters is determined only by the duty cycle of the active switch.

Thus, these converters must cascade more power stages to obtain higher voltage gain, which will result in the complex circuit and low efficiency. Many Converters have been developed to achieve a high step-up voltage ratio without using extreme duty cycle by using tapped-inductor or coupled-inductor. However, the leakage inductor energy of the coupled inductor may cause higher voltage stress on

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

High Efficiency Bridgeless Single-Power-Conversion Battery Charger for Light Electric Vehicle

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Abstract - **This paper explains the charging batteries of light electric vehicles require chargers with high efficiency and a high-power factor. To meet this need, this paper presents a bridgeless single-power-conversion battery charger composed of an isolated step-up AC-DC converter with a series resonance circuit. The bridgeless configuration reduces the conduction losses associated with the input diode rectifier, and the series-resonance circuit reduces the reverse recovery losses of the output diodes by providing zero current switching. In addition, direct and series-resonance current injection enables bidirectional core excitation by the transformer, thereby allowing high power capability. The control algorithm derived from feedback linearization is also developed, which allows the proposed charger to correct the power factor and regulate the output power in a single-stage power conversion. This simple circuit structure leads to high efficiency and a high-power factor. The theoretical concepts of the proposed charger are verified experimentally using a 1.7 kW prototype.**

Index Terms - **Full-bridge converters, input current shaping, low-distortion input current, single-stage power factor correctors (PFCs).**

INTRODUCTION

Recent years, there has been increasing interest in various eco-friendly vehicles such as electric vehicles (EVs) and plug-in hybrid EVs, which have a significant potential to reduce environmental pollution. EVs are entirely powered by propulsion batteries charged from the grid through an on-board charger, which makes such chargers a very important part of an EV. The performance of the charger is evaluated by its power-conversion efficiency and power quality (i.e., total harmonic distortion and power factor). In addition, because the charger is installed in the EV, it must be small, lightweight, and have a long lifetime. Conventional on-board chargers for EVs are based on isolated AC-DC converters with a two-stage structure consisting of a power-factor-correction (PFC) stage and a DC-DC power-conversion stage. The PFC stage, which is usually a boost converter, converts input AC voltage to DC-link voltage with a unity power factor, whereas the DC-DC power-conversion stage, which is usually an isolated high-frequency DC-DC converter, regulates the output power and provides galvanic isolation for user safety. This structure has advantages such as accepting wide input voltage, providing a high-power factor and well-regulated output power. However, the two-stage structure also has many disadvantages, such as low efficiency and circuit complexity because of its two power-processing stages. Another major drawback is a bulky intermediate dc-link capacitor that filters power fluctuations. The high current flowing through the intermediate dc-link capacitor also causes significant power loss and considerably reduces the capacitor lifetime, leading to capacitor failure.

To eliminate the PFC stage and reduce the dc-link capacitance, single-stage approach is being investigated to replace the two-stage structures. In single-stage converters with a DC-link capacitor, the PFC stage and the DC-DC stage are merged by sharing the switches. However, because the DC-link voltage is not controlled in this scheme, it can be more than twice the grid voltage, leading to requirement of high voltage rating switches which causes high switching and conduction losses. In addition, because PFC is achieved based on the operation principle of the circuit without an additional PFC controller, the power factor is affected by changes in the grid voltage or load condition. To achieve a high-power factor without a PFC stage and a DC-link capacitor, single-stage resonance converters with inherent PFC and current-fed full-bridge converters have been introduced. These converters do not require a DC-link capacitor, thereby eliminating the associated problems. Also, almost unity power factor can be achieved using the appropriate PFC-control techniques. However, these

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com.
1st online international conference on informatics, robotics, construction & communication, 2020

AN ISOLATED POWER FACTOR CORRECTED POWER SUPPLY UTILIZING THE TRANSFORMER LEAKAGE INDUCTANCE

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Abstract—The widespread use of electronic devices increases the need for compact power factor corrected power supplies. The use of electronic equipment has increased in last few years. AC rectification is a very inefficient process, resulting in waveform distortion of the current which is drawn from the source. This produces a large spectrum of harmonic signals that may interfere with other equipment. In input rectifier bridge the conventional boost PFC suffers from the high conduction loss This project describes an isolated power factor corrected power supply that utilizes the leakage inductance of the isolation transformer to provide boost inductor functionality. The bulk capacitor is in the isolated part of the power supply allowing for controlled startup without dedicated surge limiting components. A control method based on switch timing and input/output voltage measurements is developed to jointly achieve voltage regulation and input power factor control. A simulation and prototype design is implemented with detailed measurements and waveforms shown to confirm the desired functionality.

Keywords - DCM-discontinuous conduction mode, CCM - continuous conduction mode, THD - total harmonic distortion, PFC - power factor correction, PF - power factor, led - light emitted diode.

I.INTRODUCTION

One type of power factor correction (PFC) involves passive correction, where the reactive power of a system is compensated by adding a component that will use an equal but opposite amount of reactive power. For example, if a load is inductive with a reactive power of 1.754 kVAR, then the system would require a capacitive load with a reactive power of 1.754 kVAR to oppose the inductance. This type of power factor correction works well for linear loads on large scales where the cost of the power factor correction system can be absorbed by the size and cost of the overall system.

A. Active correction:

In active power factor correction, we must use an active power factor circuit that forces the AC current to track the AC voltage. One of the most common active PFC circuits is called the boost PFC converter. The boost PFC circuit cycles rapidly between two states, switch closed and switch open. During this states the inductor and capacitor charges and discharges.

B..Passive correction:

One type of power factor correction (PFC) involves passive correction, where the reactive power of a system is compensated by adding a component that will use an equal but opposite amount of reactive power. For example, if a load is inductive with a reactive power of 1.754 kVAR, then the system would require a capacitive load with a reactive power of 1.754 kVAR to oppose the inductance. This type of power factor correction works well for linear loads on large scales where the cost of the power factor correction system can be absorbed by the size and cost of the overall system.Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as "3.5-inch disk drive".

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Contact Tracing Using Machine Learning

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Abstract

Contact tracing is a critical tool in the fight against infectious diseases, including the ongoing COVID-19 pandemic. Traditional contact tracing methods involve manually identifying and notifying individuals who have come into contact with an infected person. However, with the increasing scale of outbreaks, manual contact tracing has become increasingly difficult and time-consuming.

Machine learning can help automate and enhance the contact tracing process. In this context, ML algorithms can analyze large volumes of data to identify potential transmission chains, predict the likelihood of an individual being infected, and prioritize high-risk individuals for testing and isolation. This paper presents an overview of recent research on contact tracing using machine learning. The paper covers ML techniques and their applications that involve Clustering and DBSCAN Algorithms and Proximity Graph. Additionally, the paper discusses the challenges and ethical considerations associated with using ML in contact tracing, such as data privacy and bias. Overall, this paper highlights the potential of ML to improve the effectiveness and efficiency of contact tracing, ultimately helping to curb the spread of infectious diseases.

Keywords—contact tracing, outbreaks, transmission chains, isolation, clustering and db scan algorithm

Introduction

Contact tracing is a crucial tool in the fight against the spread of infectious diseases such as COVID-19. It involves identifying and notifying individuals who have come into contact with an infected person in order to reduce the risk of further transmission. Contact tracing is the process of finding people who may have come into contact with an infected person ("contacts") and collecting additional information about them in the field of public health. Public health strives to reduce illnesses in the population by tracing the contacts of infected individuals, testing them for infection, isolating or treating the infected, and tracing their

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International Journal of Advances in Applied Sciences (IJAAS)
Vol. 9, No. 2, June 2020, pp. 149~158
ISSN: 2252-8814, DOI: 10.11591/ijaas.v9.i2.pp149-158

Water condensation system based on thermoelectric coller using solar energy

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Article Info

Article history:

Received Apr 22, 2019
Revised Feb 11, 2020
Accepted Apr 3, 2020

Keywords:

BIS
Condensation
RO
UV

ABSTRACT

The main objective of the paper is to develop a water condensation system based on thermoelectric cooler using solar Energy to convert atmospheric moisture directly into usable and even drinking water. This idea can be extended further in future – For large scale implementation, RO and UV water filter can be used for producing such water that meets the standard of WHO and BIS easily. Peltier device has many types of models which are much efficient than TEC1. Those can be used. As the paper aims at producing water from atmosphere and keeping this device handy, large sized scrubbers are not used for better air filtration. Scrubbers can remove all the oxides from the air. For large implementation it can be handled. The concept of this paper can also be used as a better alternative in refrigeration science against conventional systems. It can also be observed in this way i.e. the usage of such low power semiconductor devices are indicating towards more prominent evolution of cooling engineering that is going to alter the whole scenario and myths about the power consumption of refrigeration science. Thus in near future we will be able to use such devices that are now limited within the paper.

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1. INTRODUCTION

The air in the atmosphere contains at least a little water. On hot, muggy days, the air feels thick and uncomfortable because it's saturated with moisture. Getting access to fresh water can be difficult in some of the hottest parts of the world. Despite the fact that heat and humidity persist at levels that would seem to invite daily showers, a lack of infrastructure makes it extremely difficult for far-flung communities to gain access to reliable supplies of water. Water generators, also known as water makers, harvest the moisture suspended in humidity air [1]. Within those amounts almost 30% of water is wasted. This amount of water can be used by implementing a device like Atmospheric Water Generator. They use one of two basic methods. The most common employs technology similar to another appliance in your home, your air conditioner. Warm air passes over a set of coils that are chilled using refrigerant. Because cool air can't hold as much water vapor as warm air, the cold air leaves behind condensation that's routed to a drain or pan for disposal. In a water generator, the goal isn't to cool the air to make interior rooms more comfortable. The goal is to reclaim that condensation, filter it, and then store it in a carafe or other holding tank.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020. ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

Z SOURCE FED H-TYPE DIODE CLAMPED MULTILEVEL INVERTER WITH LESS NUMBER OF SWITCHES

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Abstract— **In this paper, simulation using MATLAB-SIMULINK is performed with bipolar triangular fixed amplitude multi-carrier Phase Disposition (PD) PWM strategy with sine wave and Third Harmonic Injection reference for the chosen Z Source based H-Type Diode Clamped Multilevel Inverter (ZSBH-Type DCMLI). The root mean square value of the fundamental component and THD of the output voltage which are the most important performance indices for the chosen inverter topologies are evaluated presented and compared for various references through duty ratios. From the simulation results it is observed that for both the reference the THD is almost similar but the root mean square value in terms of voltage is more for THI reference with phase disposition strategy.**

Keywords— *-Source inverter, DCMLI, PWM, THD, Boost*

I. INTRODUCTION

Inverter is a power electronic device which converts DC into AC. Based on the nature of the input source; inverters are mainly classified as voltage source and current source inverters. DC link of current source inverters needs large DC chokes. So it has limited dynamic performance. This is the drawback of current source inverters. Voltage source inverters do not have high dynamic performance and have dv/dt problems. The demerits of the traditional voltage source inverters are compensated by the emergence of multilevel inverters. Multilevel Inverter (MLI) is made up of multiple switches. Multilevel inverter enables the use of environmental friendly energy sources like solar cells and fuel cells.

MLIs have problems of shoot-through state and MLIs can perform buck operation only. Impedance-Source (Z-Source) networks are extensively used to provide boost ability in such MLIs. Z-Source MLIs have single-stage power conversion capability, which make use of shoot-through and non-shoot-through states of the inverter bridge to provide boosted output voltage, thus achieving high immunity to the EMI noise. However, Z-Source MLI has noticeable flaws such as high voltage stress across the capacitors and switching devices, high inrush current and small boost ability. Another major drawback of the Z-Source MLI is the discontinuous input current that may lead to low utilization and permanent damage of the dc source.

Babaei et al[1] discussed about the reduction of dc voltage sources and switches in asymmetrical multilevel converters using a novel topology. Anderson and Peng [2] developed different types of quasi-Z-Source inverters. Babaei [3] introduced a cascade multilevel converter topology with reduced number of switches. Axelrod et al [4] suggested a switched-capacitor/switched-inductor structure for getting transformer less hybrid DC-DC PWMconverters. Astudillo et al [5] proposed a new symmetrical hybrid multilevel DC-AC converter. Al-Othman and Abdelhamid [6] proposed different method to elimination of harmonics in multilevel inverters with non-equal dc sources using PSO. Abdel et al [7] suggested a switched inductor boost converter for PV applications. Abu-Rub et al [8] Quasi-Z-source inverter-based photovoltaic generation system with maximum power tracking control using ANFIS. Aida Baghbany Oskouei and Seyed Hossein Hosseini [9] introduced a novel SVC algorithm for multilevel Z-source inverter. Anh-Vu Ho et al [10] made a Analysis and control of single- phase Z-source multilevel inverter. Weihua Liang et al [11] described about state of charge balancing control for battery energy stored quasi-Z-Source cascaded multilevel inverter based photovoltaic power system. Mohamed Trabelsi et al [12] introduced a 1-MW quasi-Z source based multilevel PV energy conversion system. The above literature survey gave some idea about the proposed work on Z source inverter and multilevel inverter. Balamurugan et al [13] developed hardware implementation of cascaded hybrid multilevel inverter with reduced number of switches. Balamurugan et al [14] also developed hybrid carrier PWM strategies for three phase h-bridge multilevel inverter Balamurugan et al [15] introduced dspace based implementation of various inverted sine carrier PWM strategies for three phase five level h-bridge inverter. Vijayalakshmi and Balamurugan [16] made an investigation on Z-source based cascaded

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Design, Analysis and Rapid prototype of Hip Simulator

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Abstract - **Universally more than 2lakhs people are ailing from hip failure every year and the remedy for this is replacement. In India, the percentage of people getting handicapped due to hip fractures is high. For that, the people are going for replacements of the hip using artificial hip prosthesis. The artificial prosthesis is imported from the foreign countries which are costlier than the custom-made Indian prosthesis. For that, the Indian people are going for Indian custom-made prostheses. To evaluate the custom made for patients of Indian prostheses, many institutes are working on the prostheses simulators. In this work the walk simulator or hip simulator for Indian customized prostheses is designed. Using this simulator, the prostheses life period can be evaluated with the existing data available from the literature and with the data acquiring from the simulator.**

Index Terms - **Hip simulator model, stainless steel and aluminium alloy material, Fatigue and wear analysis.**

1.INTRODUCTION

Once a suitable implant configuration was achieved, initial bench testing was repeated with the simple load to failure test using a hydraulic jack and donated polyurethane foam femurs from Pacific Research Laboratories The information from these initial tests was valuable to develop a qualitative understanding of failure modes. For example, it was noted that the head of the compression screws migrated superiorly as the construct approached failure. This was addressed with a plate designed to fit between the interlocking screw and the posterior compression screw to serve as a buttress. Although prominence of the plate was originally problematic, this was resolved with successive iterations of the design. Furthermore, early testing demonstrated the distinct advantage of having the threaded screw heads for fixation into the lateral cortex. Overall, the load-to-failure testing system was invaluable in comparing early design iterations of the hip construct. Ultimately, it was recognized that although early bench testing was helpful, a more sophisticated testing apparatus was needed before using the implant clinically. This testing was achieved through a collaborative effort between SIGN, Program for Appropriate Technology in Health (PATH) (an international on-profit organization), and Allan Tenser from the University of Washington Orthopedic Science Laboratory. Although load-to-failure testing was valuable in the early design process of the SHC, fatigue testing was necessary to understand the failure modes associated with more physiologic loading.(Ref 1,4 and 7)

Maturation of the fitness movement has brought with it an increasingly sophisticated consumer who has become concerned with the stress that activities such as Walking or running impose on the body. In order to maintain and improve their level of fitness, many in this group have sought out new modalities that provide the desired training stimulus but with reduced wear and tear.

To meet this demand, manufacturers first introduced treadmills with impact absorbing suspension systems. Later, the entire nature of weight-bearing cardiovascular exercise was altered with the introduction of gait simulators. These devices mimic walking and running by keeping the user suspended on two moving footplates. Unlike treadmills, however, gait simulators impart no jarring forces on the user, by virtue of the fact that the foot never leaves the support platform.

The degree to which gait simulator induces joint stress is entirely a function of its design. The initial design utilized an elliptical path of motion and was referred to as an elliptical cross trainer. A new class of gait simulator is designed around an accurate path of motion and has, thereby, been designated an arc trainer. The purpose of this investigation is to examine the kinematics and biomechanics of these gait simulators and to compare them to normal ambulatory conditions.(Ref 3,4 and9)

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

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Computer Systems
Science and Engineering

Tech Science Press

DOI: 10.32604/csse.2023.038074
Article

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An Efficient MPPT Tracking in Solar PV System with Smart Grid Enhancement Using CMCMAC Protocol

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Received: 26 November 2022; Accepted: 10 April 2023; Published: 28 July 2023

Abstract: Renewable energy sources like solar, wind, and hydro are becoming increasingly popular due to the fewer negative impacts they have on the environment. Because, Since the production of renewable energy sources is still in the process of being created, photovoltaic (PV) systems are commonly utilized for installation situations that are acceptable, clean, and simple. This study presents an adaptive artificial intelligence approach that can be used for maximum power point tracking (MPPT) in solar systems with the help of an embedded controller. The adaptive method incorporates both the Whale Optimization Algorithm (WOA) and the Artificial Neural Network (ANN). The WOA was implemented to enhance the process of the ANN model's training, and the ANN model was developed using the WOA. In addition to this, the inverter circuit is connected to the smart grid system, and the strengthening of the smart grid is achieved through the implementation of the CMCMAC protocol. This protocol prevents interference between customers and the organizations that provide their utilities. Using a protocol known as Cross-Layer Multi-Channel MAC (CMCMAC), the effect of interference is removed using the way that was suggested. Also, with the utilization of the ZIGBEE communication technology, bidirectional communication is made possible. The strategy that was suggested has been put into practice, and the results have shown that the PV system produces an output power of 73.32 KW and an efficiency of 98.72%. In addition to this, a built-in regulator is utilized to validate the proposed model. In this paper, the results of various experiments are analyzed, and a comparison is made between the suggested WOA with the ANN controller approach and others, such as the Particle Swarm Optimization (PSO) based MPPT and the Cuckoo Search (CS) based MPPT. By examining the comparison findings, it was determined that the adaptive AI-based embedded controller was superior to the other alternatives.

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Implementation of FPGA Based Single Phase Grid Power Quality Improvement Using EV Charging and Discharging

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Abstract:

In this paper, Grid matched with EV battery system is constrained by hysteresis current control method. FPGA algorithm can be programmed to perform the control activity of BUCK/BOOST converter by charging and discharging of battery mode. Improving power quality by maintaining a current THD level of less than 4%. This scheme manages usage of battery in valuable manner. At its hour is improved to charge brace power quality. Battery is one of the stockpile components; utilize that the EV very still days or not utilized days. THD of current is decreased and compared this results is nearly great than existing one and this will realize in simulation and also hardware.

Keywords: Voltage Source Converter (VSC), Total harmonics distortion (THD), Electric vehicle (EV), Field Programmable Gate Array controller(FPGA), Grid to Vehicle (G2V),Vehicle to Grid (V2G).

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received : 01 Jan 2023
Revised : 15 Feb 2023
Accepted : 03 Mar 2023
Published : 12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

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Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

Abstract— This paper concerns the automatic smart solar radiation tracker dedicated to photovoltaic panels. The proposed tracking system ensures optimum generation of electrical power by proper orientation of PV panels while consuming minimal energy. The design criteria are based on controlling the panel's position by automatic rotation throughout two DC motors only at certain times during the day. The followed methodology uses a microcontroller algorithm to redirect the solar panels in accordance with the actual coordinates of the sun. The idea is applicable to any PV system at any geographical location as panel rotation is changed according to the tilt and azimuth angles. This leads to capturing maximum radiation at any given time. Moreover, its power consumption is low due to its working mechanism and automatic sleep mode feature while not in use. Results have proved its cost-effectiveness, energy- efficiency, simplicity, and reliability in operation under different weather conditions.

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Keywords: ***photovoltaic, solar cells, sun tracker, solar energy, tracking mechanism.***

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

I. INTRODUCTION

The fact that conventional energy sources are unsustainable, environmentally harmful, and expected to diminish within a few years, placed deploying renewable eco-friendly energy sources at the center of public interest. "Solar energy is the cleanest and most abundant renewable energy source available. Solar energy is harnessed and converted into electricity using different technologies in which photovoltaic cells are the most popular and efficient one. Nonetheless, researchers are experiencing many challenges to optimize the efficiency of photovoltaic cells. According to a report published in 2019 by Fraunhofer Institute of Solar Energy Systems ISE, the maximum efficiency reached of a mono-crystalline and multi-junction cells are 26.7% and 46% respectively.

One of the main reasons for low-efficiency values is that the energy output of the PV cell is directly proportional to the sunlight concentration. PV power plant productivity is boosted when the solar panel is mounted perpendicularly to. Due to sun continuous position changing in the skydome, this orientation can only be achieved by implementing a movable tracker that follows the sun's position. In contrast, the absorption efficiency of an immobile solar panel would be significantly less. Researchers have compared the power output of a static solar panel to a one that has a tracking system and has observed improvement in efficiency by 40% on average. Thus, the solar tracking system comes into play to maximize the reception of sunlight by automatically altering the position of the solar module according to the sun incident on the earth at any time.

The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

A single-axis mode with tilted installation of the PV panels resulted in inaccuracy and less electrical output. Likewise, manually adjustment of the tilt angle seasonally to compensate for the absence of second axis tracker, lacks practicality and accuracy. Consequently, dual-axis autonomous tracker the optimum solution. The most popular technique is using light-detecting resistor (LDR). Although methodologies may differ in controlling strategy and/or sensors number and alignment, their theory is based on the same concept. Another approach uses small-scale photovoltaic cells to act as sensors, besides the main photovoltaic panel used to generate electricity. The above-

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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MOBILE PHONE DETECTOR USING SUPER CAPACITOR

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ABSTRACT

Now a days as the technology is improved, people are addicted to mobiles. They are at that stage where they are using and at what situation they are. There are some restricted places like hospitals, examination halls etc. To avoid that situation, we have designed a mobile detector circuit. This detector can sense the presence of and activated mobile phone from a distance of one and a half meter. So, it can be used to prevent use of mobile phone in examination halls, confidential rooms etc. It is also useful for detecting the use of mobile phone for spying and un authorized video transmission. The circuit can detect the incoming and outgoing calls, SMS and video transmission even if the mobile is kept in silent mode. It is built around CA3130 (IC1) and NPN transistor BC548 (T1). When a mobile phone is active, it radiates RF signal that passes through nearby space. The signal contains electromagnetic RF radiation from the phone. Capacitor C1 is used in the circuit to detect the RF signal from the mobile phone Carefully solder the capacitor in standing position with equal spacing of the leads. The response can be optimized by trimming the lead length of C3 for the desired frequency. You may use a short telescopic type antenna. Use the miniature 12V battery of a remote control and a small buzzer to make the gadget pocket-size. The unit will give the warning indication if someone uses Mobile phone within a radius of 1.5-2 meters.

I.INTRODUCTION

Mobile phone uses RF with a wavelength of 30cm at 872 to 2170 MHz That is the signal is high frequency with huge energy. When the mobile phone is active, it transmits the signal in the form of sine wave which passes through the space. The encoded audio/video signal contains electromagnetic radiation which is picked up by the receiver in the base station.

Mobile phone system is referred to as "Cellular Telephone system" because the coverage area is divided into "cells" each of which has a base station. The transmitter power of the modern 2G antenna in the base station is 20-100 watts. When a GSM (Global System of Mobile communication) digital phone is transmitting, the signal is time shared with

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Power Quality Improvement in EV Charging & discharging time with interfaced grid using instantaneous current control technique.

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Abstract:

Vehicle-to-Grid technology has become a hotspot of current research because it can cause peak load switching; it is also a technological means for improving the grid's capacity to absorb new energy. Electric Vehicle -grid interaction is primarily controlled by pulse width modulation in bidirectional AC/DC transformation. Batteries and AC/DC converters in electric vehicles are damaged by large amplitude fluctuations. This problem was solved by implementing instantaneous current generation method to reduce the impact of volatile energy and improve the charging/discharging power quality of electric vehicles, reduce harmonics and improve the current THD to below 5% according to IEEE standards, and improve the grid power factor. It is implemented by using the Field Programmable Gate Array controller.

Keywords: Total harmonics distortion (THD), Electric vehicle (EV), Field Programmable Gate Array controller (FPGA)

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060307*

Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07Mar 2023
Published : 18 Mar 2023

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Abstract— In this paper, the power converters plays an important role in E-vehicle applications. The fast power conversion system produce more number of ripples and glitches in the power converter circuits. The properly designed system with the help of the opposite polarity of two switches and filter which is used to reduce the ripples. The integration of multiple energy sources is complicated in existing system. In order to reduce the ripple more effectively, the proposed system is designed with PV and battery source. Instead of C-filter, here the Pi-filter is installed and this will improve the efficiency more than in the existing project. The performance of the proposed topology is verified through MATLAB environment.

Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta. "Dc-Dc Boost Converter with Ripple Reduction Techniques for Electric Vehicle", Journal of Science, Computing and Engineering Research, 6(3), 34-37, 2023.

I. INTRODUCTION

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage Spikes occur across the power switch resulted from the Transformer's leakage inductance. Equivalently, the Leakage-inductance exists in the coupled inductor as well; Therefore, creating a similar undesirable voltage spike Across the power switch. The voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and introduce more Complexity to the converter.

II. EXISTING SYSTEM

The transformer-based dc-dc converters can achieve high Voltage gain ratio by simply increasing the number of turns of the high frequency transformer. Nonetheless, voltage spikes Occur across the power switch resulted from the transformer's Leakage inductance. Equivalently, the leakage-inductance exists in the coupled inductor as well; therefore, creating a similar undesirable voltage spike across the power switch.

The Voltage spikes can be absorbed by installing a snubber circuit. However, snubber circuits reduce the overall efficiency and Introduce more complexity to the converter. On the other hand, the lower volume and simplicity of the Non- magnetic coupling dc-dc converters made such types of Converters gain the attention of researchers. Several non-isolated voltage step up methods such as Voltage Lift (VL), Switched Inductor (SL), Voltage-Multiplier (VM) and Switched-Capacitors (SC) are investigated and proposed to Various known dc-dc converters.In [1] a single switch high Gain converter using the hybrid switched-capacitor technique introduced.

In [5] a single switch hybrid boosting converter is introduced. Both converters in [1] and [5] withdraw pulsating current from the PV that degrade the performance and life time of it. In [5] and [7] the active switches Inductor (ASL) boosting technique is utilized to provide high Step up capability. The ASL unit is combined with a passive Switched capacitor unit to generate the structure of converter [6]. Similarly, a voltage step up converter using the hybrid Switched inductor methodology is introduced in [7].In addition to the disadvantages pulsating input current in both converters in [6] and [7], the gain can be further increased and the Voltage stress of the switches can be decreased. In [8], a multilevel boost-converter is introduced that has a Continuous input current; however, the input current-ripple and output voltage- ripple can be reduced. Moreover, the voltage gain can be further expanded, and the voltage stress of the Switch can be reduced (normalized to the output voltage). In [9], an interleaved multilevel boost converter is proposed. Converter [9] provides ripple reduction capability but the high Number of components with respect to the given voltage gain Makes the converter practically less attractive. In [10] a continuous input current six-phase interleaved-boost converter with reduced stress is proposed. Nonetheless, the high count of the utilized components (6-switches, 6-inductors, 8-capacitor and 14-diodes) is not practical for the gain ratio and having 6switches require additional gate driver circuits; therefore, more volume, size and complexity. In this paper, a symmetrical multilevel dc-dc boost converter with ripple

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060302*

A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application

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Article Information

Received	:	01 Jan 2023
Revised	:	15 Feb 2023
Accepted	:	03 Mar 2023
Published	:	12 Mar 2023

Abstract— Recent advancements in renewable energy have created a need for both high step-up and high efficiency dc- dc converters. These needs have typically been addressed with converters using high frequency transformers to achieve the desired gain. The transformer design, however, is challenging. This paper presents a high step-up current fed converter based on the classical Cockcroft-Walton (CW) multiplier. The capacitor ladder allows for high voltage gains without a transformer. The cascaded structure limits the voltage stresses in the converter stages, even for high gains. Being current-fed, the converter (unlike traditional CW multipliers) allows the output voltage to be efficiently controlled. In addition, the converter supports multiple input operation without modifying the topology. This makes the converter especially suitable for photovoltaic applications where high gain, high efficiency, small converter size and maximum power point tracking are required. Design equations, a dynamic model, and possible control algorithms are presented. The converter operation was verified using digital simulation and a 450 W prototype converter.

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Keywords: ***CW Multiplier, High Voltage Generation, A Dc-Dc Converter, Photovoltaic Application***

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Citation: R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj. "A CW Multiplier for High Voltage Generation with A Dc-Dc Converter using Photovoltaic Application ", Journal of Science, Computing and Engineering Research, 6(3), 04-08, 2023.

I. INTRODUCTION

The increased use of photovoltaic (PV) panels for solar power in recent years has led to a great deal of research in dc- dc converter topologies suitable for PV applications. Without a dedicated power converter, the output voltage produced by PV panels is too low to be useful in grid-tied applications. A common solution to this problem involves connecting the panels in a series string configuration. This approach, however, has shortcomings. For instance, both the shading of individual panels in the string and any mismatch between panels affect the power output of every panel in the string. Therefore, connecting a high step-up dc-dc converter to each individual panel is considered a better solution. Doing so allows all panels to produce a maximum amount of power, regardless of the operating state of the other panels in the array.

A large variety of high step-up dc-dc converters exists that would be suitable to use with PV technology. Most of these converters, however, rely on either coupled inductors or high frequency transformers to achieve a high voltage gain. The design of these magnetic components can be complex and time-consuming. Additionally, many topologies require some means of managing component stress to improve efficiency. In most instances, these management techniques require the use of either a soft switching or a Resonant-type converter, further complicating the realization of these converters.

Cascaded converter topologies made from chains of simple basic converters were proposed to reduce the design complex- ity of high step-up dc-dc converters. These types of converters, however, suffer from the fact that, as the number of stages in- creases, the component stresses increase as well. The high component stresses make the practical implementation of these types of converters costly, as components with high voltage ratings are required.

Ladder type, current fed, switched capacitor converters were proposed to address the high component stresses in cascaded converters. The design in uses a Cockcroft-Walton (CW) multiplier fed by a boost converter to achieve high, con- troll able voltage gains. The CW multiplier has the unique characteristic of imposing equal voltage stresses on every stage. Its construction is also simple and easy to implement. The input stage design of is complex because it requires four controllable switches, two of which require high side driving. Although there are off-the-shelf solutions for high-side gate drive, still the complexity and losses of this circuit will be higher than a two-switch topology. Also, the output does not share a return ("ground") with the input,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

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Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060409*

Design of an MLI with a reduced amount of Switches

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	10 April 2023

Abstract— In this paper, 31-level symmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The Proposed multilevel inverter output voltage level increasing by using eight numbers of switches driven by the multicarrier modulation techniques. The voltage sources used in this multilevel CASCADE inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and eight switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components. This proposed topology offers high power capability associated with less commutation losses, less total harmonic distortion (THD), and involves less number of switching devices and less number of voltage source in comparison of conventional topologies for 31-Level asymmetric multilevel inverter.

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Keywords: ***Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.***

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Citation: A.Vijayalakshmi, Dr.P.Yamunaa, Mr.A.Antonycharles, Dr.S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan. "Design of an MLI with a reduced amount of Switches", Journal of Science, Computing and Engineering Research, 6(4), 34-37, 2023.

I. INTRODUCTION

The device which converts DC voltage to AC voltage is called inverter. Output voltage should ideally be sinusoidal wave of variable magnitude and variable frequency. An inverter does the opposite job of Rectifier. Electronic inverters can be used to produce smoothly varying AC output from a DC input. Inverters are made up of capacitors and inductors which make the output current smooth as compared to switching square wave output you get with a basic inverter.

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power- quality waveforms. Large instantaneous common -mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low dv/dt per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics First multilevel-inverter topology consisted of single-phase inverter connected in series. This topology is widely known as cascaded H-bridge (CHB) inverter. Later, an inverter named Neutral Point Clamped (NPC) was constructed using diodes connected to the neutral point; which was capable of producing multi-level output voltage by using a single DC voltage source. Flying capacitor (FC) inverter was made using several capacitors. Above said topologies are widely known as "Classical Topologies". In recent years, research is focused on reduced device count inverters which require new control techniques.

II. EXISTING SYSTEM

A existing topology based on asymmetrical multilevel in verter (ASMLI), shown in Fig. 1, which required four unequal voltage sources (V1, V2, V3, and V4) and ten unidirectional switches (S1, S2, S3, S4..... S10), which is combination of IGBT with antiparallel Diode, for 31 levels in output voltage of proposed asymmetric multilevel inverter. For 31- Level MLI, proposed topology produces maximum voltage (V4 + V3).

It is clear that switching combination of (S1, S2), (S3, S4), (S5, S6), (S7, S8), and (S9, S10) should not be turned 'ON', simultaneously, to avoid short circuit across the voltages. To generate all the positive and negative levels in the output voltage, magnitude of the voltage sources (V1:V2: V3:V4) should be in the ratio of (1:2:5:10). For different levels of 31-Level MLI, different switching combinations are shown in Table I, in which state 1 to state 15 presents positive levels, state 16 present Zero level and state 17 to state 31 presents negative levels in the output voltage waveform of proposed MLI. State condition "1" and "0" shows the corresponding switch is turn 'ON' or turn 'OFF', respectively.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060306*

Automatic Smart Solar Radiation Tracker for PV Power Plants

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	18 Mar 2023

Abstract— This paper concerns the automatic smart solar radiation tracker dedicated to photovoltaic panels. The proposed tracking system ensures optimum generation of electrical power by proper orientation of PV panels while consuming minimal energy. The design criteria are based on controlling the panel's position by automatic rotation throughout two DC motors only at certain times during the day. The followed methodology uses a microcontroller algorithm to redirect the solar panels in accordance with the actual coordinates of the sun. The idea is applicable to any PV system at any geographical location as panel rotation is changed according to the tilt and azimuth angles. This leads to capturing maximum radiation at any given time. Moreover, its power consumption is low due to its working mechanism and automatic sleep mode feature while not in use. Results have proved its cost-effectiveness, energy- efficiency, simplicity, and reliability in operation under different weather conditions.

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Keywords: ***photovoltaic, solar cells, sun tracker, solar energy, tracking mechanism.***

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Citation: Dr.G.Irin Loretta, A.Vijayalakshmi, Dr.P.Yamunaa, A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi. "Automatic Smart Solar Radiation Tracker for PV Power Plants", Journal of Science, Computing and Engineering Research, 6(3), 24-30, 2023.

I. INTRODUCTION

The fact that conventional energy sources are unsustainable, environmentally harmful, and expected to diminish within a few years, placed deploying renewable eco-friendly energy sources at the center of public interest. "Solar energy is the cleanest and most abundant renewable energy source available. Solar energy is harnessed and converted into electricity using different technologies in which photovoltaic cells are the most popular and efficient one. Nonetheless, researchers are experiencing many challenges to optimize the efficiency of photovoltaic cells. According to a report published in 2019 by Fraunhofer Institute of Solar Energy Systems ISE, the maximum efficiency reached of a mono-crystalline and multi-junction cells are 26.7% and 46% respectively.

One of the main reasons for low-efficiency values is that the energy output of the PV cell is directly proportional to the sunlight concentration. PV power plant productivity is boosted when the solar panel is mounted perpendicularly to. Due to sun continuous position changing in the skydome, this orientation can only be achieved by implementing a movable tracker that follows the sun's position. In contrast, the absorption efficiency of an immobile solar panel would be significantly less. Researchers have compared the power output of a static solar panel to a one that has a tracking system and has observed improvement in efficiency by 40% on average. Thus, the solar tracking system comes into play to maximize the reception of sunlight by automatically altering the position of the solar module according to the sun incident on the earth at any time.

The sun's position can be determined by a combination of three different parameters; azimuth angle, altitude angle and GPS coordinates of the observer. The latter depends solely on the latitude and longitude of the site where the solar module will be installed. This parameter is constant and bonded to the geographical location. However, the other two parameters can vary at any instant caused by the earth's rotation around its own axis and earth orbiting around the sun. They can be imitated on the tracker by two rotations; vertical and horizontal. Researchers have employed different tracking mechanisms to harvest maximum sunlight.

A single-axis mode with tilted installation of the PV panels resulted in inaccuracy and less electrical output. Likewise, manually adjustment of the tilt angle seasonally to compensate for the absence of second axis tracker, lacks practicality and accuracy. Consequently, dual-axis autonomous tracker the optimum solution. The most popular technique is using light-detecting resistor (LDR). Although methodologies may differ in controlling strategy and/or sensors number and alignment, their theory is based on the same concept. Another approach uses small-scale photovoltaic cells to act as sensors, besides the main photovoltaic panel used to generate electricity. The above-

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604021*

Step up – Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications

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Article Information

Received	:	30 Sep 2022
Revised	:	12 Oct 2022
Accepted	:	18 Oct 2022
Published	:	28 Oct 2022

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Abstract— A systematic method for developing isolated step up – step down (IBB) converters is proposed in this paper, and single-stage power conversion, soft-switching operation and high efficiency performance can be achieved with the proposed family of converters. On the basis of a non-isolated two-switch step up - step downconverter, the proposed IBB converters are generated by replacing the DC step down-cell and step up-cell in the non-isolated step up - step down converter with the AC step down - cell and step up - cell, respectively. Furthermore, a family of semi-active rectifiers (SARs) is proposed to serve as the secondary rectification circuit for the IBB converters, which helps to extend the converter voltage gain and reduce the voltage stresses on the devices in the rectification circuit. Hence, the efficiency is improved by employing a transformer with a smaller turns ratio and reduced parasitic parameters, by using low-voltage rating MOSFETs and diodes with better switching and conduction performances. A full-bridge IBB converter is proposed and analyzed in detail as an example. The phase-shift modulation strategy is applied to the full-bridge converter to achieve isolated step up - step down conversion. Moreover, soft-switching performance of all active switches and diodes can be achieved over a wide load and voltage range by the proposed converter and control strategy. A 380V output prototype is fabricated to verify the effectiveness of the proposed family of converters,

Keywords: ***DC-DC converter, isolated step up - step downconverter, semi-active rectifiers, soft-switching, high step-up***

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Citation: S.Dinakar Raj, S.L. Sreedevi, R.Tamilamuthan, Dr.G.Irin Loretta, A.VijayaLakshmi, P.Yamunaa. "Step up Step down Converters Based on Semi-active Rectifiers for High Output Voltage Applications ", Journal of Science, Computing and Engineering Research, 6(4), 111-116, 2023.

I. INTRODUCTION

Isolated DC-DC converters are widely used to meet the input/output voltage range and galvanic isolation requirements in the renewable energy and battery discharging applications such as battery-sourced front-end converters for stand-alone renewable power systems, and maximum power point tracking converters for grid-tied renewable power generation systems. Generally speaking, isolated

However, achieving high efficiency power conversion over a wide voltage range is of a great practical concern, especially for power systems that draw from renewable energy sources and batteries. For example, the output voltages of photovoltaic (PV) arrays may fluctuate over a wide range due to the variations in solar radiation and ambient temperature, and the terminal voltage of a battery also exhibits wide fluctuation due to change in its state of charge.

From the perspective of conversion efficiency, an isolated step up - step down converter is a promising approach. A flyback converter is a typical converter, although its efficiency remains low because of the high voltage/current stresses on the components and the hard-switching of the active switch and rectifying diode. Moreover, the flyback converter is only suitable for low power applications. Fig. 1 shows the diagram of a two-switch step up - step downconverter, which is composed of a step down - cell, a step up - cell and a DC-link inductor. This converter is of interest because it can realize both voltage step-up and step-down conversion, and can achieve high efficiency over a wide voltage range. However, it cannot satisfy the requirement of galvanic isolation. A family of converters was developed by replacing the non-isolated step down - cell in the non-isolated two-switch step up - step downconverter shown in Fig.1 with an isolated step down - cell. A wide voltage gain range with flexible control has been achieved with these converters, but the conversion efficiency is hindered by the cascaded two-stage conversion architecture. In addition, the active switches and rectifying diodes on the secondary-side of these converters are subjected to hard-switching, which has a negative influence on the conversion efficiency as well. From the perspective of efficiency, achieving conversion with a single-stage and

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

A SINGLE PHASE TRANSFORMERLESS INVERTER FOR PV APPLICATION

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Abstract— **Recently multilevel inverters (MLI) have attracted more attention in research and industry, as they are changing into a viable technology for several applications. The concept of MLI was introduced for high power and high/medium voltage applications as they can provide an effective interface with renewable energy sources. Developing of reduced switch MLI topology has been a rapid research topic since the past decade. MLIs can generate higher voltage levels and also reduces the passive filter requirements. Diode Clamped MLI, Flying Capacitor MLI and Cascaded H-Bridge MLI are the conventional topologies. The number of components is directly proportional to the number of levels. Therefore, the reduced switch MLI topologies were introduced to overcome this drawback.. Multicarrier pulse width modulation technique is utilized for generating the quality of output voltage level. To prove the proposed multilevel inverter topologies feasibility, many comparisons are done with multiple performance parameters. Total Harmonic Distortion is the main parameter which is calculated using theoretical asymptotic time domain formula and the values are compared with simulation and experimental results.**

Keywords— MLI- MULTILEVEL INVERTER, FCMLI - FLYING CAPACITOR MULTILEVEL INVERTER, SDCMLI- SWITCH DC SOURCE MULTILEVEL INVERTER

I. INTRODUCTION

The inspection and investigation of power electronic systems had started a century ago and has encountered more than 100 years of advancement. The utilization of power electronic system has penetrated into an ever increasing number of applications during the past decade such as large motor drives, railway traction, Unified Power Flow Controllers, Static Var Compensators, HVDC transmission and STATCOM. Nowadays, the involvement of power electronic system has gained more popularity in renewable energy applications such solar, wind, fuel cell, hydrogen, biomass and ocean or marine energy.

In power electronic system, especially inverter technology plays a vital role in renewable energy application due to continuous strong interest in energy conversion process. So, the research pertaining to the inverter technology is more interesting and attractive in both academic and industry perspectives. Many industrial/modern applications require higher voltage and higher power like tens of kilo volts and mega-watts power range as the normal operating range. Therefore, the direct utilization of single switching devices for higher power range is more difficult and challenging. So, the intension is to introduce the idea of Multilevel Inverter (MLI) [1] concept to overcome the above said drawbacks.

For high voltage and high power application, the switching devices share the voltage stress in MLIs than in conventional inverters contingent upon the quantity of voltage level adopted. In the meantime, with expanding the number of level in output voltage will decrease the harmonic distortion on it. The utilization of MLI is adopted even in medium voltage application also with the benefits of lower switching losses and lower switching stress.

II. TRANSFORMER INVERTER

Voltage-fed inverter transformers are more common than the current-fed. Let Butler Winding custom design a voltage-fed inverter for your business needs. The term inverter is associated with several different electronic applications. In logic circuits inverter may be a logic inverter, the equivalent of a "Not" gate. In analogue signal processing, an inverter can be a circuit which inverts the phase of the signal being transmitted. In power conversion applications an inverter is an electronic transformer which converts power from a Direct Current (D.C.) source into Alternating Current (A.C.) power. Power conversion inverters can be divided into two sub-categories, voltage-fed inverters and current- fed inverters. Voltage-fed inverters are more common than the current-fed inverters. The electronic transformers used in inverter circuits are often called inverter transformers. Inverters produce A.C. power by switching the polarity of the D.C. power source across the D.C. power source€ ™s load. The early inverters used mechanical switches to do the switching. Vacuum tubes replaced mechanical switches in low power applications[1]. Eventually

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060314*

Hiro Card Marker Detection in Augmented Reality

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	20 Mar 2023

Abstract— Augmented Reality is a combination of a real and a computer-generated or virtual world. It is achieved by augmenting computer-generated images on real world. It is of four types namely marker based, marker less, projection based and superimposition based augmented reality. It has many applications in the real world. AR is used in various fields such as medical, education, manufacturing, robotics and entertainment. Augmented reality comes under the field of mixed reality. It can be considered as an inverse reflection of Virtual Reality. They both have certain similarities and differences. This paper also gives us knowledge regarding those major threats that augmented reality will face in the near future and about its current and future applications. It provides a comprehensive study of Augmented Reality. One of the challenges of AR is to align virtual data with the environment. A marker-based approach solves the problem using visual markers, e.g 2D barcodes, detectable with computer vision methods. We discuss how different marker types and marker identification and detection methods affect the performance of the AR application and how to select the most suitable approach for a given application..

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Keywords: *Augmented Reality, Entertainment, Virtual, Computer*

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R , Noble Lourdhu. "Hiro Card Marker Detection in Augmented Reality", Journal of Science, Computing and Engineering Research, 6(3), 69-75, 2023.

I. INTRODUCTION

Augmented Reality has its origin from the word 'Augment' meaning to add or enhance. The term Augmented Reality was given by Boeing Researcher, Tom Caudell. Augmented Reality (AR) is overlapping or augmenting of digital images on real world objects using various AR apps. AR intensifies one's understanding of the real world. AR can be defined as the system in which real and virtual worlds have been combined, there is real time interaction, and the device is registered in 3D. Here, the augmentation is being done in real time. One can say that AR is a technology in between the real reality and the virtual reality. Augmented reality (AR) is one of the technologies gaining increasing interest. By mixing virtual with the real world in different proportions, augmented reality allows a level of immersion that no virtual equipment can provide.

AR systems have been already used in many applications as surgery, inspection of hazardous environments, engineering. Most of those systems, however, only operate indoors and cover relatively small areas.The advances of the computer, vision and wireless technology make possible development of outdoor wireless systems to support complex analysis, decision-making and governing processes.This chapter is organised in four sections. The chapter gives a broad definition of AR systems, discusses AR problems with respect to similar techniques for representing, interacting with 3D worlds (VR and AV) and communicating with mobile users (LBS), and provides classifications of AR systems.

Very often AR is defined as a type of "virtual reality where the Head Mounted Display (HMD) is transparent". The goal of augmented reality systems is to combine the interactive real world with an interactive computer-generated world in such a way that they appear as one environment. As the user moves around the real object, the virtual (i.e computer generated) one reacts as it is completely integrated with the real world.

Augmented Reality allows us to interact with the real and virtual worlds at the same time. It is an example of Intelligence Amplification (IA), as told by Fred Brooks, which means using computer as a tool so as to make it easier for a human to perform a task . Thus, this technology has been applied in many fields some of which have been mentioned below. In Medical, Augmented Reality will be far-reaching in the near future. It is being widely used in healthcare sector where there is a need of visualizing the medical information and the patient within the same physical space. Augmented Reality can be used to perform surgeries and can help surgeons perform real time surgeries without being physically present near the patient. Some of the real life examples where AR is being used in medical field. Eye Decide is a medical app which simulates the impact of specific conditions or medicines on a person's vision using a camera. E.g Eye Decide can demonstrate the impact of cataract. Accu Vein app uses a handheld camera

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

A STUDY ON TRANSIENT PROTECTION USING MO-SURGE ARRESTERS FOR DC RAILWAY SYSTEMS

S. Joshibha Ponmalar

Assistant Professor, Department of Electrical and Electronics Engineering, PERI Institute of Technology.

Abstract: Transient protection of DC railway systems is studied in this paper, by considering the different insulation of the rails and the earthing concepts. The ratings of gapless Metal oxide(MO) surge arresters are based on the relevant EN standards and national guidelines. A recently evolved crossover voltage limiter, which joins overvoltage security and the insurance against risky touch voltages, is presented in the writing is introduced in this article.

Keywords: DC railway systems, High voltage limiter, Low voltage limiter, Transient protection, Surge Arresters

1. Introduction

Transients in electrical networks are due to effects of lightning strokes and switching actions which is unavoidable. Lightning strokes hits the tall objects hence in railways there is a possibility of direct or nearby lightning. Due to indirect lightning there is a induced voltages, and unacceptable voltages due to failures in the system. Contingent upon the protection of the rails against earth, various viewpoints must be considered for an overall security idea. A DC traction protection system against a lightning strike is given in [1]. In [2] and the use of different protection apparatus is discussed.

2. Voltages in DC railway systems

The voltages in the railway system is broadly classified as (i) system voltages and (ii) overvoltage

2.1. System voltages

The supply voltages for railways are given in the two *standards*: BS EN 50163 and IEC 60850. For railway applications traction system supply voltages is used. To study about arresters and the protection concept in general the following some definitions are necessary, that are given for the reference.

Nominal voltage Vn: the designated value for a system.

Maximum permanent voltage Vmax1: the maximum value of the voltage likely to be present indefinitely.

Maximum non-permanent voltage Vmax2: the maximum value of the voltage likely to be present for maximum of 5 min .

The values for Vmax2 can become 800V in the 600V system, and 1000V in the 750V system in case of regenerative breaking.

To design a insulation coordination and transient protection, the highest value of voltage will be taken for consideration.

2.2. Overvoltage's

The height of tower, insulators used in overhead DC power transmission system and other dimensions used in railways are more or less same as that of medium voltage (MV) distribution networks. Hence the consideration used in MV system can be taken as the reference input for designing insulation coordination and transient protection. Based on the lightning day of that location, the expected number of indirect lightning which depends on the exposure of the line, nearby objects such as trees, buildings, towers, etc protection system will be designed.

Overvoltage's due to direct and indirect lightning strikes are identified by different wave shapes. From the literature it is clear that overvoltage's due to a direct strike have an overall wave shape similar to that of the incident lightning current, the fast impulse rising portion consists of superimposed with several spikes created due to insulation breakdown. Induced overvoltage's are characterized by pulse width significantly shorter than the channel-base current of the lightning and

Their wave shape is strongly affected by the ground electrical conductivity [3].

A direct lightning striking a phase conductor infuses current waves in the two ways. The relating voltage rises to half of the current increased by the line trademark impedance, which is about 400Ω. Since over 90% of the strokes have a peak current of 10 kA, the overvoltage will surpass 2MV for 90% of the strokes. These voltages developed by direct lightning are far higher than the lightning withstand voltage of the line. Thus flashovers among stage and earth will happen.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DEVELOPING A GESTURE BASED VIDEO CALLING FOR DEAF AND MUTE PEOPLE USING MICROSOFT KINCET

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B.Priya[2] C.Kalaiarasi[3] K.Varalakshmi[4] V.Dharma Prakash[5]

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Department of Computer Science and Engineering

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Abstract

In recent year, there has been rapid increase in the number of deaf-mute victims due to birth defects, accidents and oral diseases. Since deaf-mute people cannot communicate easily with normal people so they have to depend on some sort of visual communication. This system is based on a skin-color modelling technique so the skin color range is predetermined that will extract pixels(hand) from non-pixels(background). The images were fed into the model called the Convolutional Neural Network (CNN) for classification of images. Keras was used for training of images provided with proper lighting condition and a uniform background; the system acquired an average testing accuracy of 93.67%, of which 90.04% was attributed to ASL alphabet recognition and 97.52% for static word recognition, thus surpassing that of other related studies. The framework is developed by using python flask for a Web Based Application to establish the connection between deaf-mute and normal users. So that the Sign Language can be converted into Normal text or voice as output for the normal people. on the other end voice of the normal people is convcrted into text for the convenient of the deaf-mute people

Introduction

To Develop an Web Based Application for Two-Way Communication between Deaf-Mute users and Normal users by converting Sign language into text or voice message at the output with the help of deep learning algorithm we can achieve this operation for image processing and to build a better communication between any users. 1.2 Project Domain 1.2.1 Image processing Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image. Nowadays, image processing is among rapidly growing

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

A SINGLE PHASE TRANSFORMERLESS INVERTER FOR PV APPLICATION

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Abstract— **Recently multilevel inverters (MLI) have attracted more attention in research and industry, as they are changing into a viable technology for several applications. The concept of MLI was introduced for high power and high/medium voltage applications as they can provide an effective interface with renewable energy sources. Developing of reduced switch MLI topology has been a rapid research topic since the past decade. MLIs can generate higher voltage levels and also reduces the passive filter requirements. Diode Clamped MLI, Flying Capacitor MLI and Cascaded H-Bridge MLI are the conventional topologies. The number of components is directly proportional to the number of levels. Therefore, the reduced switch MLI topologies were introduced to overcome this drawback.. Multicarrier pulse width modulation technique is utilized for generating the quality of output voltage level. To prove the proposed multilevel inverter topologies feasibility, many comparisons are done with multiple performance parameters. Total Harmonic Distortion is the main parameter which is calculated using theoretical asymptotic time domain formula and the values are compared with simulation and experimental results.**

Keywords— MLI- MULTILEVEL INVERTER, FCMLI - FLYING CAPACITOR MULTILEVEL INVERTER, SDCMLI- SWITCH DC SOURCE MULTILEVEL INVERTER

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
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DESIGN CONSIDERATION OF A HIGH EFFICIENCY FULL BRIDGE SINGLE STAGE CONVERTER WITH IMPROVED OUTPUT

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Abstract— **This paper explains the single-stage circuit topology consists of of full-bridge isolated dc–dc converter combined with two input inductors and two input diodes connected to the mains network, in order to obtain an isolated ac/dc switch mode power supply, with sinusoidal input current. Consequently, circuit current is equally distributed by using proposed topology of four-bridge transistors which is made up of four input parallel boost power factor correctors (PFCs). Better power factor correction and output voltage regulation is ensured by the use of the four-bridge transistors with galvanic isolation that makes this topology unique, which also contributes to improve the converter efficiency. A maximum efficiency of 94% was obtained.**

Keywords— **Full-bridge converters, input current shaping, low-distortion input current, single-stage power factor correctors (PFCs).**

I. INTRODUCTION

A switch mode power supplies (SMPSs) with galvanic isolation, having the capability to provide the improved power factor correction (PFC) is a eminent characteristic. This PFC topology requires the input bridge rectifier additionally followed by a boost converter circuit to improve the characteristics of the converter [1-3]. For high level of power conversion, the two stage operation is considered here with input converter and full-bridge isolated dc–dc converter results with the inherent characteristics of high cost and the possibility to achieve the very high efficiency in each stage of power conversion. Efficiency is taking major part to assure the better converter operation at any unnecessary conditions. It concluded that, to obtain a overall efficiency is always greater than 95% is mandatory for giving better efficiency greater than 97.5%, which is difficult to achieve and also expensive to obtain, when the second stage is a full-bridge converter[4]-[10].These techniques were permitted to obtain good input current wave shaping with lower harmonic distortion and efficiency higher, >95%.However, to perform also high-frequency isolation and output dc voltage regulation isolated dc–dc converter ratings of the power transistor and diodes increase considerably, there by raising the cost of these solutions to values that can be even higher than those observed in the two stages topology [11-15] .

Simultaneously, the operation of input current shaping and output voltage regulation could be achieved by using these topologies without using any additional transistors. However, these topologies are not designed in terms of additional components and current distribution in the bridge transistors. For example, in the topologies presented in, only two parallel input boost converters are provided using the low-side transistors, which leads to asymmetrical current distribution in the bridge transistors causing, in these transistors, a high current stress. An input bridge rectifier is also needed for these topologies. For the topologies proposed in, only one input inductor is used, but this inductor and the two low-side transistors have to support the maximum input current Fig 1. On the other hand, the topology presented in uses two inductors for half of the maximum input current, which means that, each low-side boost transistor needs only to support half of the maximum input current, thereby reducing the current stress in these transistors.

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II. CIRCUIT DIAGRAM

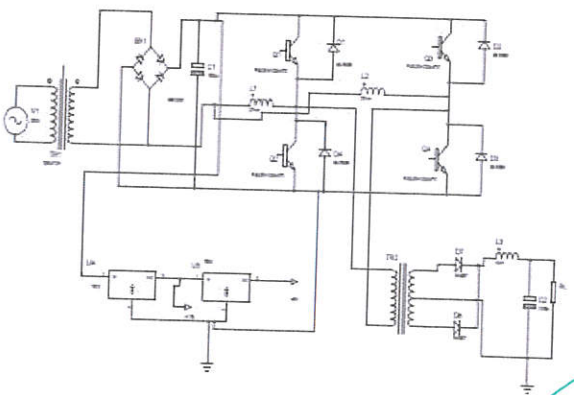


Fig 1. Power circuit diagram

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020. ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

Z SOURCE FED H-TYPE DIODE CLAMPED MULTILEVEL INVERTER WITH LESS NUMBER OF SWITCHES

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Abstract— **In this paper, simulation using MATLAB-SIMULINK is performed with bipolar triangular fixed amplitude multi-carrier Phase Disposition (PD) PWM strategy with sine wave and Third Harmonic Injection reference for the chosen Z Source based H-Type Diode Clamped Multilevel Inverter (ZSBH-Type DCMLI). The root mean square value of the fundamental component and THD of the output voltage which are the most important performance indices for the chosen inverter topologies are evaluated presented and compared for various references through duty ratios. From the simulation results it is observed that for both the reference the THD is almost similar but the root mean square value in terms of voltage is more for THI reference with phase disposition strategy.**

Keywords— *-Source inverter, DCMLI, PWM, THD, Boost*

I. INTRODUCTION

Inverter is a power electronic device which converts DC into AC. Based on the nature of the input source; inverters are mainly classified as voltage source and current source inverters. DC link of current source inverters needs large DC chokes. So it has limited dynamic performance. This is the drawback of current source inverters. Voltage source inverters do not have high dynamic performance and have dv/dt problems. The demerits of the traditional voltage source inverters are compensated by the emergence of multilevel inverters. Multilevel Inverter (MLI) is made up of multiple switches. Multilevel inverter enables the use of environmental friendly energy sources like solar cells and fuel cells.

MLIs have problems of shoot-through state and MLIs can perform buck operation only. Impedance-Source (Z-Source) networks are extensively used to provide boost ability in such MLIs. Z-Source MLIs have single-stage power conversion capability, which make use of shoot-through and non-shoot-through states of the inverter bridge to provide boosted output voltage, thus achieving high immunity to the EMI noise. However, Z-Source MLI has noticeable flaws such as high voltage stress across the capacitors and switching devices, high inrush current and small boost ability. Another major drawback of the Z-Source MLI is the discontinuous input current that may lead to low utilization and permanent damage of the dc source.

Babaei et al[1] discussed about the reduction of dc voltage sources and switches in asymmetrical multilevel converters using a novel topology. Anderson and Peng [2] developed different types of quasi-Z-Source inverters. Babaei [3] introduced a cascade multilevel converter topology with reduced number of switches. Axelrod et al [4] suggested a switched-capacitor/switched-inductor structure for getting transformer less hybrid DC-DC PWMconverters. Astudillo et al [5] proposed a new symmetrical hybrid multilevel DC-AC converter. Al-Othman and Abdelhamid [6] proposed different method to elimination of harmonics in multilevel inverters with non-equal dc sources using PSO. Abdel et al [7] suggested a switched inductor boost converter for PV applications. Abu-Rub et al [8] Quasi-Z-source inverter-based photovoltaic generation system with maximum power tracking control using ANFIS. Aida Baghbany Oskouei and Seyed Hossein Hosseini [9] introduced a novel SVC algorithm for multilevel Z-source inverter. Anh-Vu Ho et al [10] made a Analysis and control of single- phase Z-source multilevel inverter. Weihua Liang et al [11] described about state of charge balancing control for battery energy stored quasi-Z-Source cascaded multilevel inverter based photovoltaic power system. Mohamed Trabelsi et al [12] introduced a 1-MW quasi-Z source based multilevel PV energy conversion system. The above literature survey gave some idea about the proposed work on Z source inverter and multilevel inverter. Balamurugan et al [13] developed hardware implementation of cascaded hybrid multilevel inverter with reduced number of switches. Balamurugan et al [14] also developed hybrid carrier PWM strategies for three phase h-bridge multilevel inverter Balamurugan et al [15] introduced dspace based implementation of various inverted sine carrier PWM strategies for three phase five level h-bridge inverter. Vijayalakshmi and Balamurugan [16] made an investigation on Z-source based cascaded

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Industrial Engineering Journal
ISSN: 0970-2555
Website: www.ivyscientific.org

Industrial Engineering Journal
Volume 15 Issue 10 * October 2022

A Novel Hybrid Clustering Algorithm for Lifetime Maximization and Throughput Enhancement in Wireless Sensor Networks

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Abstract: Wireless sensor networks (WSNs) can be deployed both inside and out-of-doors. Sensor nodes can be positioned on a very large scale, perhaps even woven in fabric, or scattered from airplanes. It can also be used in habitat observation, energy administration, inventory control, and military warfare. Therefore many sensor networks will likely be deployed in open, actually insecure, or even hostile atmospheres where node compromise is a distinct likelihood. One of the major advantages of wireless sensor networks is their capability to operate in unattended, harsh environments in which existing human-in-the-loop monitoring schemes are uncertain, inefficient, and sometimes

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© November 2021| IJIRT | Volume 8 Issue 6 | ISSN: 2349-6002

A review on Australian Bush fire: Calculation of area of burnt bushes in south Eastern Region during 2019-20

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Abstract **- The bushfire occurred during 2019–2020 in summer on the east coast of Australia was a series of major fires occurring from November 2019 to end of January 2020 across the states of Queensland, New South Wales (NSW), Victoria and South Australia. The bushfires were exceptional in scope and the broad character of the bushfires caused smoke pollutants to be transported not only to Australia, but also to New Zealand .At the pinnacle of the bushfires, smoke plumes were infused into the stratosphere at a height of up to 19 km and hence elated across the world. The air quality monitoring data collected during the bushfire period and remote sensing data from the Moderate Resolution Imaging Spectro radiometer (MODIS) and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) satellites to determine the extent of the wildfires, the pollutant transport and their impacts on air quality and health of the exposed population in NSW. The results showed that the dispersion and transport of pollutants from bushfires predicted the daily concentration. The impact on health endpoints such as mortality and respiratory and cardiovascular diseases in addition millons of mammals, animals, birds, reptiles, frogs were died to that across the modelling domain was then estimated. The estimated bushfire area is calculated which is higher than previous wildfire happened and health impact on each of the Australian has cardiovascular diseases hospitalizations during November 2019 to Jan 2020.**

Index Terms **- Bushfires, South East Australia, pollutant transport, air quality effect, brunt area.**

INTRODUCTION

The 2019–20 Australian bushfire season, colloquially known as Black Summer, was a period of unusually intense bushfires in many parts of Australia. Bushfires in Australia are a widespread and regular occurrence that have contributed significantly to shaping the nature of the continent over millions of years.
Eastern Australia is one of the most fire-prone regions of the world, and its predominant eucalyptus forests have evolved to thrive on the phenomenon of bush fire. However, the fires can cause significant property damage and loss of both human and animal life. Bushfires have killed approximately 800 people in Australia since 1851 and billions of animals.

CAUSES FOR AUSTRALIAN BUSHFIRE

In recent times most major bushfires have been started in remote areas by dry lightning. Some reports indicate that a changing climate could also be contributing to the ferocity of the 2019–20 fires with hotter, drier conditions making the country's fire season longer and much more dangerous. During periods of drought, the fuel for wildfires is greater than normal, and bushfires combine to become mega fires generating their own weather and spreading fire further. Strong winds also promote the rapid spread of fires by lifting burning embers into the air. In New South Wales, dry winds originating from the Great Dividing Range abruptly raise air temperatures in the lee of that mountain range and reduce atmospheric moisture, thus elevating fire danger.
The state of New South Wales (NSW) and most of eastern Australia was in drought from 2018 to the end of 2019. In October 2019, spring rain then relieved part of western NSW. This resulted in increasing vegetation growth which increased the likelihood of fires during the subsequent summer due to more fuel load available and when meteorological conditions were more favorable to ignite fires

OBJECTIVES

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A SECURE FRAME WORK FOR GOVERNMENT TENDER ALLOCATION USING BLOCK CHAIN

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Abstract

Block chain technology is an advanced database mechanism that allows transparent information sharing within a business network. It stores data in block that are linked together in a chain. It most safe,secure and fast. Our project is to create web application to the people who lodge a complaints to the government regarding common problems. The complaint where move to the respective departments and the problem which can be solved were hold and report back to the government. The government will allocate the tender to the contractors the satisfying coded amount is chosen then transactions starts more secure using block chain technology.

The existing system is lacking to process the data in a short period of time with the less efficiency and implemented in block chain technology the existing algorithm used consensus mechanism, ECDSA and RSA.In the proposed system to overcome the existing implementing SHA 256 algorithm in the real time database collected from the website gov.tender.an and in the existing datasets government procedure and comparing them. The performance measures of this experimental results areexplainedinthecomparison, accuracy,precision,recallandefficiency.This project gives the good result in the SHA 256 than consensus algorithm.

Keyword---Block chain, SHA256 algorithm, Distributed Ledger TechnologyINTRODUCTION

There have been different endeavors to carry out the innovation to make government processes paperless and immediate, for example, web based tagging frameworks, internet giving of tenders, documenting expense forms,and so on. Albeit a large portion of these frame works appear to be hearty and very much carried out, everyone of them depend on the possibility of a focal server that has a weak link, as

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060305*

Authorized Data Dedupulication Technique In Cloud Storage System

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	17 Mar 2023

Abstract— Data deduplication is one of important data compression techniques for eliminating duplicate copies of repeating data, and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the confidentiality of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this project makes the first attempt to formally address the problem of authorized data deduplication. Different from traditional deduplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new deduplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

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Keywords: ***Data Deduplication, Security, Cloud Computing, Storage.***

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Citation: S.S.Vasantha Raja, Dr R.Palson Kennedy, S. Jonisha, T.Bersikin Libina. "Enhancing Communication Skills of the Learners in Professional Advancement, "Journal of Science, Computing and Engineering Research, 6(3), 18-23, 2023.

I. INTRODUCTION

Cloud computing provides seemingly unlimited "virtualized" resources to users as services across the whole Internet, while hiding platform and implementation details. Today's cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified privileges, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the ever-increasing volume of data. To make data management scalable in cloud computing, de duplication has been a well-known technique and has attracted more and more attention recently.

Data deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage. The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent. Instead of keeping multiple data copies with the same content, deduplication eliminates redundant data by keeping only one physical copy and referring other redundant data to that copy. Deduplication can take place at either the file level or the block level. For filelevel de duplication, it eliminates duplicate copies of the same file. Deduplication can also take place at the block level, which eliminates duplicate blocks of data that occur in non-identical files. Although data deduplication brings a lot of benefits, security and privacy concerns arise as users' sensitive data are susceptible to both inside and outsider attacks. Traditional encryption, while providing data confidentiality, is incompatible with data deduplication.

Specifically, traditional encryption requires different users to encrypt their data with their own keys. Thus, identical data copies of different users will lead to different cipher texts, making deduplication impossible. Convergent encryption has been proposed to enforce data confidentiality while making deduplication feasible.

It encrypts/decrypts a data copy with a convergent key, which is obtained by computing the cryptographic hash value of the content of the data copy. After key generation and data encryption, users retain the keys and send the cipher text to the cloud. Since the encryption operation is Deterministic and is derived from the data content, identical data copies will generate the same convergent key and hence the same cipher text. To prevent unauthorized access, a secure proof of ownership protocol is also needed to provide the proof that the user indeed owns the same file when a duplicate is found. After the proof, subsequent users with the same file will be provided a pointer from the server without needing to upload the same file. A user can

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060406*

B&W Image Colorization Using Computer Vision And Deep Learning

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— Previous approaches to black and white image colorization relied on manual human annotation, which frequently resulted in desaturated results that were not believable as true colorizations. The project attempts to generate a plausible color version of a greyscale photograph given as input. It's a fully automated process for creating beautiful, lifelike colorization. By framing the challenge as a classification job, it accepts the problem's underlying ambiguity and uses class re-balancing during training to increase the diversity of colors in the end result. The system is trained on over a million color images and is implemented as a feed-forward pass in a CNN during testing. By a large margin, this strategy surpasses earlier methods. It also shows that colorization can be an effective pretext task for self-supervised feature learning when employed as a cross-channel encoder. On a variety of feature learning benchmarks, this technique achieves cutting-edge results

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Keywords: ***Colorization, CNN, VGG, Deep learning, Image Coloring***

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Citation: Dr Palson Kennedy R, Jonisha S, Bersikin Libina T, Vasantha Raja S S. "B&W Image Colorization Using Computer Vision And Deep Learning" Journal of Science, Computing and Engineering Research, 6(4), 18-23, 2023.

I. INTRODUCTION

Grayscale refers to digital photographs in which each pixel's value represents solely the light's intensity information. Only the darkest black to the brightest white are often displayed in such images. To put it another way, the image only features black, white, and grey hues, with grey having many levels. The value of each pixel in a grayscale image is proportional to the number of bits of data utilized to represent it. Grayscale image is a one-dimension (channel) image and the value of a grayscale image is commonly represented by 8 bits, that is, the pixel value of a pixel is represented by a combination of eight binary values. As a result, pixels have a value range of 0–255,with a total of 256 grayscale levels.

An RGB image is a three-dimension (channel) image, also known as a true colour image, is saved as an m-by-n-by-3 data array that defines the red, green, and blue colour components for each individual pixel. A palette is not used in RGB images. Each pixel's colour is determined by a combination of the red, green, and blue intensities stored in each colour plane at the pixel's location, where the red, green, and blue components are each 8 bits. This results in a possible palette of 16 million colours. True colour image is a term that refers to the precision with which a real-life image can be replicated

We will convert a grayscale or black and white image to a brilliant colour image in this project. However, the purpose of this project is to create a realistic colorization that may potentially trick a human observer, rather than to retrieve the original ground truth colour. As a result, our goal becomes much more attainable: model enough statistical relationships between the semantics and textures of grayscale images and their colour counter parts to yield visually appealing results.

We tackle the problem of automatic image colorization by (a) designingan appropriate objective function that handles the multimodal uncertainty of the colorization problem while capturing a wide variety of colours(b) introducing a novel framework for testing colorization algorithms that could be applied to other image synthesis tasks, and (c) training on a million colour images to set a new high-water water mark on the task. Second, we introduce the colorization taskas a competitive and simple way for self-supervised representation learning,with state-of-the-art results on a variety of benchmarks.

II. RELATED WORKS

HINT BASED COLORIZATION [1] Levin et al. proposed a simple but effective method that incorporates user colorization hints in a quadratic cost function, requiring that neighboring pixels in space-time with similar intensities have similar colours. The hints are provided in the form of imprecise coloured "scribbles" on the grayscale input image, and the method is capable of producing high quality colorizations with no additional information about the image. Extensions to this approach have improved its performance even more: Huang et al. used adaptive edge

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

COP DIV:A CHRONOLOGICAL COPYRIGHT DIVISIONAL APPROACH

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ABSTRACT

Copy right s plays an important role in industry as well as in academic institutes. However, quickly understanding the real meaning of a given copy right or a Copyright is difficult as they typically are very long and written in a quite unreachable way. These important information, especially the innovation itself and the experimental part of the invention, are usually contained in the description section. However, in many Copyright s the explanation parts are neither interpreted nor easily demonstrable. Here, we explain our novel CopDiv method for Copyright divisions, which aims at mechanically and openly recognize the most important parts of a Copyright . CopDiv uses a two-step approach, where a Copyright is first divisional into text blocks in an unsupervised fashion followed by a supervised classification step for each identified division. In contrast to previous work, CopDiv uses semantic word embeddings in both phases and applies a chronological learning algorithm for the second step. These changes guide to, on average, an improvement of 9.37% (8.87%, 9.00%) in terms of F1-score (precision, recall) and 7.19 in terms of accuracy in association to a baseline, as evaluated on two novel and manually divisional gold standard Copyright corpora. The method also is easily parallelizable, fast, making it applicable for truly large Copyright collections.

***Keywords**: Copyright divisions; Machine learning; Text divisions; Chronological classifiers; Word embeddings.*

1. INTRODUCTION

Copyright s are a key source of information for most industries. They are often the first (and sometimes the only) channel of publication of new ideas, innovations, and technologies. A big advantage of Copyright s is that they have to describe their innovative aspects in detail, because international Copyright laws demand full explanation of the invention to receive Copyright protection. Accordingly, scientists, Copyright searchers, data analysts, and Copyright lawyers are continuously reading and analyzing Copyright documents to learn about novel trends, to detect Copyright infringement, to valuate a competitor's intellectual property, to assess own novel ideas etc.

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© December 2021| IJIRT | Volume 8 Issue 7 | ISSN: 2349-6002

Deriving Scientific Insights from Machine Learning for Geo-science data

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Abstract - **Geo-sciences is a one of the vital social area that demands solutions to numerous pressing issues confronting humanity and the whole world. As the geo-sciences enter the era of big data, machine learning (ML)—which has been extensively successful in commercial domains—offers enormous promise to help solve geo-sciences challenges. This article introduces machine learning (ML) researchers to the challenges posed by geo-sciences problems and the potential for both machine learning and geo-sciences advancement. We begin by highlighting common sources of geo-sciences data and outlining their shared characteristics. Data science is gaining traction across a broad range of geo-sciences fields and applications. To meet that requirement, this article presents a review from a data life cycle viewpoint. Numerous facets of the geo-sciences present unique difficulties for the study of intelligent systems. Geo-sciences data is notoriously difficult to analyze since it is frequently unpredictable, intermittent, sparse, multi-resolution, and multiscale. The spatiotemporal boundaries of geo-sciences processes and objects are frequently amorphous. Across academia, industry, and government, there is a strong desire to learn more about the current state of data science in geo-sciences as well as its potential. To address that need, this article provides a review from a data life cycle perspective. The data life cycle's critical steps include concept generation, data collection, preprocessing, analysis, archiving, distribution, discovery, and repurposing. Initially we discusses the fundamental concepts and theoretical underpinnings of data science, while the second section summarizes key points and shareable experiences from existing publications centered on each stage of the data life cycle. In conclusion, a future vision for data science applications in geo-science is discussed, including topics such as open science, smart data, and team science. We hope that this review will be beneficial to data science practitioners in the geo-science community and flash additional discussion about data science best practices and future trends in geo-sciences and data science.**

Index Terms - **Geo-science, Data Science, scientific insights, Machine learning, Big data, data life cycle.**

1.INTRODUCTION

The goal of geo-sciences study is to get a better understanding of the Earth as a complex, highly interacting system of natural processes and their connections with human activities. Given the complexity of geo-sciences data, current methods have significant flaws. First and foremost, evidence alone is insufficient for the creation of models of the extremely complex processes under investigation; thus, preceding hypotheses must be taken into consideration. Second, data gathering can be most successful if it is guided by knowledge of current models in order to concentrate on data that will make a significant impact. Third, in order to integrate heterogeneous data and models from different disciplines, it is necessary to capture and reason about substantial qualifiers and context in order to make their integration feasible. The necessity for knowledge-rich scientific insights that include substantial volumes of geo-sciences knowledge. Geo-sciences research seeks to comprehend the Earth as a complex, highly interactive system of natural processes and their interactions with human activities. Given the complexity of geo-science data, current approaches have fundamental flaws. To begin, using data alone is insufficient for developing models of the extremely complex phenomena under study; therefore, prior theories must be considered. Second, data collection can be most effective when guided by an understanding of existing models in order to concentrate on data that will make a difference. Third, integrating disparate data and models from disparate disciplines requires capturing and reasoning about

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603010*

Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines

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Article Information

Received : 08 Jan 2023
Revised : 21 Feb 2023
Accepted : 07 Mar 2023
Published : 19 Mar 2023

Abstract— Alzheimer's is a type of dementia that causes problems with memory, thinking and behavior. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks. Dementia is not a specific disease. It's an overall term that describes a group of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities. Alzheimer's disease accounts for 60 to 80 percent of cases. Vascular dementia, which occurs after a stroke, is the second most common dementia type. But there are many other conditions that can cause symptoms of dementia, including some that are reversible, such as thyroid problems and vitamin deficiencies. Dementia is a general term for loss of memory and other mental abilities severe enough to interfere with daily life. It is caused by physical changes in the brain. Alzheimer's is the most common type of dementia, but there are many kinds. The input data is taken from the dataset repository. In our process, we are taken the Alzheimer's disease dataset as input. The system is developed the machine learning algorithm such as Support vector machine and logistic regression. The results shows that the performances metrics such as accuracy, sensitivity and specificity.

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Keywords: ***Alzheimer's Disease, Dementia, Machine Learning Algorithm, SVM and Logistic Regression.***

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Citation: Dr Palson Kennedy R, Vasantha Raja S S, Jonisha S, Bersikin Libina T. "Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines ", Journal of Science, Computing and Engineering Research, 6(3), 46-51,2023.

I. INTRODUCTION

ALZHEIMER's disease (AD) is the leading cause of dementia and poses a significant social and economic challenge. It is responsible for more than half of all cases of dementia. Over 50 million individuals currently suffer from dementia worldwide with a projected increase to 152 million by 2050. No cure for AD has been discovered, but there is intense effort to develop new clinical interventions that may slow or halt the disease. Such interventions are aimed at early (including preclinical and prodromal) stages of the disease prior to extensive cell damage, when it is thought treatment is more likely to be effective. Alzheimer's disease and related dementias (ADRD) have become a major public health concern in the United States. An estimated 5.6 million Americans aged 65 and older (10% of the US population) were living with ADRD in 2019, and this number is expected to grow dramatically as the population continues to age. By 2025, the number of Americans aged 65 or older with ADRD is expected to reach 7.1 million, nearly a 27% increase from 2019, and by 2050, this population is projected to be 13.8 million, with the highest growth among those in ADRD's advanced stage. Persons with ADRD require progressively extensive assistance in their daily lives, the majority of which is provided by family members, friends, and other unpaid caregivers. It is estimated that in 2018, American caregivers of persons with ADRD provided 18.5 billion hours of informal unpaid assistance, valued at $233.9 billion. Family caregivers (hereafter "caregivers") of persons with ADRD are expected to make important care decisions for their family members with ADRD on a daily basis. However, these caregivers report being unprepared for their roles and responsibilities, uninformed about care options, and unsupported by professionals in their decision making. Care giving for persons with ADRD is stressful, and it can severely affect the caregiver's own health and well-being. There is an urgent need to better prepare caregivers to manage their daily lives and those of their family members with ADRD, yet there are critical knowledge gaps regarding the types and amounts of information that caregivers may want to have in order to better manage ADRD. To provide patient-centred care for people with ADRD and enhance caregivers' quality of life, we must address those gaps.

Artificial intelligence (AI) is showing great promise in areas of health care—in precision treatments, patient education, virtual assistance, and cost reduction. Some attempts have been made to apply AI for persons with

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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HUMAN SIGNATURE VERIFICATION USING CNN WITH TENSORFLOW

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Abstract

A signature of a person is simply a handwritten sign or marks that resembles to his/ her name often stylized and unique and indicates person's identity, intent, and consent. Mostly used for different purpose like authenticating checks, drafts, certificates, approvals, letters, and other legal documents. Since signature are used in such critical activities, confirmation of their authenticity are significantly important.. Traditionally signature was manually compared with copies of genuine signatures for verification. This simple method may not be sufficient as the technology is becoming more and more advance and with advancing techniques of forgeries and falsification of signature. So, inorder to tackle such problem new efficient tool is needed and this project proposes such signature verification tool which can assist human in correct decision making in authentication of handwritten signature.

For such authentication of signature this project presents an applications of which facilitates the feature of human signature verification using the convolution neural network approach. This software is able to train the network with new dataset of signature and validate the authenticity of new signature of trained class. User can also perform experiment and analyze the training and verification of model with features result analysis feature. This software consists very efficient user interface so that any non-technical person can use the software without any difficulty. The end result of project was very optimistic and iten couragesus for further research and development in this field.

Introduction

To detect the human hand signature, we planned to design deep learning technique so that a person with lesser expertise in software should also be able to use it easily. The proposed system is to predict whether the human hand signature is forged or genuine. Samples of more number of images are collected that comprises of different classes such as genuine and forged signatures. Different number of images are collected for each classes that was classified into input images.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

LAND REGISTRATION USING BLOCK CHAIN METHOD

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Abstract

The process of land registration in any country is known to be a multistep process, since it entails the engagement of all stakeholders who will have a direct or indirect stake in the registration. The currently used land record title storage system raises major issues about data fraud, the security of highly sensitive data, and the risk of system failure due to natural disasters, such as the server used for data storage going down. Compared to the current approaches and procedures for land title management and data storage, blockchain is a cutting-edge technology and database that has the ability to completely address the problems that plague current systems. The basic and most important aspect of blockchain technology is that it is a decentralised network in which all data supplied by a single node are confirmed by all other available nodes, and only after a consensus is made can then the shared data be saved to the blockchain.There are various platforms being used for the creation of reliable, decentralised, transparent, immutable, and secure blockchain-based land registration and management systems. Smart contracts based on the Ethereum blockchain are gaining traction among these systems. Being a public blockchain platform, it allows anyone to participate in the blockchain ecosystem .

Introduction

Blockchain was developed from a bitcoin paper published by Nakamoto in 2008. It is a peer-to-peer network where all participants (peers) serve as a node and all the nodes hold the same information . Blockchain is a ledger dispersed publicly above a network that registers transactions associated with other network applicants . Instead of relying on the single authority such as administrators that can forge the database, blockchain technology offers a decentralised environment that offers robustness and security as well. Untrustworthy administrators can abuse this power. A normal database suffers from that issue which

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

PAT DIV: A CHRONOLOGICAL PATENT DIVISIONAL APPROACH

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ABSTRACT

Copy right s plays an important role in industry as well as in academic institutes. However, quickly understanding the real meaning of a given copy right or a Pattern right is difficult as they typically are very long and written in a quite unreachable way. These important information, especially the innovation itself and the experimental part of the invention, are usually contained in the description section. However, in many Pattern right s the explanation parts are neither interpreted nor easily demonstrable. Here, we explain our novel PatDiv method for Pattern right divisions, which aims at mechanically and openly recognize the most important parts of a Pattern right . PatDiv uses a two-step approach, where a Pattern right is first divisional into text blocks in an unsupervised fashion followed by a supervised classification step for each identified division. In contrast to previous work, PatDiv uses semantic word embeddings in both phases and applies a chronological learning algorithm for the second step. These changes guide to, on average, an improvement of 9.37% (8.87%, 9.00%) in terms of F1-score (precision, recall) and 7.19 in terms of accuracy in association to a baseline, as evaluated on two novel and manually divisional gold standard Pattern right corpora. The method also is easily parallelizable, fast, making it applicable for truly large Pattern right collections.

Keywords: Pattern right divisions; Machine learning; Text divisions; Chronological classifiers; Word embeddings.

1. INTRODUCTION

Pattern right s are a key source of information for most industries. They are often the first (and sometimes the only) channel of publication of new ideas, innovations, and technologies. A big advantage of Pattern right s is that they have to describe their innovative aspects in detail, because international Pattern right laws demand full explanation of the invention to receive Pattern right protection. Accordingly, scientists, Pattern right searchers, data analysts, and Pattern right lawyers are continuously reading and analyzing Pattern right documents to learn about novel trends, to detect Pattern right infringement, to valuate a competitor's intellectual property, to assess own novel ideas etc.

Due to the steep growth of the number of published Pattern right applications and due to the typical length of Pattern right applications, it has become extremely challenging to keep track of novel innovations even when focusing on a single technical field [1], [2]. One possible remedy is the application of computational methods from the field of information extraction (IE) to automatically extract relevant knowledge from Pattern right s [3], [4], [5], [6], [7]. However, when applied to entire Pattern right s, IE methods often produce an enormous amount of information which is mostly irrelevant for typical analysis tasks, such as prior art, extensive lists of slightest variations in potential usages of the innovation, lengthy metaphors of the inner workings of the invention, etc. Therefore, a typical and important pre-processing step before applying IE is the identification of the most relevant parts of a Pattern right .

Defining and finding the most relevant parts of a Pattern right is not a trivial matter. Typically, Pattern right s are pre-structured in sections such as bibliographic data, title, abstract, description, or claims. In these, title and abstract often

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SIGNAL AND VOICE CONTROLLED HOME AUTOMATION SYSTEM

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Abstract- Nowadays it is familiar to operate home appliances and electronic gadgets through an Infrared remote control. The Internet of Things (IoT), Arduino, is used in a massive way and people are quickly inventing new gadgets that improve our life style. This kind of everyday jobs can be done effortlessly. The foremost motive of suggest a new system of hand signal control is to reduce the need for the elderly/disabled people to use a physical remote but rather use simple gestures. Signal or Gesture means a movement of part of body. Gesture Recognition is the technology that is used to identify physical actions. It identifies hand, arms, head, toe or any part of the body. So the central aim is to provide a human interface to the computer. The devices can be controlled not only by using signals but also by using voice commands as well. Smart assistant such as Google assistant can be used for this purpose. The main objective of this automated system is to reduce human labour, effort, time and errors due to human negligence.

Keywords: *Arduino, Google Assistant, signal, IoT, and Voice commands.*

I. INTRODUCTION

Gesticulation and voice control are set to strongly influence automation in the future; what will these technologies look like and how will they have an effect on the home mechanization market?. We live in an exciting generation where commonly used everyday appliances i.e."things" are becoming smart! "Things" that have sensors can communicate to other "things" and can provide control to more "things". The Internet of Things (IoT) is winning us in a big way and people are swiftly inventing new gadgets that improve our lives. Smart structure not only refers to reduce human hard work but also energy efficient and time saving. In this paper, everyday appliances are connected to sensors and sensors give status of appliances to the web. Controlling home appliances and electronics gadgets through an Infrared remote control is now in general.(1) But the same controlling tasks can be done more easily. The main purpose of proposing the new system of hand signal remote control is to eliminate the need to look in to the hand held remote and to search for a explicit key for specific function. Signal means a movement of part of body. Gesticulation Recognition is the technology that recognizes the movement of body. It recognizes hand, arms, head or any part of the body. So, the goal of signal detection is to provide interface of human body with computer through mathematical algorithm. This paper presents a new system to control

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IJCRT.ORG ISSN: 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

VIRTUAL CLOTH FITTING IN 2D USING DEEP LEARING

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ABSTRACT

In online shopping, People would like to know how they look in a particular dress they tend to buy. To bring closer between in-store (offline) and online shopping and provide a realistic shopping experience to the consumers, a system is required to predict how people look in a particular garment that they tend to buy. Traditional approaches to make such a system were dealing with computer graphics where a 3D avatar of the person is created and various clothes are visualized on him/her. The usage of such approaches limits practical applications due to high computation and hardware requirements. This Project aims to build a fitting system such that, it visualizes people wearing new clothes without any 3D information, only using Images, in the same pose as they are standing in. This Project is composed of two modules one for changing the shape of cloth given in the input according to the personality and another module to attach this cloth onto the individual body. Using Efficient CNN based networks, which learns to predict the parameters for changing shape via spatial transformation is used in the first module. The shape changed cloth is passed on to the next module which is based on U-net architecture that predicts the mask where to attach the cloth, using this information the cloth is attached onto the body for generating final output images. The system is able to generate natural and rich images without much loss.

Introduction

Online Shopping of Apparel has been in trend since the last decade and the ongoing years have seen the rise of demand for E-commerce fashion shopping, due to the convenience in shopping time and the wide availability of products at our disposal. Despite of such convenience online shopping provides there always exists an inconsistency that differentiates it from real-world shopping, which is the lack of physical trial of clothing apparel. The Lack of physical trial is one of top reasons for number of returns placed in fashion industry across E-commerce. The problem defined here can be solved with the help of developing a system that can visualize how the clothing realistically looks when we would wear in Real-world. Virtual fitting

© November 2021| IJIRT | Volume 8 Issue 6 | ISSN: 2349-6002

A Novel Hybrid Algorithm for Securing Data Transfer with machine Learning Disease Prediction

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Abstract - **Data security refers to the process of protecting data from unauthorized access and data corruption throughout its life cycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms. The security system used nowadays uses data encryption software to effectively enhance data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted cipher text. To an unauthorized person, the cipher data will be unreadable. That data can then be decrypted only by a user with an authorized key. Whereas with the improving data insecurity nowadays leads to loss of confidential data as the key is easily hack able because of a single algorithm usage. Diabetes-related complications include damage to large and small blood vessels, which can lead to heart attack and stroke, and problems with the kidneys, eyes, feet and nerves. The risk of most diabetes-related complications can be reduced if diagnosed early. To overcome this problem this project presents a medical application that accepts and analyses a patient's medical data to give a diagnosis to check if he/she is diabetic with an efficient data security system where two security algorithms will be merged to secure the patient's medical data stored and accessed in cloud. In addition, the emerging block chain technologies with the wireless data transfer system, which makes easy the interaction between the data and cloud. The medical data is analyzed and the result is stored securely in a cloud database such as mongoDB as an highly secure encrypted key. The result is received from the database and decrypted in the frontend to view the test results. Thus, this project presents an effective end to end security for medical applications.**

Index Terms - **Data Security, Encryption, Hashing, Hackable, Token, Diabetes.**

I.INTRODUCTION

Data security refers to the process of protecting data from unauthorized access and data corruption throughout its lifecycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms.

Organizations around the globe are investing heavily in information technology (IT) cyber security capabilities to protect their critical assets. Whether an enterprise needs to protect a brand, intellectual capital, and customer information or provide controls for critical infrastructure, the means for incident detection and response to protecting organizational interests have three common elements: people, processes and technology.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively. According to Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges. So what are the factors currently affecting diabetes in India that are making this problem so extreme?

The aetiology of diabetes in India is multifactorial and includes genetic factors coupled with environmental

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Industrial Engineering Journal
ISSN: 0970-2555
Website: www.ivyscientific.org

Industrial Engineering Journal
Volume 15 Issue 10 * October 2022

A Novel Hybrid Clustering Algorithm for Lifetime Maximization and Throughput Enhancement in Wireless Sensor Networks

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Abstract: Wireless sensor networks (WSNs) can be deployed both inside and out-of-doors. Sensor nodes can be positioned on a very large scale, perhaps even woven in fabric, or scattered from airplanes. It can also be used in habitat observation, energy administration, inventory control, and military warfare. Therefore many sensor networks will likely be deployed in open, actually insecure, or even hostile atmospheres where node compromise is a distinct likelihood. One of the major advantages of wireless sensor networks is their capability to operate in unattended, harsh environments in which existing human-in-the-loop monitoring schemes are uncertain, inefficient, and sometimes

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A SMART ROBOT FOR INSPECTION IN DISASTER AREAS

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Abstract

Robots can play an important role in recovery operations that present considerable dangers for human rescue teams, such as after chemical explosion and fire explosion. However, the robots currently used are limitedin their ability to interact and coopcratc with humans byusing three sensors. This paper introduces a framework for the rescue robot development and control. Humans can be used for rescuing people in these areas, but due tohigh risk of building collapses it is not possible to send human rescue teams in these areas. Thus affordable high technology equipment which makes this risky job quicker and safer is needed for the hour, which has beendescribed in this paper.

Keywords-

Arduino Uno Microcontroller, Zigbee, Temperature sensor, gas sensor, MEMS sensor,buzzer, Robot mechanism, ESP32 Modulo (Board).

INTRODUCTION

Disaster in areas that are caused by negligence, accident or lack of maintenance are sudden and unexpected damage occurs. For the last few decades, many disaster has happened, such as chemical explosion, gas leaking has caused huge economic losses and human life loss. Of increasing worldwide population in high hazard and vulnerability areas became the main factor. The aim of the smart robot is to track the actions, gathering information from disaster area and other concepts of monitoring that are necessary. The smart robot has now been used to target identification and recognition where it focuses mainly on the protection and gathering information about temperature, gas leaking in disaster area along with rescue team.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FACIAL MANIPULATION DETECTION USING U-NET

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ABSTRACT

As advanced face synthesis and manipulation methods are made available, new types of fake face representations are being created which have raised significant concerns for their use in day-to-day life. Hence, it is crucial to identify the digitally altered facial images. A new method to identify the manipulated human faces and locate the region of manipulation is done using U-net Architecture. This manipulated image, created by altering the original image, along with the mask of alteration is used to train the model. Image padding, rectified linear activation, max pooling, up convolution are performed and thus output mask is obtained. The accuracy and dice score are calculated. Thus the area of manipulation done on the human face is found by using U-net.

Key words: Facial manipulation, U-net, area of manipulation, multi-class classification

INTRODUCTION

The use of manipulated images in social media and on the internet is growing rapidly. Attackers manipulate the facial area of an image digitally and create a new fake image. This fake image, may be created by altering the original image by image splicing – copy a part of image and pasting it onto another image – by face swap –swapping the faces of individuals in an image- by deep fakes replacing a face with another face based on deep learning. It's crucial to find the digitally manipulated facial images and videos surfing on the internet to avoid spread of false news. There are many existing facial manipulation detection methods. However, these detection methods results in binary classification and are feasible to only limited manipulation techniques.

In this paper, a novel method for facial manipulation detection using the U-net Architecture is proposed. U-net is an architecture used for multi class segmentation of images, which was first designed and applied to bio-medical images in 2015. Using U-net architecture, the model is trained with datasets of real

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

IOT AND GOOGLE ASSISTANT BASED WIRELESS NOTICE BOARD

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Abstract

This proposed system presents a digital notice board using WiFi module. The idea behind this proposed system is to provide its users with a simple, fast and reliable way to put up important notices in an LCD where the user can send a message to be displayed in the LCD. The message can be sent through an Google Assistant application designed in this proposed system, through the WiFi module. So, notices can be put up in an LCD display from any location in the world. It uses a microcontroller for system control, WiFi based technology for communication and sends the message through the Google Assistant application. The proposed system consists of a Nodemcu, WiFi module, an LCD, and an Google Assistant application for user interface with the hardware. This device can be used anywhere irrespective of the place of deployment provided mobile network connectivity is available.

Introduction

As technology improves, efficient, financially affordable and highly productive output becomes an absolute necessity, and this leads us to be more inclined towards using automated control systems. Human intervention, although it offers variety, adaptability and interactivity, could lead to errors, as it is a natural and inevitable result of this variability. Hence, automation of a system is an accepted means to minimize human error and its impact.

Applying this to the situation under scrutiny now, the traditional methods of writing typing the notice on paper, and having a man/woman deliver the notice to the respective groups, or having him/her paste the notice on the notice board, is prone to errors. The person delivering could deliver it to the wrong group, or tamper with the information being sent, etc.

With the electronics industry moving at a fast pace, we are able to solve many such problems with digital replacements. Our proposed system, Multi Electronic Notice Board, aims at eliminating the use of

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604016*

IOT based Health Machine for covid-19 with Matlab

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— Thenovel CoronaVirus(COVID 19) is a pandemic of unimaginable proportion and magnitude that is posing a great challenge worldwide to the medical industry in the 21st century. It has completely changed the texture of life to agreater extent.IoT isconsideredasoneofthefastestgrowingtechnologyinthemedicalandindustrial fields. The proposed device can help the patients by checking their health status through monitoring and diagnosing patients. This paper presents a measuring and recording device for heart rate, body temperature and CT imaging. An Arduinodevicewithsensorswillbeusedtomeasuretheserecordsandsendthemtothecloudserver.

Keywords: *IoT, Arduino, COVID-19, Sensors, Cloud server*

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H. "IOT based Health Machine for covid-19 with Matlab", Journal of Science, Computing and Engineering Research, 6(4), 80-85, 2023.

I. INTRODUCTION

The novel epidemic disease of the coronavirus (COVID-19) is becoming a pandemic and spreading all over the world. COVID-19 first originated in the city of Wuhan in the Hubei Province of China. COVID-19 is a type of Severe Acute Respiratory Syndrome (SARS) that spreads through the minute droplets of respiration via sneezing, coughing, interaction among normal and susceptible or patients in close proximity. The COVID-19 respiratory droplets can be inhaled or transmission spread through the mouth, eyes, or nose by touching the surface where the droplets land. The disease has affected the whole world with about 106,358,244 COVIDcontact with an infected person. The drops containing the living virus can spread up to three feet and attack another person's mucous membrane when the patient coughs or sneezes without covering the mouth. People who are in close contact with someone with SARS are at high risk, meaning they live or work with SARS or have direct contact with the person by any means. The SARS-COVID transmission and contamination can

be controlled by isolating and remote monitoring of the susceptible and patients. The rapid growth in the usc of smart sensors, smart watches, smart phones, and mobile technology in daily life and healthcare sector results in having a significant impact on the world. The healthcare services' providers and experts are taking advantage of a reduction of invasive methods which lead to the cut-off of transmission of viral diseases.confirmed cases and 2,320,798 deaths. SARS-COV is transmitted from person to person through close interaction and

contact with an infected person. The drops containing the living virus can spread up to three feet and attack another person's mucous membrane when the patient coughs or sneezes without covering the mouth. People who are in close contact with someone with SARS are at high risk, meaning they live or work with SARS or have direct contact with the person by any means.

The SARS-COVID transmission and contamination can be controlled by isolating and remote monitoring of the susceptible and patients. The rapid growth in the use of smart sensors, smart watches, smart phones, and mobile technology in daily life and healthcare sector results in having a significant impact on the world. The healthcare services' providers and experts are taking advantage of a reduction of invasive methods which lead to the cut-off of transmission of viral diseases.

Although, there is a variety of modeling approaches that have been proposed so far for prediction and evaluation of the COVID-19 disease, there are more questions that can still be answered. There are some related works that sensitivity analysis used in their studies. They used this technique only for special variables and parameters.

II. IMPLEMENTATION

In this proposed method, Arduino MEGA microcontroller is used to interface with the sensors and to the communication devices. The DHT 11 (Temperature) sensor, heart rate sensor are interfaced with the micro controller to regularly monitor the patients' health. The person's heath is continuously monitored by these sensors and if there is any abnormality the controller sends alter message to the doctors through IoT. The LCD is used to update the latest information of the patient. The IOT module is used to update the information to the cloud which can be accessed through healthcare workers. The CT imaging's are diagnosed by Image processing and the treatment is coordinated according to the infection rate. Henceproper

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Hindawi
Journal of Chemistry
Volume 2022, Article ID 3793739, 11 pages
https://doi.org/10.1155/2022/3793739

Research Article

Optimized Production of Biodiesel Using Internet of Things Sensed Temperature with Hybrid Particle Swarm Optimization

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Received 6 August 2021; Revised 1 December 2021; Accepted 20 December 2021; Published 10 January 2022

Academic Editor: Susana Casal

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Biofuel production offers a non-fossil fuel that can be utilized in modern engines without any redesign. Regardless of receiving rising attention, many researchers have explored microalgae-based biofuel production and found biodiesel production is cost-effective compared to petroleum-centered conventional fuels. The primary reason is that the lipid accumulation of microalgae is possible. An efficient technique is proposed for optimized biodiesel manufacturing with microalgae through an IoT device with the hybrid particle swarm optimization (HPSO) algorithm for elapsing such drawbacks. First, the component of biodiesel is determined. Then, from the components, the temperature value is sensed through the IoT device. Based on the obtained temperature, the reaction parameters are optimized with HPSO to increase productivity and reduce cost. Finally, we observed performance and comparative analysis. The experimental results contrasted with the existent particle swarm optimization (PSO) and genetic algorithm (GA) concerning iteration's temperature, concentration, production, and fitness. The present HPSO algorithm has differed from the existing PSO and GA concerning IoT sensed temperature and production function. Fitness value and instance concentration are the performance parameters. It varies based on the iteration values. Thus, the proposed optimized biodiesel production is advanced when weighed down with the top-notch methods.

1. Introduction

The rapid increase in the oil price, the requirement for energy, concerns about its availability, and climate change led to the search for renewable energy to keep to the demands investigated by Valizadeh et al. [1]. Yu et al. [2] and Sanli et al. [3] analyzed and reported that the biodiesel is stated as FA-alkyl monoesters emanated as renewable feedstocks, like vegetable oils and animal fats. Globally, biodiesel is chiefly produced by the transesterification (TE) process wherein oil (edible or nonedible) and alcohol (ethanol, methanol, propanol) reacted in the presence of a catalyst (homogeneous, heterogeneous, along with enzymatic). Advantages of biodiesel such as complete biodegradability, lack of sulfur particles, and particulate emissions, nontoxicity, and a fall in carbon monoxide along with carbon dioxide emissions are reported in [4, 5].

Vegetable oil fuels are becoming more attractive because of their renewability, energy security, and higher energy content close to the petroleum-centered powers. The biodiesel's properties resemble those of the standard diesel fuel; in addition, it can well be employed as a fuel mix or as a substitution for diesel fuel. Nowadays, disparate vegetable oils, say, soybean, camelina, sunflower, rapeseed, and palm oils, are being utilized for biodiesel production [6–9].

The transesterification is characteristically carried out utilizing primary and secondary alcohols [10]. Numerous parameters affect the biodiesel yield by transesterifying vegetable oils: reaction temperature, alcohol/oil molar ratio, agitation speed, catalyst concentration, and reaction time. Transesterification optimization needs loads of experiments and mathematical equipment to envisage every process parameter's impact. The response surface method

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-3, Issue- 5, September - October 2022.
DOI: *https://doi.org/10.46379/jscer.2022.030502*

IOT usage in Mobile system and Ecosystem

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Article Information

Received : 28 Sep 2022
Revised : 09 Oct 2022
Accepted : 14 Oct 2022
Published : 25 Oct 2022

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Abstract— Mobile technology opens the door for a new kind of learning called here and now learning that occurs when learners have access to information anytime and anywhere to perform authentic activities in the context of their learning. Mobile devices, applications and services have become integrated into people's daily lives on a personal and professional level. The purpose of this study was to investigate challenges &opportunities of IoT in mobile technology. The paper is divided in 5 sections and the content of the paper covers the history, elements, challenges and opportunities along with future of IoT specific to Indian Mobile arena.

Keywords: *IoT, M2M, Mobile technology, Smart Devices, 5G.*

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Citation: Dr.C.Sureshkumar, Dr.S.Prabakaran, Dr.T.Prashanth, K.Varalakshmi. "IOT usage in Mobile system and Ecosystem, "Journal of Science, Computing and Engineering Research, 3(5), 12-19, September- October 2022.

I. INTRODUCTION

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an Internet Protocol (IP) address and is able to transfer data over a network.1 The Internet of Things (IoT) also describes the network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools.

Over the past few years, IoT has become one of the most important technologies of the 21st century. Now that we can connect everyday objects—kitchen appliances, cars, thermostats, baby monitors—to the internet via embedded devices, seamless communication is possible between people, processes, and things.

By means of low-cost computing, the cloud, big data, analytics, and mobile technologies, physical things can share and collect data with minimal human intervention. In this hyper connected world, digital systems can record, monitor, and adjust each interaction between connected things. The physical world meets the digital world—and they cooperate.[2]

A. IoT Progress

First coined in 1999, the term refers to the giant network of connected things and people, all of which share data amongst each other. Today, IoT objects have come to include smartphones to automobiles and everything in between. The innumerable data points that billions of IoT devices capture each day are processed into actionable insights with the help of analytics. While the reciprocity between AI and IoT is relatively well known, there are other technologies at play that enable the Internet of Things.[5]

Different people call Internet of Things with different names but the objective of IoT is same in the broad sense. The aliases of Internet of Things include Web of Things, Internet of Objects, Embedded Intelligence, Connected Devices and Technology Omnipotent, Omniscient and Omnipresent. In addition to these, it has also calling as counting

a) Cyber Physical Systems "Integrations of computation and physical processes", in which bringing the real and virtual worlds together.
b) Pervasive Computing is a computer environment in which virtually every object has processing power with wireless or wired connections to a global network
c) Ubiquitous Computing or Calm technology, where technology becomes virtually invisible in our lives
d) Machine-to-Machine Interaction means no human intervention whilst devices are communicating end-to-end.
e) Human Computer Interaction involves the study, planning, and design of interaction between people and computers.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604018*

Multipurpose File Transfer and File Inquiry

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— A Company wants to sync their files based on the configuration. Also inquire files based on Metadata. The Preconditions are the API will transfer files across local, FTP, sFTP locations. A REST API will be able to retrieve documents based on metadata. The post conditions are the data files should be transferred according to the requirement. The Success case would be the data files should be transferred according to the requirement, the Documents can be retrieved based on the metadata. The high volume PDF file migration is achieved by converting the PDF files to Base64.

Keywords: ***File transfer, File Inquiry, FTP, STMP, API..***

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H "Multipurpose File Transfer and File Inquiry", Journal of Science, Computing and Engineering Research, 6(4), 90-96, 2023.

I. INTRODUCTION

Computer users spend time every day interacting with digital files and folders, including downloading, moving, naming, navigating to, searching for, sharing, and deleting them. Such file management has been the focus of many studies across various fields, but has not been explicitly acknowledged nor made the focus of dedicated review. In this paper we present the first dedicated review of this topic and its research, synthesising more than 230 publications from various research domains to establish what is known and what remains to be investigated, particularly by examining the common motivations, methods, and findings evinced by the previously furcate body of work.

We find three typical research motivations in the literature reviewed: understanding how and why users store, organise, retrieve, and share files and folders, understanding factors that determine their behaviour, and attempting to improve the user experience through novel interfaces and information services. Relevant conceptual frameworks and approaches to designing and testing systems are described, and open research challenges and the significance for other research areas are discussed. We conclude that file management is a ubiquitous, challenging, and relatively unsupported activity that invites and has received attention from several disciplines and has broad importance for topics across information science.The client is a Finance based company and a premier mulesoft clients with Hybrid implementation. As of now they are using a file system and manual process to retrieve files, but the client needs to automate the same.There are customer related documents(.pdf files) for loan processing which are received from multiple channels like FTP, sFTP.

Source	Destination	File name Pattern
FTP	File	*loan*
SFTP	FTP	*profile*
SFTP	File	*statements*

CustomerName	Date	File
x	12122021	CustomerName_Date.pdf

Fig 1. Functional Requirements

The documents are then manually transferred to multiple locations like Local File, FTP and sFTP. This process needs to be automated based on a configuration file which will be located at a common location. All the files need to be retrieved by the client which are there in File Destination based on the metadata. This metadata is again kept in a configuration file.

A. Non Functional Requirements:

1. Error handling **strategy:**

a. In case of invalid data (ex- wrong Metadata or File not present) send an email to the Ops Team.

b. Retry mechanism for calls to file connections (ideally 3 times) before raising error(transient/connectivity).

2. Request frequency:

a. Upto 2 requests per 5 minutes.

3. Compliance:

a. Expose HTTPS endpoints

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

OPTIMIZATION OF INTERNET SIGNALS USING QOS PREDICTION IN ARTIFICIAL INTELLIGENCE

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Abstract

In the fast-moving world, the internet plays a vital role in part of every individual, business, and sector. So the internet is ruling nooks and corners of the world. The main goal is to provide quality internet services without any interruptions. As we can see the falling in internet signals or lost signals may affect each individual to a gigantic business. So to provide a signal in the correct strength can overcome the issue of the quality services on both customer and internet provider side. Here we are implementing a recommendation system to optimize the quality of service to the persons or sectors who are using the internet. This makes the service providers satisfy the customer and increase the business process further with the help of the recommendation system. Based on locations every time the signal differs according to the locations and hence when a customer confronts the signal issues, the service provider equalises the query of the customer by providing the signal to the requested customer based on the location. By doing this, we are not only efficiently solving the problem of the customer but also increasing the customer counts by providing the quality of the internet providing services using the recommendation system.

Introduction

The scope of the proposed system includes providing the quality of internet services. Providing quality of service depends on rectifying the problem of signal strength on time. So providing the right signal strength at the right time to the requested customer is a big concern in the internet providing services. When a service provider updates a plan it has to maintain the plan without any interruptions. But when a signal is weaker on the customer side it is important to sort out the issue. So, the service providers determine the strength of the requested customers. But when the customer continuously faces the problem in network signal. The Internet service provider efficiently sorts it out by providing the

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





PIONEERING MULTIPLE GENOMIC AND PROTEOMIC DATA USING MIRNA ANDTRANSCRIPTION FACTOR FOR GENE DISEASE SPOTTING

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ABSTRACT:

Multiple genomic and proteomic semantic interpretation scattered in many distributed and heterogeneous data sources; such heterogeneity and dispersion hamper the biologists' ability of asking global queries and performing global evaluations. To overwhelm this problem, we developed a software planning to create and maintain a Genomic and Proteomic Knowledge Base (GPKB), which integrates several of the most relevant sources .Gene Ontology (GO) is a structured repository of concepts that are associated to one or more gene products through a process referred to as annotation. There are different methods of analysis to get bio information. One of the method is the use of Association Rules (AR) which discovers biologically applicable associations between terms of GO. In existing work we used GO-WAR (Gene Ontology-based Weighted Association Rules) for extracting Weighted Association Rules from ontology-based annotated datasets. We here adapt the MOAL algorithm to mine cross-ontology association rules, i.e. rules that involve GO terms present in the three sub-ontologies of GO. We are proposing cross ontology to manipulate the Protein values from three sub ontologies for identifying the gene attacked disease. Also our proposed system, focus on intrinsic and extrinsic. Based on cellular component, molecular function and biological process values intrinsic and extrinsic values would be calculated. For each proteomic analysis for every gene disease, we analyze OMIM id, disease caused by, associated genes, medicine if available, and images

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





PROVIDES SECURITY IN CLOUD USING MULTI-CLOUD AND SLICING ALGORITHM

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ABSTRACT:

Generally the cloud server act as a container which contains data or information. Multi-cloud is the combination of public, private or managed clouds including managed services or service providers. Multi-Cloud data systems have the capacity to enhance data sharing and this aspect will be significantly of great help to data users. Most business organizations share most of their data with either their clients or suppliers and consider data sharing as a priority. In generally we are sent the file to cloud in this project the proposed system we send the file with authentication by encrypt and it can retrieve the data from multiple cloud before retrieve the file its enhancing whole file then decrypt method were use to retrieve the file to view and ID-DPDP protocol can realize private verification, delegated verification and public verification We propose a survey on the achievable security merits by making use of multiple distinct clouds simultaneously. Various distinct architectures are introduced and discussed according to their security and privacy capabilities and prospects. Also we propose the splitting and merging concepts during storage in cloud environment. For experimental results, we are implementing Apache server as the accounting load balancer to keep track of the virtual machine status. Tomcat server is installed in virtual machine to obtain the job status. For data secure repository or data recovery in cloud storage we proposed multi-cloud architecture, where the user data is split into 2 parts and one half is encrypted using RC5 encryption algorithm and other half is encrypted using attribute based encryption algorithm and stored in Cloud 1 and Cloud 2. During the request our technique will merge the 2 parts and provide the response to the requested user.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604019*

Real-Time Facial Recognition Based Student Proctoring System Using KNN Algorithm

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— Individual uniqueness and individuality are their faces. In this project, human faces are automatically used for attendance tracking purpose. Student attendance is essential for any college, university, and school. The traditional way to record attendance is to call the student's name or registration number and the attendance will be recorded. The time required for this purpose is a major concern. Assume that the course will take approximately 60 minutes and registration for attendance will take around 10 minutes. For any teacher, this is a waste of time. To avoid these losses, this project uses an automated process based on image processing. This project uses face detection and face recognition. Face detection is used to locate the face area, and face recognition is used to mark the presence of the understudy. KNN algorithm is used for obtaining the machine learning model alias KNN Classifier. A classifier of all students in the class is saved, and attendance is recorded if each student's face matches one of the faces in the trained model.

Keywords: *KNN Algorithm, Facial Recognition, Real Time, Classification.*

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H. "Real-Time Facial Recognition Based Student Proctoring System Using KNN Algorithm", Journal of Science, Computing and Engineering Research, 6(4), 97-103,2023.

I. INTRODUCTION

Attendance is of prime importance for both the teacher and student of an educational organization. So it is very important to keep a record of attendance. The problem arises when we think about the traditional process of taking attendance in the classroom. Calling the name or roll number of the student for attendance is not only a time-consuming problem but also needs energy. So an automatic attendance system can solve all the above problems.

There is an automatic attendance making system that is currently used by many institutions. One such system is the biometric technique. Although it is automatic and a step ahead of the traditional method it fails to meet the time constraint. The student has to wait in queue for attendance, which is time taking. This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly mandatory. This system eliminates classical student identification such as calling the name of the student or checking the respective identification cards of the student, which can not only interfere with the ongoing teaching process but also can be stressful for students during examinations sessions.

Face recognition is part of computer vision. Face recognition is used to identify a person in a biometric method based on the image on their face. A person is identified through biological traits. Human eyes can easily recognize people by simply looking at them but the concentration span for human eyes has its limit. Hence, a computerized method is invented to perform face recognition. Face recognition includes the operations of automatic detection followed by verifying a person from either a picture or video. Although face recognition has been researched extensively, there are still challenges to overcome such as: Misalignment, Pose Variation, Illumination Variation, Expression Variation. Face recognition is a part of biometric identification that extracts the facial features of a face, and then stores it as a unique face print to uniquely recognize a person. Biometric face recognition technology has gained the attention of many researchers because of its wide application. Face recognition technology is better than other biometric based recognition techniques like finger-print, palm-print, iris because of its non-contact process.

Recognition techniques using face recognition can also recognize a person from a distance, without any contact or interaction with the person. Face recognition techniques are currently implemented in social media websites like Facebook, at airports, railway stations. Facebook uses the facial recognition technique for automating the process of tagging people. For face recognition we require a large dataset and complex features to identify a person in all conditions like change of illumination, age, pose, etc. Recent research shows there is a betterment in facial recognition systems. In the last ten years there has been

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

STOCK MARKET PRICE PREDICTION USING RANDOM FOREST AND SUPPORT VECTOR MACHINE

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Abstract

In the past decades, there is an increasing interest in predicting markets among economists, policymakers, academics and market makers. The objective of the proposed work is to study and improve the supervised learning algorithms to predict the stock price.Stock Market Analysis of stocks using data mining will be useful for new investors to invest in stock market based on the various factors considered by the software. Stock market includes daily activities like Sensex calculation, exchange of shares. The exchange provides an efficient and transparent market for trading in equity, debt instruments and derivatives. Our aim is to create software that analyses previous stock data of certain companies, with help of certain parameters that affect stock value. We are going to implement these values in data mining algorithms and we will be able to decide which algorithm gives the best result. This will also help us to determine the values that particular stock will have in near future. We will determine the patterns in data with help of machine learning algorithms.

Introduction

Machine learning is a subfield of computer science, but is often also referred to as predictive analytics, or predictive modeling. Its goal and usage is to build new and/or leverage existing algorithms to learn from data, in order to build eneralizable models that give accurate predictions, or to find patterns, particularly with new and unseen similar data.

magine a dataset as a table, where the rows are each observation (aka measurement, data point, etc), and the columns for each observation represent the features of that observation and their values. At the outset of a machine learning proposed system, a dataset is usually split into two or three subsets. The minimum subsets are the training and test datasets, and often an optional third validation dataset is

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

VOICE AND GESTURE BASED HOME AUTOMATION SYSTEM

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ABSTRACT

It is now common to control home appliances and electronic gadgets through an Infrared remote control. These tasks can also be done more easily. The primary motive of proposing a new system of hand gesture control is to eliminate the need for the elderly/disabled people to use a physical remote but rather use simple gestures. Gesture means a movement of part of body. Gesture Recognition is the technology that is used to identify physical actions. It recognizes hand, arms, head or any part of the body. So the goal is to provide a human interface to the computer. The devices can be controlled not only by using gestures but also by using voice commands as well. Smart assistant such as Google assistant can be used for this purpose

Keywords: *IoT, Arduino, Flex, Google Assistant, Gesture and Voice commands.*

I. INTRODUCTION

We live in an exciting generation where commonly used everyday appliances i.e. "things" are becoming smart! "Things" that have sensors can communicate to other "things" and can provide control to more "things". The Internet of Things (IoT) is upon us in a huge way and people are rapidly inventing new gadgets that enhance our lives. Smart Building not only refers to reduce human efforts but also energy efficient and time saving. In this paper, everyday appliances are connected to sensors and sensors give status of appliances to the web. Controlling home appliances and electronics gadgets through an Infrared remote control is now in general. But the same controlling tasks can be done more easily. Primary motive of proposing the new system of hand gesture remote control is to remove the need to look in to the hand held remote and to search for a specific key for specific function. Gesture means a movement of part of body. Gesture Recognition is the technology that recognizes the movement of body. It recognizes hand, arms, head or any part of the body. So, the goal of Gesture Recognition is to provide interface of human body with computer via mathematical algorithm. This paper presents a novel system to control home appliances through hand gesture as a remote-control device. In this paper, not only by gestures the devices are controlled by using voice with the help of digital assistant like Google Voice Assistant.

II. LITERATURE REVIEW AND PREVIOUS WORK

The construction and conversion of ordinary homes into "smart homes" has seen a remendous rise in recent years. This can be ascribed to technologies such as the Internet of Things, sensors, smart phones, smart appliances, cloud computing, and digital assistants such as Amazon Alexa, Google

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© November 2021| IJIRT | Volume 8 Issue 6 | ISSN: 2349-6002

A Novel Hybrid Algorithm for Securing Data Transfer with machine Learning Disease Prediction

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Abstract - **Data security refers to the process of protecting data from unauthorized access and data corruption throughout its life cycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms. The security system used nowadays uses data encryption software to effectively enhance data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted cipher text. To an unauthorized person, the cipher data will be unreadable. That data can then be decrypted only by a user with an authorized key. Whereas with the improving data insecurity nowadays leads to loss of confidential data as the key is easily hack able because of a single algorithm usage. Diabetes-related complications include damage to large and small blood vessels, which can lead to heart attack and stroke, and problems with the kidneys, eyes, feet and nerves. The risk of most diabetes-related complications can be reduced if diagnosed early. To overcome this problem this project presents a medical application that accepts and analyses a patient's medical data to give a diagnosis to check if he/she is diabetic with an efficient data security system where two security algorithms will be merged to secure the patient's medical data stored and accessed in cloud. In addition, the emerging block chain technologies with the wireless data transfer system, which makes easy the interaction between the data and cloud. The medical data is analyzed and the result is stored securely in a cloud database such as mongoDB as an highly secure encrypted key. The result is received from the database and decrypted in the frontend to view the test results. Thus, this project presents an effective end to end security for medical applications.**

Index Terms - **Data Security, Encryption, Hashing, Hackable, Token, Diabetes.**

I.INTRODUCTION

Data security refers to the process of protecting data from unauthorized access and data corruption throughout its lifecycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms.

Organizations around the globe are investing heavily in information technology (IT) cyber security capabilities to protect their critical assets. Whether an enterprise needs to protect a brand, intellectual capital, and customer information or provide controls for critical infrastructure, the means for incident detection and response to protecting organizational interests have three common elements: people, processes and technology.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively. According to Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges. So what are the factors currently affecting diabetes in India that are making this problem so extreme?

The aetiology of diabetes in India is multifactorial and includes genetic factors coupled with environmental

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AI BASED SPAM SPOILER FOR PUBLICAND PRIVATE E-MAIL SERVICES

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Abstract-

In recent years, cyber security incidents have occurred frequently. In most of these incidents, attackers have used different type of spam email as a knock-on to successfully invade government systems, well-known companies, and websites of politicians and social organizations in many countries. The detection of spam mail from big email data has been paid public attention. However, the camouflage technology of spam mail is becoming more and more complex, and the existing detection methods are unable to confront with theincreasingly complex deception methods and the growing number of email. In this project, we proposed to design a novel efficient approach named Spam Spoiler for big e-mail data classification into four different classes: Normal, Fraudulent, Harassment, and Suspicious E-mails by using LSTM based GRU. The new method includes two important stages, sample expansion stage and testing stage under sufficient samples. This project The LSTM based GRU efficiently captures meaningful information from E-mails that can be used for forensic analysis as evidence. Experimental results revealed that Spam Spoiler performed better than existing.ML algorithms and achieved a classification accuracy of 98% using the novel technique of LSTM with recurrent gradient units. As different types of topics are discussed in E-mail content analysis. Spam Spoiler effectively outperforms existing methods while keeping the classification process robust and reliable.

1. INTRODUCTION

Email stands for Electronic Mail. It is a method to sends messages from 2one computer to another computer through the internet. It is mostly used in business, education, technical communication, document interactions. It allows communicatingwith people all over the world without bothering them Email messages are conveyed through email servers; it usesmultiple protocols within the TCP/IP suite. For example, SMTP is a protocol, stands for simple mail transfer protocol and used to send messages whereas other protocols IMAP or POP are used to

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AMLBOT: AN AI POWERED TRANSACTIONAL NETWORK AND BEHAVIOUR ANALYSIS TO DETECT AND PREVENT MONEY LAUNDERING ACTIVITIES.

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ABSTRACT

Money laundering is the process of disguising the proceeds of illegal activities as legitimate funds. Money laundering is a significant problem that poses serious threats to the integrity of the financial system, as it enables criminals to profit from illegal activities and finance further criminal endeavors. Money laundering is also linked to other crimes, such as drug trafficking, terrorism financing, and corruption. To combat money laundering, governments and financial institutions have implemented variousmeasures, such as Know Your Customer (KYC) regulations, Anti-Money Laundering (AML) laws, and the use of financial intelligence units.

Keywords—Anti-Money, Laundering, criminal endeavors, Know Your Customer(KYC)

INTRODUCTION

Money laundering is the process of disguising the proceeds ofillegal activities as legitimate funds. Money laundering is a significant problem that poses serious threats to the integrity of the financial system, as it enables criminals to profit from illegal activities and finance further criminal endeavors. Money laundering is also linked to other crimes, such as drug trafficking, terrorism financing, and corruption. To combat money laundering, governments and financial institutions haveimplemented various measures, such as Know Your Customer (KYC) regulations, Anti-Money Laundering (AML) laws, and the use of financial intelligence units. The existing money laundering system is complex,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060305*

Authorized Data Dedupulication Technique In Cloud Storage System

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07Mar 2023
Published	:	17 Mar 2023

Abstract— Data deduplication is one of important data compression techniques for eliminating duplicate copies of repeating data, and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the confidentiality of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this project makes the first attempt to formally address the problem of authorized data deduplication. Different from traditional deduplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new deduplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

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Keywords: ***Data Deduplication, Security, Cloud Computing, Storage.***

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Citation: S.S.Vasantha Raja, Dr R.Palson Kennedy, S. Jonisha, T.Bersikin Libina. "Enhancing Communication Skills of the Learners in Professional Advancement, "Journal of Science, Computing and Engineering Research, 6(3), 18-23, 2023.

I. INTRODUCTION

Cloud computing provides seemingly unlimited "virtualized" resources to users as services across the whole Internet, while hiding platform and implementation details. Today's cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified privileges, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the ever-increasing volume of data. To make data management scalable in cloud computing, de duplication has been a well-known technique and has attracted more and more attention recently.

Data deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage. The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent. Instead of keeping multiple data copies with the same content, deduplication eliminates redundant data by keeping only one physical copy and referring other redundant data to that copy. Deduplication can take place at either the file level or the block level. For filelevel de duplication, it eliminates duplicate copies of the same file. Deduplication can also take place at the block level, which eliminates duplicate blocks of data that occur in non-identical files. Although data deduplication brings a lot of benefits, security and privacy concerns arise as users' sensitive data are susceptible to both inside and outsider attacks. Traditional encryption, while providing data confidentiality, is incompatible with data deduplication.

Specifically, traditional encryption requires different users to encrypt their data with their own keys. Thus, identical data copies of different users will lead to different cipher texts, making deduplication impossible. Convergent encryption has been proposed to enforce data confidentiality while making deduplication feasible.

It encrypts/decrypts a data copy with a convergent key, which is obtained by computing the cryptographic hash value of the content of the data copy. After key generation and data encryption, users retain the keys and send the cipher text to the cloud. Since the encryption operation is Deterministic and is derived from the data content, identical data copies will generate the same convergent key and hence the same cipher text. To prevent unauthorized access, a secure proof of ownership protocol is also needed to provide the proof that the user indeed owns the same file when a duplicate is found. After the proof, subsequent users with the same file will be provided a pointer from the server without needing to upload the same file. A user can

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060406*

B&W Image Colorization Using Computer Vision And Deep Learning

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— Previous approaches to black and white image colorization relied on manual human annotation, which frequently resulted in desaturated results that were not believable as true colorizations. The project attempts to generate a plausible color version of a greyscale photograph given as input. It's a fully automated process for creating beautiful, lifelike colorization. By framing the challenge as a classification job, it accepts the problem's underlying ambiguity and uses class re-balancing during training to increase the diversity of colors in the end result. The system is trained on over a million color images and is implemented as a feed-forward pass in a CNN during testing. By a large margin, this strategy surpasses earlier methods. It also shows that colorization can be an effective pretext task for self-supervised feature learning when employed as a cross-channel encoder. On a variety of feature learning benchmarks, this technique achieves cutting-edge results

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Keywords: ***Colorization, CNN, VGG, Deep learning, Image Coloring***

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Citation: Dr Palson Kennedy R, Jonisha S, Bersikin Libina T, Vasantha Raja S S. "B&W Image Colorization Using Computer Vision And Deep Learning" Journal of Science, Computing and Engineering Research, 6(4), 18-23, 2023.

I. INTRODUCTION

Grayscale refers to digital photographs in which each pixel's value represents solely the light's intensity information. Only the darkest black to the brightest white are often displayed in such images. To put it another way, the image only features black, white, and grey hues, with grey having many levels. The value of each pixel in a grayscale image is proportional to the number of bits of data utilized to represent it. Grayscale image is a one-dimension (channel) image and the value of a grayscale image is commonly represented by 8 bits, that is, the pixel value of a pixel is represented by a combination of eight binary values. As a result, pixels have a value range of 0–255,with a total of 256 grayscale levels.

An RGB image is a three-dimension (channel) image, also known as a true colour image, is saved as an m-by-n-by-3 data array that defines the red, green, and blue colour components for each individual pixel. A palette is not used in RGB images. Each pixel's colour is determined by a combination of the red, green, and blue intensities stored in each colour plane at the pixel's location, where the red, green, and blue components are each 8 bits. This results in a possible palette of 16 million colours. True colour image is a term that refers to the precision with which a real-life image can be replicated

We will convert a grayscale or black and white image to a brilliant colour image in this project. However, the purpose of this project is to create a realistic colorization that may potentially trick a human observer, rather than to retrieve the original ground truth colour. As a result, our goal becomes much more attainable: model enough statistical relationships between the semantics and textures of grayscale images and their colour counter parts to yield visually appealing results.

We tackle the problem of automatic image colorization by (a) designingan appropriate objective function that handles the multimodal uncertainty of the colorization problem while capturing a wide variety of colours(b) introducing a novel framework for testing colorization algorithms that could be applied to other image synthesis tasks, and (c) training on a million colour images to set a new high-water water mark on the task. Second, we introduce the colorization taskas a competitive and simple way for self-supervised representation learning,with state-of-the-art results on a variety of benchmarks.

II. RELATED WORKS

HINT BASED COLORIZATION [1] Levin et al. proposed a simple but effective method that incorporates user colorization hints in a quadratic cost function, requiring that neighboring pixels in space-time with similar intensities have similar colours. The hints are provided in the form of imprecise coloured "scribbles" on the grayscale input image, and the method is capable of producing high quality colorizations with no additional information about the image. Extensions to this approach have improved its performance even more: Huang et al. used adaptive edge

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CONSUMER TO CONSUMER PRODUCT TRADING WITH STRATEGIC CONSUMER BEHAVIOUR USING PRIVATE BLOCK CHAIN TECHNIQUE

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Abstract

Technological improvements have brought about a boom in the recognition of consumer-to-consumer product trading (C2C-PT). It is doubtful how C2C-PT impacts the manufacturer (called the "firm") and customers within the market. We consequently construct analytical models to discover this problem. We do not forget a case in which a company develops and sells a product to customers inside the market. Consumers have their own heterogeneous random valuations of the product and are strategic in the sense that they're forward-searching application maximizers. The firm makes the top-rated choice on the product promotion charge.

We examine the effects of C2C-PT on each the firm and clients. We select the most appropriate purchasing option for the consumer and establish the most desirable pricing policy for the company. We show that the presence of C2C-PT may both advantage and hurt the firm and consumers. At the same time, the patron's strategic conduct will always cause damage to the firm. Most interestingly, we prove that strategic buying behaviour is not continually useful to consumers themselves.

LITERATURE SURVEY

Online Expert-Based Prediciton For Cognitive Raido Secondary Markets

The growing importance of wireless communications drives an increasing interest in dynamic access to spectrum resources. This requires efficient management policies that allow spectrum sharing between licensed primary users (PU) and unlicensed secondary users (SU). On such scenario, PUs shall preserve their

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603010*

Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07 Mar 2023
Published	:	19 Mar 2023

Abstract— Alzheimer's is a type of dementia that causes problems with memory, thinking and behavior. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks. Dementia is not a specific disease. It's an overall term that describes a group of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities. Alzheimer's disease accounts for 60 to 80 percent of cases. Vascular dementia, which occurs after a stroke, is the second most common dementia type. But there are many other conditions that can cause symptoms of dementia, including some that are reversible, such as thyroid problems and vitamin deficiencies. Dementia is a general term for loss of memory and other mental abilities severe enough to interfere with daily life. It is caused by physical changes in the brain. Alzheimer's is the most common type of dementia, but there are many kinds. The input data is taken from the dataset repository. In our process, we are taken the Alzheimer's disease dataset as input. The system is developed the machine learning algorithm such as Support vector machine and logistic regression. The results shows that the performances metrics such as accuracy, sensitivity and specificity.

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Keywords: ***Alzheimer's Disease, Dementia, Machine Learning Algorithm, SVM and Logistic Regression.***

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ALZHEIMER's disease (AD) is the leading cause of dementia and poses a significant social and economic challenge. It is responsible for more than half of all cases of dementia. Over 50 million individuals currently suffer from dementia worldwide with a projected increase to 152 million by 2050. No cure for AD has been discovered, but there is intense effort to develop new clinical interventions that may slow or halt the disease. Such interventions are aimed at early (including preclinical and prodromal) stages of the disease prior to extensive cell damage, when it is thought treatment is more likely to be effective. Alzheimer's disease and related dementias (ADRD) have become a major public health concern in the United States. An estimated 5.6 million Americans aged 65 and older (10% of the US population) were living with ADRD in 2019, and this number is expected to grow dramatically as the population continues to age. By 2025, the number of Americans aged 65 or older with ADRD is expected to reach 7.1 million, nearly a 27% increase from 2019, and by 2050, this population is projected to be 13.8 million, with the highest growth among those in ADRD's advanced stage. Persons with ADRD require progressively extensive assistance in their daily lives, the majority of which is provided by family members, friends, and other unpaid caregivers. It is estimated that in 2018, American caregivers of persons with ADRD provided 18.5 billion hours of informal unpaid assistance, valued at $233.9 billion. Family caregivers (hereafter "caregivers") of persons with ADRD are expected to make important care decisions for their family members with ADRD on a daily basis. However, these caregivers report being unprepared for their roles and responsibilities, uninformed about care options, and unsupported by professionals in their decision making. Care giving for persons with ADRD is stressful, and it can severely affect the caregiver's own health and well-being. There is an urgent need to better prepare caregivers to manage their daily lives and those of their family members with ADRD, yet there are critical knowledge gaps regarding the types and amounts of information that caregivers may want to have in order to better manage ADRD. To provide patient-centred care for people with ADRD and enhance caregivers' quality of life, we must address those gaps.

Artificial intelligence (AI) is showing great promise in areas of health care—in precision treatments, patient education, virtual assistance, and cost reduction. Some attempts have been made to apply AI for persons with

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604011*

Enhancement of Short Term Prediction Using modified LSTM

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— In today's economy there is a profound impact of the stock market. The main aim of stock market prediction is to predict the future values of the financial stocks of a company. Predicting the stock market is the toughest task in the field of computations. The recent trend in stock market prediction uses the machine learning technology which makes predictions based on the values of current stock market indices by training on their previous values. Stock market prices depend very much on demand and supply. High demand stocks will increase in price while heavy selling stocks will decrease. Fluctuations in stock prices affect investor perception and thus there is a need to predict future share prices and to predict stock market. The historical stock prices include opening, closing, volume weighted average price, turnover, trade values are more helpful in estimating the future of a stock. In existing method stock prices are predicted by using several machine learning algorithms like Linear Regression, Long short term memory (LSTM), Autoregressive integrated moving average (ARIMA). This project proposes modified LSTM algorithm to get better results for short term prediction of stock prices and may yield increase in accuracy.

Keywords: ***Close, LSTM, Machine Learning, Open, Stock market prediction, Turn over, Volume.***

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I. INTRODUCTION

Stock market consists of various buyers and sellers of stock. Stock market prediction means determining the future scope of market. A system is essential to be built which will work with maximum accuracy and it should consider all important factors that could influence the result. Various researches have already been done to predict stock market prices. The research is done over business and computer science domain. Sometime the stock market does well even when the economy is falling because there are various reasons for the profit or loss of a share. Predicting the performance of a stock market is tough as it takes into account various factors. The main aim is to identify the sentiment of investors. It is usually difficult as there must be rigorous analysis of national and international events. It is very important for an investor to know the current price and get a very close estimation of the future price.

The financial market is a dynamic and composite system where people can buy and sell currencies, stocks, equities and derivatives over virtual platforms supported by brokers. The stock market allows investors to own shares of public companies through trading either by exchange or over the counter markets. This market has given investors the chance of gaining money and having a prosperous life through investing small initial amounts of money, low risk compared to the risk of opening new business or the need of high salary career. Stock markets are affected by many factors causing the uncertainty and high volatility in the market. Although humans can take orders and submit them to the market, automated trading systems (ATS) that are operated by the implementation of computer programs can perform better and with higher momentum in submitting orders than any human. However, to evaluate and control the performance of ATSs, the implementation of risk strategies and safety measures applied based on human judgements are required. Many factors are incorporated and considered when developing an ATS, for instance, trading strategy to be adopted, complex mathematical functions that reflect the state of a specific stock, machine learning algorithms that enable the prediction of the future stock value, and specific news related to the stock being analysed. Investors in stock market would like to make better profit by analyzing market information.

Time-series prediction is a common technique widely used in many real-world applications such as weather forecasting and financial market prediction. It uses the continuous data in a period of time to predict the result in the next time unit. Many time series prediction algorithms have shown their effectiveness in practice. The most common algorithms now are based on Recurrent Neural Networks (RNN), as well as its special type - Long-short Term Memory (LSTM) and Gated Recurrent Unit (GRU). Stock market is a typical area that presents time-series data

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

PREDICTION OF BREAST CANCER STAGES USING MACHINE LEARNING

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ABSTRACT

Disease is the normal issue for all individuals on the planet with various kinds. Especially, Breast Cancer is the most regular ailment as a disease type for ladies. Along these lines, any advancement for analysis and expectation of malignant growth illness is capital significant for a solid life. AI methods can cause a colossal to contribute on the cycle of early analysis and expectation of disease. In this paper, two of the most mainstream AI methods have been utilized for characterization of Wisconsin Breast Cancer (Original) dataset and the arrangement execution of these procedures have been contrasted and each other utilizing the estimations of exactness, accuracy, review and ROC Area. The best exhibition has been acquired by Support Vector Machine strategy with the most elevated exactness.

Keywords— machine learning; breast cancer; classification; early diagnosis.

I. NTRODUCTION

Cancer is the second reason of human death all over the world and accounts for roughly 9.6 million deaths in 2018. Globally, for 1 human death in 6 can be said that is caused by cancer. Almost 70 percent of the deaths from cancer disease happen in countries that have low and middle income [1]. The most common cancer type among women are breast, lung and colorectal, which totally symbolize half of the all cancer cases. Also, breast cancer is responsible for the thirty percent of all new cancer diagnoses in women [2]. Machine learning (ML) methods ensure analyzing the data and extracting key characteristics of relationships and information from dataset. Also, it creates a computational model for best description of the data. Especially, according to in researches about cancer disease, it can be said that ML techniques can be handled on early detection and prognosis of cancer [3]. Asri et al. have compared some machine learning algorithms for the risk prediction and diagnosis of breast cancer. Support Vector Machine (SVM), k-Nearest Neighbors (kNN), Naive Bayes (NB) and Decision Tree (C4.5) have been applied Wisconsin Breast Cancer (Original) dataset. SVM

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

PREDICTION OF CYBER ATTACKS USING MACHINE LEARNING TECHNIQUE

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Abstract

Cyber-attack, via cyberspace, targets an enterprise's use of cyberspace for the purpose of disrupting, disabling, destroying, or maliciously controlling a computing environment/infrastructure; or destroying the integrity of the data or stealing controlled information. The state of the cyberspace portends uncertainty for the future Internet and its accelerated number of users. New paradigms add more concerns with big data collected through device sensors divulging large amounts of information, which can be used for targeted attacks. Though a plethora of extant approaches, models and algorithms have provided the basis for cyber-attack predictions, there is the need to consider new models and algorithms, which are based on data representations other than task-specific techniques. However, its non-linear information processing architecture can be adapted towards learning the different data representations of network traffic to classify type of network attack. In this, we are modeling cyber-attack prediction as a classification problem, Networking sectors have to predict the type of Network attack from given dataset using machine learning techniques. The analysis of dataset by supervised machine learning technique(SMLT) to capture several information's like, variable identification, uni-variate analysis, bi-variate and multi-variate analysis, missing value treatments etc. A comparative study between machine learning algorithms had been carried out in order to determine which algorithm is the most accurate in predicting the type cyber Attacks. We classify four types of attacks are DOS Attack, R2L Attack, U2R Attack, Probe attack. The results show that the effectiveness of the proposed machine learning algorithm technique can be compared with best accuracy with entropy calculation, precision, Recall, F1 Score, Sensitivity, Specificity and Entropy.

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





AN SECURE CLOUD BASED WEB APPLICATION TO PREVENT CLONE ATTACK USING DISCRETE WAVELET TRANSFORM AND JAVA STATIC WATERMARKING

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ABSTRACT-

Social media provide a common platform for millions of users across the Internet. The common problem addressed here is the misuse of data files by unknown users. In this project we have used data hiding techniques to prevent clone attack. In this proposed system, the unauthorized client has the privilege to access pictures shared in the media. We have used Java static watermarking algorithms to prevent cloning of picture files shared in the social network. Whenever a user uploads profile picture or photos it would be watermarked and updated. This is done using java static watermarking system. Any unauthorized users updating the same picture can be detected and their respective IP would be blocked. Also we have used discrete wavelet and cosine transforms for implementing stegnographic techniques to share secure images in the social media.

Index Terms – ***Java Static watermarking, Discrete Wavelet algorithm, Discrete Cosine algorithm***

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Animal Repellent System for Smart Farming Using Artificial Intelligence and Deep Learning

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ABSTRACT

Agriculture automation has been on the rise leveraging, among others, Deep Neural Networks (DNN) and IoT for the development and deployment of many controlling, monitoring and tracking applications at a fine-grained level. In this rapidly evolving scenario, managing the relationship with the elements external to the agriculture ecosystem, such as wildlife, is a relevant open issue. One of the main concerns of today farmers is protecting crops from wild animals' attacks. There are different traditional approaches to address this problem which can be lethal (e.g., shooting, trapping) and non-lethal (e.g., scarecrow, chemical repellents, organic substances, mesh, or electric fences). Nevertheless, some of the traditional methods have environmental pollution effects on both humans and ungulates, while others are very expensive with high maintenance costs, with limited reliability and limited effectiveness. In this project, we develop a system, that combines AI Computer Vision using DCNN for detecting and recognizing animal species, and specific ultrasound emission (i.e., different for each species) for repelling them. The edge computing device activates the camera, then executes its DCNN software to identify the target, and if an animal is detected, it sends back a message to the Animal Repelling Module including the type of ultrasound to be generated according to the category of the animal.

Keywords: Animal Recognition, Repellent, Artificial Intelligence, Edge Computing, Animal Detection, Deep Learning, DCNN.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603010*

Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
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Published	:	19 Mar 2023

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604011*

Enhancement of Short Term Prediction Using modified LSTM

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I. INTRODUCTION

Stock market consists of various buyers and sellers of stock. Stock market prediction means determining the future scope of market. A system is essential to be built which will work with maximum accuracy and it should consider all important factors that could influence the result. Various researches have already been done to predict stock market prices. The research is done over business and computer science domain. Sometime the stock market does well even when the economy is falling because there are various reasons for the profit or loss of a share. Predicting the performance of a stock market is tough as it takes into account various factors. The main aim is to identify the sentiment of investors. It is usually difficult as there must be rigorous analysis of national and international events. It is very important for an investor to know the current price and get a very close estimation of the future price.

The financial market is a dynamic and composite system where people can buy and sell currencies, stocks, equities and derivatives over virtual platforms supported by brokers. The stock market allows investors to own shares of public companies through trading either by exchange or over the counter markets. This market has given investors the chance of gaining money and having a prosperous life through investing small initial amounts of money, low risk compared to the risk of opening new business or the need of high salary career. Stock markets are affected by many factors causing the uncertainty and high volatility in the market. Although humans can take orders and submit them to the market, automated trading systems (ATS) that are operated by the implementation of computer programs can perform better and with higher momentum in submitting orders than any human. However, to evaluate and control the performance of ATSs, the implementation of risk strategies and safety measures applied based on human judgements are required. Many factors are incorporated and considered when developing an ATS, for instance, trading strategy to be adopted, complex mathematical functions that reflect the state of a specific stock, machine learning algorithms that enable the prediction of the future stock value, and specific news related to the stock being analysed. Investors in stock market would like to make better profit by analyzing market information.

Time-series prediction is a common technique widely used in many real-world applications such as weather forecasting and financial market prediction. It uses the continuous data in a period of time to predict the result in the next time unit. Many time series prediction algorithms have shown their effectiveness in practice. The most common algorithms now are based on Recurrent Neural Networks (RNN), as well as its special type - Long-short Term Memory (LSTM) and Gated Recurrent Unit (GRU). Stock market is a typical area that presents time-series data

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060406*

B&W Image Colorization Using Computer Vision And Deep Learning

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— Previous approaches to black and white image colorization relied on manual human annotation, which frequently resulted in desaturated results that were not believable as true colorizations. The project attempts to generate a plausible color version of a greyscale photograph given as input. It's a fully automated process for creating beautiful, lifelike colorization. By framing the challenge as a classification job, it accepts the problem's underlying ambiguity and uses class re-balancing during training to increase the diversity of colors in the end result. The system is trained on over a million color images and is implemented as a feed-forward pass in a CNN during testing. By a large margin, this strategy surpasses earlier methods. It also shows that colorization can be an effective pretext task for self-supervised feature learning when employed as a cross-channel encoder. On a variety of feature learning benchmarks, this technique achieves cutting-edge results

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Keywords: ***Colorization, CNN, VGG, Deep learning, Image Coloring***

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Citation: Dr Palson Kennedy R, Jonisha S, Bersikin Libina T, Vasantha Raja S S. "B&W Image Colorization Using Computer Vision And Deep Learning" Journal of Science, Computing and Engineering Research, 6(4), 18-23, 2023.

I. INTRODUCTION

Grayscale refers to digital photographs in which each pixel's value represents solely the light's intensity information. Only the darkest black to the brightest white are often displayed in such images. To put it another way, the image only features black, white, and grey hues, with grey having many levels. The value of each pixel in a grayscale image is proportional to the number of bits of data utilized to represent it. Grayscale image is a one-dimension (channel) image and the value of a grayscale image is commonly represented by 8 bits, that is, the pixel value of a pixel is represented by a combination of eight binary values. As a result, pixels have a value range of 0–255,with a total of 256 grayscale levels.

An RGB image is a three-dimension (channel) image, also known as a true colour image, is saved as an m-by-n-by-3 data array that defines the red, green, and blue colour components for each individual pixel. A palette is not used in RGB images. Each pixel's colour is determined by a combination of the red, green, and blue intensities stored in each colour plane at the pixel's location, where the red, green, and blue components are each 8 bits. This results in a possible palette of 16 million colours. True colour image is a term that refers to the precision with which a real-life image can be replicated

We will convert a grayscale or black and white image to a brilliant colour image in this project. However, the purpose of this project is to create a realistic colorization that may potentially trick a human observer, rather than to retrieve the original ground truth colour. As a result, our goal becomes much more attainable: model enough statistical relationships between the semantics and textures of grayscale images and their colour counter parts to yield visually appealing results.

We tackle the problem of automatic image colorization by (a) designingan appropriate objective function that handles the multimodal uncertainty of the colorization problem while capturing a wide variety of colours(b) introducing a novel framework for testing colorization algorithms that could be applied to other image synthesis tasks, and (c) training on a million colour images to set a new high-water water mark on the task. Second, we introduce the colorization taskas a competitive and simple way for self-supervised representation learning,with state-of-the-art results on a variety of benchmarks.

II. RELATED WORKS

HINT BASED COLORIZATION [1] Levin et al. proposed a simple but effective method that incorporates user colorization hints in a quadratic cost function, requiring that neighboring pixels in space-time with similar intensities have similar colours. The hints are provided in the form of imprecise coloured "scribbles" on the grayscale input image, and the method is capable of producing high quality colorizations with no additional information about the image. Extensions to this approach have improved its performance even more: Huang et al. used adaptive edge

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

DATA MINING TECHNIQUES FOR MANURE RECOMMENDATION

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ABSTRACT

Agriculture plays a vital role in India. More than 60% people are in agriculture field. India is the second largest worldwide in farm outputs. A good deal of agriculture productivity is based on infrastructure, soil quality, micro-climates and local resources. Soil is a main resource to successful agriculture. The original source of the nutrients in the soil to grow crops. Many farmers are facing the problem to choose approximate amount of Manure depends on the soil and climate condition. This paper provides recommendation to increase the productivity by applying data mining techniques in agriculture. Manure Recommendation is based on minerals of soil parameter like Nitrogen, Phosphorus and Potassium by using K-mean clustering, The Nearest neighbor and decision tree and neural network algorithm.

Keywords: *Agriculture, Soil Fertility, Manure Recommendation, Data Mining, Clustering, Classification, Neural Network.*

I. INTRODUCTION

Data mining (the analysis step of the "Knowledge Discovery in Databases" process, or KDD), an interdisciplinary su mining process is to extract information from a data set and transform it into an understandable structure for further use. Aside from the raw analysis step, it involves database and data management aspects, data preprocessing, model and inference considerations , interestingness metrics, complexity considerations, post-processing of discovered structures, visualization, and online updating.

The actual data mining task is the automatic or semi-automatic analysis of large quantities of data to extract previously unknown interesting patterns such as groups of data records (cluster analysis), unusual records (anomaly detection) and dependencies (association rule mining).

II. TECHNIQUES USED IN DATA MINING

Data Loading: Data loading is the process of copying and loading data or data sets from a source file, folder or application to a database or similar application. It is usually implemented by copying digital data from a source and pasting or loading the data to a data storage or processing utility. Data loading is used in database-based extraction and loading techniques. Typically, such data is loaded into the destination application as a different format than the original source location. For example, when data is copied from a word processing file to a database application, the data format is changed

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Int. J. of Electronics Engineering and Applications, Vol. 9, No. 1, 2021

ENGROSSMENT OF STREAMING DATA WITH AGGLOMERATION OF DATA IN ANT COLONY

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ABSTRACT

A data stream is an ongoing process to appear a series of data and clustering data streams essential supplementary analysis to standard clustering. A stream is possible unlimited, data points appear online and each data point can be surveyed only once. This inflicts constraints on accessible memory and processing time. Moreover, streams can be strident and the number of clusters in the data and their statistical estate can change over time. This operation presents an online approach to clustering energetic data streams. A stochastic method is employed to find these rough clusters; this is shown to crucially speeding up the data with only a minor cost to performance, as compared to a deterministic approach. The rough clusters are then filtered using a method inspired by the discover sorting behavior of ants. Ants pick-up and drop items based on the correlation with the surrounding items. Artificial ant sort clusters by probabilistically picking and dropping micro clusters based on local density and local similarity in these operations.

Keywords - Data Stream, Local Density, Ants, Clusters and Data Points.

Reference to this paper should be made as follows:

Jagan K, Parthiban E Manikandan B,(2021), "Engrossment of Streaming Data with Agglomeration of Data in Ant Colony" Int. J. of Electronics Engineering and Applications, Vol. 9, No. 1, pp. 19-27, doi 10.30696/IJEEA.IX.1.2021.19-27.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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FACIAL BASED AUTHENTICATION USING EIGENFACE, FISHERFACE, AND LOCAL BINARY PATTERN HISTOGRAM

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Abstract

The purpose of this proposed system is to review, compare, and improve face recognition algorithms.Facial recognition is different than facial detection, and in certain situations, can be much more important than facial detection. Facial detection is the ability for a machine to detect whether a face exists in a live test. It answers the yes/no question "is this a face" or "is there a face in the image". Facial recognition is the ability for a machine to correctly label a face among a group different face. It answers the question "whose face". Face recognition is important with regard to biometrics authentication. For security purposes, it is very important to correctly identify a person when attempting to authenticate. This can be necessary for door/area access, airport security and home security. In these situations, it can be imperative that the user presented is correctly identified and either granted access correctly or incorrectly. There are currently multiple applications available on both Android and iPhone that use facial recognition for both phone and application access as a means of additional security in the event that someone that is not authorized.

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Introduction

The purpose of this proposed system is to review, compare, and improve face recognition algorithms. Facial recognition is different than facial detection, and in certain situations, can be much more important than facial detection. Facial detection is the ability for a machine to detect whether a face exists in a live test. It answers the yes/no question "is this a face" or "is there a face in the image". Facial recognition is the ability for a machine to correctly label a face among a group different face. It answers the question "whose face". Face recognition is important with regard to biometrics authentication. For security purposes, it is very important to correctly identify a person when attempting to authenticate. This can be necessary for door/area access, airport security and home security. In these situations, it can be

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Smart Sensing with MQTT Mesh Network

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ABSTRACT

A wireless mesh network (WMN) is a mesh network created through the connection of wireless access point (WAP) nodes installed at each network user's locale. The networking infrastructure is decentralized and simplified because each node need only transmit as far as the next node. WMNs may or may not be connected to the internet. Wireless mesh networks, which can also be a form of wireless ad hoc network (WANET), are often used for the following: connecting internet of things (IoT) devices, such as sensors, security systems, smart appliances and monitoring systems; building networks in developing communities that lack internet wiring infrastructure; and providing consistent wireless access to hospitals, educational campuses and warehouses. Wi-Fi and networking in temporary locations, such as construction Network Security Can be defined as measures taken to protect data during their transmission along the media. Whereas securing the internet means taking measures to protect data during their transmission over a collection of Interconnected networks. Network security is the most important issue in the vast field of wireless networks. In order to improve network security, there are number of products that are available in the market that use packet filtering. For a network administrator, packet filtering is an effective tool for security purposes but he/she has to have an in depth knowledge of the capability of this tool. Our firewall software contains a set of protocol for which the filters will be applied. We have devised a packet filtering firewall called Net app for Microsoft windows operating systems.

INTRODUCTION

In this project the WiFi - based mesh network that will transmit the data to each nodes and finally the data will be published in the MQTT based web server, So there is no need of wired connections between sensors and clouds. In this, the nodes don't need to connect to a central node. Nodes are responsible for relaying each others transmissions. This allows multiple devices to spread over a large physical area. The nodes can self-organize and dynamically talk to each other to ensure that the packet reaches its final node destination. If any node is removed from the network, it is able to self-organize to make sure that the

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© November 2021| IJIRT | Volume 8 Issue 6 | ISSN: 2349-6002

A Novel Hybrid Algorithm for Securing Data Transfer with machine Learning Disease Prediction

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Abstract - **Data security refers to the process of protecting data from unauthorized access and data corruption throughout its life cycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms. The security system used nowadays uses data encryption software to effectively enhance data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted cipher text. To an unauthorized person, the cipher data will be unreadable. That data can then be decrypted only by a user with an authorized key. Whereas with the improving data insecurity nowadays leads to loss of confidential data as the key is easily hack able because of a single algorithm usage. Diabetes-related complications include damage to large and small blood vessels, which can lead to heart attack and stroke, and problems with the kidneys, eyes, feet and nerves. The risk of most diabetes-related complications can be reduced if diagnosed early. To overcome this problem this project presents a medical application that accepts and analyses a patient's medical data to give a diagnosis to check if he/she is diabetic with an efficient data security system where two security algorithms will be merged to secure the patient's medical data stored and accessed in cloud. In addition, the emerging block chain technologies with the wireless data transfer system, which makes easy the interaction between the data and cloud. The medical data is analyzed and the result is stored securely in a cloud database such as mongoDB as an highly secure encrypted key. The result is received from the database and decrypted in the frontend to view the test results. Thus, this project presents an effective end to end security for medical applications.**

Index Terms - **Data Security, Encryption, Hashing, Hackable, Token, Diabetes.**

I.INTRODUCTION

Data security refers to the process of protecting data from unauthorized access and data corruption throughout its lifecycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms.

Organizations around the globe are investing heavily in information technology (IT) cyber security capabilities to protect their critical assets. Whether an enterprise needs to protect a brand, intellectual capital, and customer information or provide controls for critical infrastructure, the means for incident detection and response to protecting organizational interests have three common elements: people, processes and technology.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively. According to Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges. So what are the factors currently affecting diabetes in India that are making this problem so extreme?

The aetiology of diabetes in India is multifactorial and includes genetic factors coupled with environmental

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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FRAMEWORK FOR NON-CONTINUOUS SPACIOUS MECHANISM WITH TECHNICAL BEGATS

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ABSTRACT

In this application we proposed non linearity have introduced new challenges in Hospital resource monitoring and scheduling. First, a stacked auto encoder is used to extract dominant representations of each local process unit and establish the local inner monitor. Second, mutual information (MI) is used to determine the neighbour-hood variables of a local unit. Finally, the outer-related representations from all process units are used to establish global monitoring systems. Every resource is important in hospital sector, while oxygen cylinder plays an important role as it is used for emergency purpose. There should be a proper monitor and control over this integrated system so that any fatal deaths can be mitigated by providing cylinders whenever it's needed most. A large number of variables, complex relations between units, and process non linearity contribute to the difficulty in developing first principle-model of processes and prevent the use of model-based monitoring methods. Then the owner pays the cost for the defect parts. After buying the parts office manager sends to the employee. Then employees replace the defects parts. The admin maintains the payment detail of buying parts.

Keywords : Non-Continuous Spacious, resource monitoring, scheduling

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INTRODUCTION

In any sector resource allocation plays a vital role to improve their service, it is true in Health-care sector too, oxygen cylinders are no less important than other resource. There are multiple deaths happening when cylinders are not shared to patients when they needed most. Proper monitoring and scheduling the cylinders in a hospital can mitigate this problem, yet these can be effectively applied when multiple hospitals are integrated in the process. The distributed monitoring scheme is more efficient in detecting a local fault (a fault that affects only a local part of a process) than the centralized monitoring scheme. Machine learning is a

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604013*

Google Playstore Reviews Prediction Using ML And NLP

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— Play Store is Google's official pre-installed app store on Android-certified devices. It provides access to content on the Google Play Store, including apps, books, magazines, and music, movies, and television programs. Google play store allow the user to download a mobile application and user get inspired by the rating and reviews of the mobile app. A recent study analyzes that user preferences, user opinion for improvement, user sentiment about particular feature and detail with descriptions of experiences are very useful for an application development. The aim is to classify the Google app reviews based on supervised machine learning techniques (SMLT).The analysis of dataset by supervised machine learning technique (SMLT) to capture several information's like, variable identification, univariate analysis, bi-variate and multi-variate analysis, missing value treatments and analyze the data validation, data cleaning/preparing and data visualization will be done on the entire given dataset. To propose a machine learning-based method to classify the Google play store reviews results in the form of positive, neutral or negative best accuracy from comparing supervise classification machine learning algorithms. Millions of mobile apps are available in app stores, such as Apple's App Store and Google Play. For a mobile app it would be increasingly challenging to stand out from the enormous competitors and become prevalent among users. Good user experience and well-designed functionalities are the keys to a successful app. To achieve this, popular apps usually schedule their updates frequently. If we can capture the critical app issues faced by users in a timely and accurate manner, developers can make timely updates, and good user experience can be ensured.

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Keywords: ***Google Playstore, Machine Learning, Natural Learning Process, SMLT techniques.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Google Play store Reviews Prediction Using ML And NLP", Journal of Science, Computing and Engineering Research, 6(4), 61-67, 2023.

I. INTRODUCTION

MOBILE apps keep gaining popularity over the last few years. According to Statista the global mobile internet user penetration in 2016 has exceeded half the world's population. During the third quarter of 2018, Android users were able to choose from 2.1 million apps, while Apple's App Store provided almost 2 million apps. While users have a large number of products to choose from, the apps are facing immensely fierce competition to survive. The popular mobile app stores, such as Google Play and App Store, use the star-rating mechanism to gather users' ratings and feedback. The feedback and ratings can impact an app's ranking on these stores, and further influence its discovery and trial. A survey in reported that only 15%~50% of the users would consider downloading a lowrated app, while for the high-rated apps, the ratio reached 96%. Thus, ensuring good user experience and keeping users engaged can help maintain high download numbers and increase benefits to app developers.

Recent studies showed that frequently updated apps could benefit in terms of increase in ranking. This is the case since the popular app stores factor in the freshness of an app in the ranking process. Additionally, app updates can also improve user experience. Specifically, McIlroy et al. found that the rationale behind updates is often related to bug-fixing (63% of the time), new features (35%), and feature improvement (30%). However, not every update can definitely lead to positive user experience and high ranking. For example, the updated Android and iOS versions of Skype released in June 2017 received a flood of complaints as the new design removed the key functionality andfeatures available in the older version, such as the visibility of online friends .As a result, its user rating on the App Store plunged from 4.5 to 1.5 stars shortly after the update. Such situations are not unusual, and can cause customer churn and losses to app developers. The losses could be limited if the issues were recognized timely. In thi s work, we aim at accurately detecting emerging app issues by analyzing user feedback. IDEA is one of the most recent works that can be directly applied to detect emerging issues/topics from user feedback. IDEA takes user reviews distributed in consecutive app versions as input, and outputs emerging app issues in the level of phrases and sentences. A modified online topic

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DEVELOPING A GESTURE BASED VIDEO CALLING FOR DEAF AND MUTE PEOPLE USING MICROSOFT KINCET

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Abstract

In recent year, there has been rapid increase in the number of deaf-mute victims due to birth defects, accidents and oral diseases. Since deaf-mute people cannot communicate easily with normal people so they have to depend on some sort of visual communication. This system is based on a skin-color modelling technique so the skin color range is predetermined that will extract pixels(hand) from non-pixels(background). The images were fed into the model called the Convolutional Neural Network (CNN) for classification of images. Keras was used for training of images provided with proper lighting condition and a uniform background; the system acquired an average testing accuracy of 93.67%, of which 90.04% was attributed to ASL alphabet recognition and 97.52% for static word recognition, thus surpassing that of other related studies. The framework is developed by using python flask for a Web Based Application to establish the connection between deaf-mute and normal users. So that the Sign Language can be converted into Normal text or voice as output for the normal people. on the other end voice of the normal people is convcrted into text for the convenient of the deaf-mute people

Introduction

To Develop an Web Based Application for Two-Way Communication between Deaf-Mute users and Normal users by converting Sign language into text or voice message at the output with the help of deep learning algorithm we can achieve this operation for image processing and to build a better communication between any users. 1.2 Project Domain 1.2.1 Image processing Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image. Nowadays, image processing is among rapidly growing

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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HANDLING MISSING DATA TO IMPROVE GENERALIZATIONPERFORMANCEO MACHINELEARNING CLASSIFIER

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Abstract

In supervised learning, missing values usually appear in the training set. The missing values in a dataset maygenerate bias, affecting the quality of the supervised learning process or the performance of classification algorithms. These imply that a reliable method for dealing with missing values isnecessary. In this project, we analyze the difference betweeniterative imputation of missing values and single imputation inreal-world applications. We propose an iterative imputationmethod, in which each missing attribute-value is iterativelyfilled using a predictor constructed from the known values and predicted values of the missing attribute-values from the previous iterations. Meanwhile, we demonstrate that it is reasonable to consider the imputation ordering for patching upmultiple missing attribute values, and therefore introduce amethod for imputation ordering. We experimentally show that our approach significantly out performs some standard machine learning methods for handling missing values in classification tasks.

Introduction

The missing data problem is arguably the most common issue encountered by machine learning practitioners when analyzing real-world data. In many applications ranging fromgene expression in computational biology to survey responsesin social sciences, missing data is present to various degrees.As many statistical models and machine learning algorithmsrely on complete data sets, it is key to handle the missing data appropriately. Missing data problem is a common issue in most real-world studies. Since most statistical models and data-dependent machine learning (ML) algorithms could only handle complete datasets, the issue of how to approach missing values plays an important role in statistical inferences.Let Y be an (N × K) data matrix with i-th row yi = (yi1, yi2, ...,yiK) where yij is the value of j-th feature for the i- the sample. Define the subset of observed values as Y obs and missing values as Y mis. Also, let M = [mij]be the missing indicator matrix, where mij indicates whether yij is missing .ornot.Rubin(19776)defines three different missing mechanisms according to the conditional probability of the missing ,{mij = 1}, given the data. The mechanism of missing data is completely at random (MCAR) if the probability of missing ness is

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060313*

EXTRACTION AND PLOTTING OF SPECTRAL AND TEMPORAL FEATURES OF EEG RHYTHMS

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— Despite the medical community's astronomical expansion, understanding the activity of the human brain remains a challenging work for medical specialists, and the quantum of difficulty in treating conditions like epilepsy grows without any limits. As a result, an automatic system that can plot brain waves will be of tremendous assistance to the medical industry in mapping the same with human emotions and the collected information may be utilized to heal and prevent neural disorders using Machine Learning. In this work, the brain waves are obtained in the form of EEG waves and the same is denoised and filtered using renewed techniques and features such as temporal and spectral. These are extracted from the EEG data and fruitful insights are obtained from the same.

Keywords: ***Brain, Medical, EEG, Machine Learning***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Extraction And Plotting of Spectral and Temporal Features of EEG Rhythms ", Journal of Science, Computing and Engineering Research, 6(3), 63-68, 2023.

I. INTRODUCTION

One of the most challenging tasks in developing brain computer interface (BCI applications) is the design of systems that translate the mental imagination of movements to commands without the use of any peripheral nervous system. There are a variety of BCI fields that include brain science, neural engineering, rehabilitation, and brain technology. Developers of BCI systems often use robots and other devices that are fully capable of controlling their mental intentions. One of the most challenging tasks in developing these systems is analyzing the electrical properties of brain waves. These are referred to as brain waves and consist of various rhythmic components. The four major components of brain waves are delta, theta, alpha, beta, and gamma. These are the frequencies that are responsible for carrying the information contained in the overall electrical activity of the brain. To filter out the various ranges of signals coming from the sensors, each component is individually designed to be filtered. In order to implement BCI, the developers need to extract the various rhythmic components of brain waves. During the recording of an electroencephalogram (EEG), the physiological noises generated by the brain are also added. This process is very challenging, as the brain waves are not only carrying the information, they also contain other signals. The effective extraction of these brain waves is very important to the clinical implementation of the BCI.

Thus, rhythmic components of collected brain waves are employed to create a brain computer interface (BCI). Physiological sounds are inadvertently mixed in with pure brain activity data during EEG recording. The extraction of the rhythmic component (RCE) from a noisy EEG is difficult, yet the successful extraction of the brain waves is a critical stage in using the EEG in clinical diagnosis and/or BCI implementation. Apart from just extracting the rhythmic components, advanced techniques are applied furthermore to extract the spectral and temporal data which in turn will be of great use in the healthcare industries. An EEG is a test that detects abnormalities in your brain waves, or in the electrical activity of your brain. During the procedure, electrodes consisting of small metal discs with thin wires are pasted onto your scalp. The electrodes detect tiny electrical charges that result from the activity of your brain cells.

The charges are amplified and appear as a graph on a computer screen, or as a recording that may be printed out on paper. Your healthcare provider then interprets the reading. During an EEG, your healthcare provider typically evaluates about 100 pages, or computer screens, of activity. He or she pays special attention to the basic waveform, but also examines brief bursts of energy and responses to stimuli, such as flashing lights. Evoked potential studies are related procedures that also may be done. These studies measure electrical activity in your brain in response to stimulation of sight, sound, or touch. The EEG is used to evaluate several types of brain disorders. When epilepsy is present, seizure activity will appear as rapid spiking waves on the EEG. People with lesions of their brain, which can result from tumors or stroke, may have unusually slow EEG waves, depending on the size and the location of the lesion. Wherein this project concentrates on anxiety, traumic disoders, post-traumatic stress, psychotic disorders, depression, bipolar disoders, personality disoders, to stabilize mental strength etc, and since there are several

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604014*

Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— The present paper has introduced an innovative, efficient and real-time cost beneficial technique that enables users to hear the contents of text images instead of reading through them. It combines the concept of Optical Character Recognition (OCR) and Text to Speech Synthesizer (TTS) using a webcam. The major problem faced by visually impaired people these days is that they are unable to do text recognition on their own, which forces them to depend on others for their day to day activities such as reading newspapers, letters sent through post, referring books etc. The ultimate aim of the project is to help the visually impaired people to recognize the text. When a printed text is shown in front of the webcam it has to capture the image, extract the text from the image and should read out the text either through computer audio or headphones. Text-to-Speech (TTS) is the ability of a computer to produce spoken words by converting text to voice. In other words Text-to-Speech software is a speech synthesizer that vocalizes text in real time in a natural way. This paper describes the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module.

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Keywords: ***OCR, TTS, Speech, webcam, voices.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired", Journal of Science, Computing and Engineering Research, 6(4), 68-73, 2023.

I. INTRODUCTION

Languages are the oldest way of communication between human beings whether they are in spoken or written forms. In the recent era, visual text in natural or manmade scenes might carry very important and useful information. Therefore, the scientists have started to digitize these images, extract and interpret the data by using specific techniques, and then perform text-to-speech synthesis (TTS). It is done in order to read the information aloud for the benefit and ease of the user.

Text extraction and TTS can be utilized together to help people with reading disabilities and visual impairment to listen to written information by a computer system. Optical character recognition is employed to recognize and extract the words and finally the extracted text is converted to appropriate speech using text-to-speech synthesizer. The proposed algorithm is tested on images representing different scenes ranging from documents to natural scenes. Promising results have been reported which prove the accuracy and robustness of the proposed algorithm and encourage its practical implementation in real world scenarios. This project has represented the innovative idea as well as a low cost technique that is used to hear the contents of the text image without reading them. It combines the concept of OCR and TTS. This system is used to help the blind people to interact with computers effectively through a vocal interface.

OCR is defined as the electronic or mechanical conversion of handwritten script or printed text images into machine-encoded text. A character recognizer would recognize the segmented characters one by one. This technique is referred to as "segmentation-based" OCR. Optical Character Recognition emanates from technologies involving telegraphy and creating reading devices for the blind.

An OCR system is made up of both hardware and software. The service aims to analyze a physical document's content and convert the elements into a script that can subsequently be utilized for processing data. For example, consider postal and mail sorting services. OCR is critical to their capacity to rapidly process source and return addresses so that correspondence may be sorted more efficiently. Optical character recognition has been applied to a number of applications. In other words, OCR systems transform a two-dimensional image of text, that could contain machine printed or handwritten text from its image representation into machine-readable text. OCR as a process generally consists of several sub-processes to perform as accurately as possible.

International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





EVALUATING DISEASE FROM SEVERAL MEDICAL DATA BY USING HL7

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ABSTRACT:

To furnish a detailed analysis on the healthcare data in HL7(Health Level 7) by utilizing Big data analytics and to create disease prediction system as the healthcare sector is considered as one of the important industries in information technology. In the past few years, healthcare data has become more complex with huge amount of data related to ever growing and changing technologies, mobile applications and discovery of new diseases. The belief of healthcare sectors is that healthcare data analytics tools are important to manage a large amount of complex data, to improve healthcare industries, efficiency and accuracy in medical practice. Information technology is a boon for the healthcare sectors to upgrade their efficiency in healthcare performance availing the provided data and information.The concept of big data though not new is constantly changing with attempts of defining big data and inventing newer hardware and software mechanisms to store, analyse and visualize the data in keeping with the requirements of collection of data elements as per the requisite size, speed and type. Velocity, variety and volume are the three innate aspects of the data produced. Furthermore, each of these data repositories is isolated and inherently incapable of providing a platform for global data transparency.

Keywords: Health Level 7 (HL7), Healthcare, Hadoop Distributed File System (HDFS), Deep Analysis.

[1] INTRODUCTION

Medical is no exception in the field of big data. Technology has been changing the world. Medical providers such as medical institutions, labs contain data systems that are tranquil of multiple, distributed applications. HL7 is a data transposing message standard for movingscientific and administrative information among medicalapplications. Patient details are stored in various

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

LEAF DISEASES DETECTION AND MEDICATION

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ABSTRACT

India is fast developing country and agriculture is the back bone for the countries development in the early stages. Now a day's technology plays vital role in all the fields but till today we are using some old methodologies in agriculture. Identifying plant disease wrongly leads to huge loss of yield, time, money and quality of product. Identification of plant disease is very difficult in agriculture field. Leaf disease detection requires huge amount of work, knowledge in the plant diseases, and also require the more processing time. The objective of this research is to make use of significant features and prediction is done using computer vision technique. This method mainly download the image from the server then it converts the image into a gray-scale by calculating its pixels and it shows out only the defected parts of the leaf. This approach can significantly support an accurate detection of leaf disease. We can extend this approach by using image processing technique. It displays the output in graphical view that is X and Y coordinates. The user can also view the output in mobile application by retrieving the result from the server.

Keywords—Natural Language Processing, Gray scale image, *Maximum Likelihood Estimation, Machine Learning.*

I. INTRODUCTION

Developing countries like India the economy is mainly depends on agriculture. Due to plant diseases the quality and quantity of agriculture product is reduced. Some of the plant disease do not have visibility during early stage it only appears at that final stage. The purpose of agriculture is not only to feed ever growing population but it is an important source of energy and a solution to solve the problem of global warming. Plant disease diagnose is very important in earlier stage in order to cure and control the disease. In this method experts are involved who have the ability to detect the changes in leaf. Many times different experts identify the same disease as the different disease. This method requires continuous monitoring of experts. Depending on the applications, many systems have been proposed to solve or at least to reduce the problems, by making use of image processing we are also some of the automatic classification tool. Using this technique, we can easily segment the plant disease and also the affected part of the leaf can be found.

II.PROPOSED METHODOLOGY

In the proposed system, this is done using the segmentation process which detects and classifies the image. Image processing is used for measuring affected area of diseases and to determine the difference in the colour of the affected area. It covers the survey based on the classification mechanism whether the affected leaf is from which type of plant it specifies the pixel values and represent them in

IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SECURE ONLINE TRANSACTION WITH USER AUTHENTICATION

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ABSTRACT:

Online transaction process is secure with one-time password (OTP). Generating OTP has many factors that can make OTP unique for every time it is generated. In this paper we implement user Identification using Face Recognition to verify the user. In case of emergency situation, the login can be done using OTP and also the person image is captured and Mail to the Account Holder. Thus, our system has improved security compared to existing System.

Keywords: Face Recognition, Internet of Things

I. INTRODUCTION:

Presently a day with the system world, the path for cybercrime is gotten simpler for hacking reason. On account of this explanation, arrange security has gotten one of the greatest confronting the present IT offices security. We heard a ton about programmers and wafers approaches to take any sensible secret phrase or pin code number character, wrongdoings of ID cards or Mastercard's misrepresentation or security breaks in any significant structure and afterward build up any data or different significant information from any association or organization. These issues permit us to know the need of solid facial innovation to verify significant information and certifications. This innovation depends on a system called "face acknowledgment" utilizing biometric. Biometric is a type of bio-informatics that utilizations organic properties to recognize individuals. Since biometric frameworks recognizable proof an individual by the natural qualities, they are hard to counterfeit.

II. TECHNIQUES USED IN MACHINE LEARNING

As of late, as indicated by the rising improvement of savvy cell phones and tablet PC, portable web-based business has significantly expanded because of the explanation that the capacity of keen cell phone and tablet PC are consolidated together. M-banking is consequently gotten increasingly helpful, powerful and opportune through the new portable correspondence frameworks. So as to raise the security of M-banking, a few banks receive the one-time secret key (OTP) to cure the conceivable M-banking taking danger. Previously, the OTP is sent to individual cell phone. However, right now a large portion of the savvy cell phone can perform M-banking effectively. In this manner, it increases higher danger of data security because of

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

SMART TICKET SYSTEM MISTREATMENT QR CODE IN MECHANICAL MAN APPLICATION

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ABSTRACT

In this paper, we have a tendency to square measure proposing QR reader for ticket. Users will scan QR reader rather than price tag. during this app, once registration profile completed, we've to connect our bank details through this app. Whenever we have a tendency to square measure happening in bus, we've to pick from and to location. Then it'll generate quantity details per head. afterward we've provided traveler details. Passenger's details mean count. Then we will scan QR code. Therefore, directly cash can transfer from our bank details. Then we will get SMS alert for price tag payment proof. Then admin (Conductor) facet, they calculate quantity details through mistreatment net application. Then they will calculate per day quantity details for ticket data. To boost the quality of bus service, an amount system which will monitor and predict the rider Flow of the running buses is helpful. Here, rider Flow denotes the quantity of on-board passengers of a bus that varies over time and house. The rider flow can partially mirror the collective human quality on a route and thus the standard of utility in term of comfort.

Keywords: *QR Code, E-Ticket, Price tag, Travelling Amount, Traveler's Detail, Payment, Application.*

I. INTRODUCTION:

Buses are the foremost wide used public transportation in many cities nowadays. To improve the standard of Bus Company, a period system that can monitor and predict the rider Flow of the running buses is useful. Here, rider Flow denotes the number of on-board passengers of a bus that varies over time and house. The rider flow will partly mirror the collective human quality on a route and therefore the quality of bus service in term of comfort. From a programming perspective, it tells you the way many folks travel or need to travel on a route. This data will guide the operators to allot and schedule the route and timetable dynamically in fine granularity.Automatic Fare assortment (AFC) devices that may record payments of rider's exploitation revolving credit, and a GPS embedded On Board Unit (OBU) that may track the bus area unit wide deployed. With the mature of massive knowledge systems, we've got the chance to estimate and predict the rider flow of each bus in urban wide BTS. To depict the matter additional clear, we will think about a concrete example as shown in Figure one. The solid lines and circles illustrate the segments and stations that the buses already travelled before current time, and therefore the dash lines represent the rest of the trips they'll travel. the matter is that given the time data of AFC dealing records and therefore the OBU traces of the buses.

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
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ABSTRACT

In this paper, we have a tendency to square measure proposing QR reader for ticket. Users will scan QR reader rather than price tag. during this app, once registration profile completed, we've to connect our bank details through this app. Whenever we have a tendency to square measure happening in bus, we've to pick from and to location. Then it'll generate quantity details per head. afterward we've provided traveler details. Passenger's details mean count. Then we will scan QR code. Therefore, directly cash can transfer from our bank details. Then we will get SMS alert for price tag payment proof. Then admin (Conductor) facet, they calculate quantity details through mistreatment net application. Then they will calculate per day quantity details for ticket data. To boost the quality of bus service, an amount system which will monitor and predict the rider Flow of the running buses is helpful. Here, rider Flow denotes the quantity of on-board passengers of a bus that varies over time and house. The rider flow can partially mirror the collective human quality on a route and thus the standard of utility in term of comfort.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604015*

Intelligent Voice Over System for Disabled People

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— The problem of multimodal interaction is discussed. The use of blinking and winking, interpreted as Eye gestures, is considered. The main aim of this study is to propose a simple method that allows the recognition of the state of the eye: open or closed; and to distinguish between blinking and winking. A Few people and groups are not able to operate the computer because of their illnesses. In this scenario, it is sound, to introduce a method of computer operation, which is easily accessible, even considering the disabilities of the differently abled. A Human-Computer Interaction system that is designed for individuals with severe disabilities to simulate control of a traditional computer mouse is introduced. A specific human computer interaction system using eyeball movement is presented. But in this system, we use eyes instead of mouse which provides a unique way of operating the computer with the help of eyeball movements. This system tracks the eye movements of the user with arduino data and simulates the eye movements into mouse cursor movements on screen and also detects the user's eye staring at the icon and will translate it into click operation on screen. Embedded c to read sensor value to controller, and control pushes the data to computer via serial communication. Python reads serial data from USB and converts signal data to UI interface with pre-trained data and conditions. The main aim of this system is to help the user to control the cursor without the use of hands and is of great use especially for the people with disability.

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Keywords: ***Polypropylene, Acacia, Wear test, Taber abraser.***

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Citation: Gayathri G S, Vimala Devi A, Priya B, Kalaiarasi C. "Intelligent Voice Over System for Disabled People", Journal of Science, Computing and Engineering Research, 6(4), 74-79, 2023.

I. INTRODUCTION

Lately, there has been an enthusiasm for creating characteristic communication among humans and the computer. There are a few examinations for Human-PC communication. The vision-based interface approach removes movement data with no high valued gear through a video- picture input. Accordingly, vision-based methodology is considered a compelling strategy to develop human computer interface frameworks. For vision-based human computer association, identification of the eye is a major issue. Eye following process is recognized by the crisis of intelligent applications. In spite of everything, to promote a dream based multimodal human PC interface framework, eye following and its acknowledgment is completed. Constant eye input has been used most of the time for incapacitated customers, who can use their eyes for input.

A computer interaction based on a regular mouse requires a human hand and plane surface for its operation which is not adequate for fixed pointing on the computer screen. These modern computer mice are wireless and use the light sensor to detect its movement. The operation of these mice also depends on the plain and unobstructed surface to effectively poll the user movement additionally, the need for hand limits the use of above mouses for the handicap people. A large number of people with hand disabilities pay much attention to this kind of technology for computer interaction because no hand or GUI is required to control the computer mouse.

However, a hand-free operation of the pointing device or mouse is needed to make the computer-access for the disable people as well as to remove the strain in the finger and cut down the joint pain. There are many known solutions that allow for mowing the cursor without using hands. For this purpose, the identification of head movements based on the head image or facial image analysis is often used. It is also possible to use additional sensors, e.g. accelerometers, or gyro sensors. However, cursor movement control is not enough to replace a computer mouse. The basic motivation for undertaking the research is the need for effective and hands-free generation of system events that are normally provided by the mouse keys. We chose to use blink/ wink to solve the problem. It is the simplest action that is always available and does not interfere with the tasks in most situations.

The main aim of this study is to develop a simple method that allows the recognition of the state of the eye (open/closed) and to distinguish between blinking and winking. We also consider two applications where the blink and wink action plays the decisive role. In such a situation,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604022*

Support Vector Machine based Multi Block Chain E Voting System

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— In India, the voting system generally uses the manual approach where voters queue up in a physical space to cast their votes for their choices. Manual voting system without any doubt does not lead to 100% voting rate. This project primarily focuses to provide the people an authentic scientific community with parties' policy positions, with respect to their constituencies. A web application is developed using reactJS that aims to analyze the role of the existing political parties/independents who are contesting in the forthcoming state election. This web application also helps the state government in achieving 100% voting rate in the state elections by providing an e-voting system enabling Face Detection authentication. The project is mainly aimed at providing a secured and user-friendly Online Voting System. The problem of voting is still critical in terms of safety and security. This system deals with the design and development of a web-based voting system using face detection and Aadhaar card in order to provide a high performance with high security to the voting system. The proposed Online Voting System allows the voters to scan their faces, which is then matched with an already saved image within a database that is retrieved while casting of votes. The voting system is managed in a simpler way as all the users must login by Aadhaar card number and click on his/her favorable candidates to cast the vote by using face detection it provides enough security which reduces the dummy votes.

Keywords: ***Voting, Face detection, support vector machine.***

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Citation: Gayathri G S, Vimala Devi A, Priya B, Kalaiarasi C. "Support Vector Machine based Multi Block Chain E Voting System", Journal of Science, Computing and Engineering Research, 6(4), 117-123, 2023.

I. INTRODUCTION

Electronic voting or e-voting has been used in varying forms since 1970s with fundamental benefits over paper based systems such as increased efficiency and reduced errors. However, there remain challenges to achieve wide spread adoption of such systems especially with respect to improving their resilience against potential faults. Blockchain is a disruptive technology of current era and promises to improve the overall resilience of e-voting systems. This paper presents an effort to leverage benefits of blockchain such as cryptographic foundations and transparency to achieve an effective scheme for e- voting.

The proposed scheme conforms to the fundamental requirements for e-voting schemes and achieves end-to-end verifiability. The paper presents details of the proposed e-voting scheme along with its implementation using Multichain platform. The paper presents in-depth evaluation of the scheme which successfully demonstrates its effectiveness to achieve an end-to-end verifiable e-voting scheme. Deep learning is a computer software that mimics the network of neurons in a brain. It is a subset of machine learning and is called deep learning because it makes use of deep neural networks. Deep learning algorithms are constructed with connected layers. Each Hidden layer is composed of neurons. The neurons are connected to each other. The neuron will process and then propagate the input signal it receives the layer above it. The strength of the signal given the neuron in the next layer depends on the weight, bias and activation function. The network consumes large amounts of input data and operates them through multiple layers; the network can learn increasingly complex features of the data at each layer. Each Hidden layer is composed of neurons. The neurons are connected to each other.

The neuron will process and then propagate the input signal it receives the layer above it.The strength of the signal given the neuron in the next layer depends on the weight, bias and activation function.The network consumes large amounts of input data and operates them through multiple layers; the network can learn increasingly complex features of the data at each layer. Deep learning is a powerful tool to make prediction an actionable result. Deep learning excels in pattern discovery (unsupervised learning) and knowledge-based prediction. Big data is the fuel for deep learning. When both are combined, an organization can reap unprecedented results in term of productivity, sales, management, and innovation.

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060322*

Vehicle Collision Detection and Alert System Using Yolov3 Algorithm

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	26 Mar 2023

Abstract— According to worldwide statistics, traffic accidents are the cause of a high percentage of violent deaths. Due to this and the wide use of video surveillance and intelligent traffic systems, an automated traffic accident detection approach becomes desirable for computer vision researchers. Over the past years, automatic traffic accident detection (ATAD) based on video has become one of the most promising applications in intelligent transportation and is playing a more and more important role in ensuring travel safety. Input is a video obtained via surveillance systems. Output results are acquired instantly in real-time and we would be notified if there's a chance of collision or not. Our system is based on YOLO, Neural networks, and Deep Learning of object detection along with computer vision technology and several methods and algorithms. The existing systems are simple and effective but are only able to analyze the rear portion of the vehicle. Hence, not very effective and have low accuracy. We propose an automated, real-time system for the beforehand detection of vehicle collisions during high traffic and intimate the concerned people using the application. Our approach will work on still images, recorded- videos, and real- time live videos and will detect, classify, track and compute moving object velocity and direction using a convolution neural network. Using YOLO, it will be able to detect the front as well as the rearview of the vehicle and alert us beforehand. The Advantages of the proposed system are Secured, Interpretability, High accuracy, Lightweight model & fast processing. Moreover, this system can be used in the cases of Self-driving cars.

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Keywords: ***Traffic Systems, YOLO, neural networks***

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Citation: Gayathri G S, Vimala Devi A, Priya B, Kalaiarasi C. "Vehicle Collision Detection and Alert System Using Yolov3 Algorithm", Journal of Science, Computing and Engineering Research, 6(3), 112-117, 2023.

I. INTRODUCTION

Vehicles are an important way of transportation all over the world. There are many cases of road accidents every day in the world. A traffic collision, also called a motor vehicle collision, car accident, or car crash occurs when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree, pole, or building. Traffic collisions often result in injury, disability, death, and property damage as well as financial costs to both society and the individuals involved.

Road transport is the most dangerous situation people deal with on a daily basis, but casualty figures from such incidents attract less media attention than other, less frequent types of tragedy. A number of factors contribute to the risk of collisions, including vehicle design, speed of operation, road design, weather, road environment, driving skills, impairment due to alcohol or drugs, and behavior, notably aggressive driving, distracted driving, speeding, and street racing.

In 2013, 54 million people worldwide sustained injuries from traffic collisions.[2] This resulted in 1.4 million deaths in 2013, up from 1.1 million deaths in 1990.[3] About 68,000 of these occurred in children less than five years old.[3] Almost all high-income countries have decreasing death rates, while the majority of low- income countries have increasing death rates due to traffic collisions. Middle-income countries have the highest rate with 20 deaths per 100,000 inhabitants, accounting for 80% of all road fatalities with 52% of all vehicles. While the death rate in Africa is the highest (24.1 per 100,000 inhabitants), the lowest rate is to be found in Europe (10.3 per 100,000 inhabitants).

Road incidents are caused by a large number of human factors such as failing to act according to weather conditions, road design, signage, speed limits, lighting conditions, pavement markings, and roadway obstacles. A 1985 study by K. Rumar, using British and American crash reports as data, suggested 57% of crashes were due solely to driver factors, 27% to combined roadway and driver factors, 6% to combined vehicle and driver factors, 3% solely to roadway factors, 3% to combined roadway, driver, and

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





XSS IN SOCIAL MEDIA NETWORKS

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ABSTRACT:

Information security (IS) is designed to protect the confidentiality, integrity and availability of computer system data from those with malicious intentions. Confidentiality, integrity and availability are sometimes referred to as the CIA Triad of information security. This triad has evolved into what is commonly termed the Parkerian hexad, which includes confidentiality, possession (or control), integrity, authenticity, availability and utility.They are responsible for keeping all of the technology within the company secure from malicious cyber attacks that often attempt to breach into critical private information or gain control of the internal systems. About 43% of web applications are vulnerable to XSS worms. Such unbearable growth of XSS worms has raised some serious security and privacy concerns in OSN. Vulnerabilities of websites are exploited over the network through web request using GET and POST method.A cross site scripting attack is a very specific type of attack on a web application. It is used by hackers to mimic real sites and fool people into providing personal data.I am going to discusses a detailed classification of XSS attacks and presents the recent occurrences of XSS attacks on numerous platforms of OSN-based web applications.

INTRODUCTION:

Information security (IS) is designed to protect the confidentiality, integrity and availability of computer system data from those with malicious intentions. Confidentiality, integrity and availability are sometimes referred to as the CIA Triad of information security. This triad has evolved into what is commonly termed the Parkerian hexad, which includes confidentiality, possession (or control), integrity, authenticity, availability and utility. They are responsible for keeping all of the technology within the company secure from malicious cyber attacks that often attempt to breach into critical private

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

LITERATURE REVIEW ON ENHANCED SECURITY OF AADHAR BASED BIOMETRIC VOTING MACHINE

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ABSTRACT

Bangladesh is one of the countries in which introduced voting system in parliamentary and assembly polls. Electronic voting system is very popular nowadays. E- Voting system consists of electronic data which is recorder and processed in a secure manner. E-Voting system is very popular method but low security mechanisms are implementer in this method. The use of finger print in a voting system for registration and authentication application has it's limitation. Limitations are mismatches caused by disparity in finger print trait and templates of voters taken at the point of registration and authentication, aging, variations in user interaction (i.e. pressure on the scanner), environmental changes and injuries are few of the factors that can cause these disparities. The iris is more resistant to this factors that cause disparity in biometric. A mismatch denies the voter access the voting system. In every election, the election commission is facing a lot of troubles and various types of problems throughout the election. The most familiar issue faced by the election commission is improper confirmation with respect to the arrangement of casting the votes, duplication or illegal casting of votes. In this paper, a secure and new voting system is developed to improve the existing voting system using iris recognition. Iris is one of the most secure biometric of person identification. This implemented iris recognition technology drastically reduces the chances of mismatches for genuine voters and denies imposters in the voting system due to its reliability and robustness .The main goal of this article is to avoid the duplication of casting votes.

Keywords— *Biometric, Voting system, Iris recognition*

I. INTRODUCTION

Voting System is the government election processes in every democratic nation. Democracy is to allow people to vote on their interest and it is right of every individual of a democratic nation. The democratic government depends on the results of the election. Today's world is an era of internet and technology, internet and electronics are increasing day by day. It is unavoidable to upgrade the traditional voting system and protect the security of it. The main intention of this article is to develop a new idea about voting system and also ensure security of it. To safeguard the security of voting system, we use iris recognition in proposed system. Iris recognition is used since it is highly unique, stable, cannot be duplicated and easily captured. Many types of voting system have been used around the world. Paper ballot voting system is an old and unsecure voting system where it is possible to caste multiple votes from same person. It runs to fling the vote with a ballot paper and a stamp. In electronic voting system, the election data (voter information, vote) is recorded, stored and preceeded as digital information. Electronic voting system is used to caste vote as well as counting number of votes.

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IARJSET

ISSN (Online) 2393-8021
ISSN (Print) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology
ISO 3297:2007 Certified
Vol. 5, Issue 2, February 2018

Adaptive and Co-operative Caching System for Efficient Bandwidth Utilization in MANET

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Abstract: This paper presents the co-operative based database for ad hoc Mobile Networks (MANET). The main focus of the system is on the nodes that save the queries sent. Queries are used as an index of the data stored in the caches of the nodes. This paper deals about the system formation and detection of demanded data from the cache or from the external database. Different parameters like upper and lower bonds for query caching nodes, average load experience, node bandwidth and hit ratio are analyzed and derived. The proposed method is simulated using NS-2. The proposed system has achieved a better success rate and a lower delay compared to other caching systems.

Keywords: Mobile ad hoc networks, distributed cache, cache indexing, database queries.

I. INTRODUCTION

The challenges in MANETs leads to the creation of efficient routing techniques [1]. In many scenarios, mobile devices can be distributed over a large area where access to peripheral data is achieved through one or more Access Points (AP). However, all the nodes don't have direct contact with the access points, but depend on other nodes that act as routers. In some situations, the access points can be located at the ends of the MANET, where reaching them can be expensive in terms of delay, power consumption and bandwidth. This proposed framework creates a cooperative cache system that reduces the delay and maximizes the probability of finding saved data in the ad hoc network, without inducing exceptionally high node traffic in several node cases at an average speed (at high traffic and low traffic conditions) and show how our functions conclude the rest [2].

II. INTRODUCTION EXISTING SYSTEM

A preface system proposed in [3] to store the response of the database to queries in given nodes and use queries as a directory for responses. Parallel to this, Three associated cache schemes: Cache Path, Cache Data, and Hybrid Cache is also covered. The main idea of these schemas is to analyze the step requests and data cache or the address of the node where they are stored. Later, if the same data request goes through the node, you can present the data or redirect the request to its stored location.

The cache path saves space by storing locations where data is to be stored, while cache data saves time by storing data instead of the route. The third scheme, Hybrid Cache, is an intermediate solution where queries are cached by route or data, whichever is optimal [4] The relative positions of the nodes with each other and with the AP are very essential to the success of the queries. previous systems. On the other hand, in [5], the cache software called SQUIRREL has been integrated into the Internet nodes to allow multiple nodes in a given region to share their caches..

III. PROPOSED SYSTEM

An algorithm for a system that would outperform the Data discovery under ICP (Internet Cache Protocol) at various scenarios which would show a better performance metrics in terms of delay, jitter, network traffic (under low as well high traffic condition) effective bandwidth utilization and good put is proposed in this paper. The competence of query directories (QDs) can be improved by using query compression techniques similar to the one proposed in [6], which may prove helpful in large networks.

IV. INTRODUCTION ALGORITHM USED

COACS Algorithm:

i. Initialize all the nodes.
ii. Some nodes are elected as Query Directories (QD) using QDAP (Query Directory Assignment Packet) based on the score calculated { Time, Battery, Memory and Bandwidth }

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DOI 10.17148/IARJSET.2018.5211

IARJSET

ISSN (Online) 2393-8021
ISSN (Print) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology
ISO 3297:2007 Certified
Vol. 5, Issue 2, February 2018

Based Development of a PC and Smartphone Based Wireless Automobile Diagnostic System

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Abstract: The design, implementation and testing of an automobile Engine Control Unit (ECU) data acquisition system is presented. The ECU parameters are graphically analyzed on a PC (Windows/Linux) or a smart phone. The graphical analysis software for real-time data monitoring are developed on Qt framework for PC use and android platform for smart phone use. The use of open source software Qt framework and android SDK for GUI development is a highlight of this system. The wireless communication features of the system using Zigbee technology allows remote real-time monitoring of the vehicle on test track.

Keywords: Android, Engine Control Unit, OBD protocol, Qt Framework, Zigbee.

I. INTRODUCTION

The microprocessor based system responsible for the synchronization of various sub systems of an automobile. The ECU collects sensor values from different parts of the engine and performs the appropriate actions [1]. The ECU logs will allow easy identification of errors and subsequent repairs. The commercially available automobile diagnostic equipment suffer from numerous draw backs like non-support of hardware up gradation, most of them have sluggish operation which cannot match the needs of real-time diagnostics and inadequate network capability. Hu et.al [2] has designed a diagnostic system based on Freescale16-bit microcontroller with the graphical software developed on Microsoft Visual Basic 6.0. PC based diagnostic system with internet updates has been proposed by Jim et al. [3] which exemplify the prevailing trend in this domain.

In this paper, the development of low cost, fast, wireless and network capable automobile diagnostic system is proposed. The system is based on the industry standard Onboard Diagnostic -II (OBD-II) standard. The PC based analysis software is platform independent and can run on both Windows and Linux systems. The forth coming sections discuss the different aspects of the wireless automobile diagnostic system.

II. ONBOARD DIAGNOSTIC STANDARD

OBD system was originally conceived as mechanism to monitor efficiency of engine and thus control vehicle exhaust emission. Different car manufacturers came up with their own proprietary Data Link Connecter (DLC), fault code and communication protocols for their cars. OBD-II provides a common platform for automobile fault detection. Different automobile manufacturers use signaling protocols to communicate with the ECU.

TABLE I. DEFINITION OF OBD – II STANDARD [1]

Physical Layer	ISO9141-2	SAE J1850	ISO14230-1	ISO 11898 ISO 15765-4
Data link Layer	ISO9141-2	SAE J1850	ISO14230-2	ISO 11898 ISO 15765-4
Network Layer				ISO 15765-2 ISO 15765-4
Transport Layer				
Session Layer				
Presentation Layer				ISO 15765-4
Application Layer	SAE J1979 ISO 15031-5	SAE J1979 ISO 15031-5	SAE J1979 ISO 15031-5	SAE J1979/ ISO 15031-5

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DOI 10.17148/IARJSET.2018.5210

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FOG DRIVE DISASTER BACKUP AS A SERVICE FOR CLOUD SERVER USING IOT AND FOG COMPUTING

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Abstract

Cloud data loss or disruption can occur because of a natural disaster, human error, malicious activity, or other causes. It can damage your reputation, cause client attrition, and lead to unnecessary delays and expenses. Still, most backup systems have been designed and optimized for outdated environments and use cases. That fact, generates frustration over currently backup challenges and leads to a greater willingness to modernize and to consider new technologies. This proposed system set up a flexible data backup operation, using Disaster Backup as a Service (BaaS) solutions, mixing them up with FogDrive local storage system.

Introduction

Data is one of the most valuable assets that any company can hold. One of the best ways to store these assets is within the cloud.Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).

Disaster recovery can be used to manage entire network backup, including applications, email, data and network configuration. If an IT failure strikes, data and applications can be restored at any time from The Cloud.Business' IT workloads can be disrupted at any time, so it is always important to have a recovery plan prepared. One advantage of cloud disaster recovery is that it can be used to back up and restore data that run on-premise, in addition to those hosted in The Cloud (offsite server).

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





PROVIDING RESTRICTIONS AGAINST ATTACK AND CONGESTION CONTROL IN PUBLICINFRASTRUCTURE CLOUD

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ABSTRACT:

Cloud computing is current trend in market .It reduce the cost and complexity of service providers by the means of capital and operational cost.It allows users to access application remotely. This construct directs cloud service provider to handle cost of servers, software updates,etc. If the session tokens are not properly protected, an attacker can hijack an active session and assume the identity of a user. To focusing on session hijacking and broken authenticationOTP is generated it will send user mail.Once the user is authenticatedthey will be split into virtual machine it is initiate to the upload process into the cloud.Thecloud user files are uploaded and stored in domain based .Also in our proposed system encryption keys are maintained outside of the IaaS domain.For encryption, we proposed RSA algorithm .For data owner file encryption, we use camellia algorithm. Finally the files are stored in the public cloud named CloudMe.

Keywords: Cloud computing, session hijacking, OTP, Virtual machine, Iaas, CloudMe

[1] INTRODUCTION

Cloud computing is an information technology(IT) standard that enables universal access to share group of configurable system resource and higher-level services that can be quickly provisioned with minimal management effort, often over the internet. Cloud providers

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International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





RECOMMENDER SYSTEM FOR RESEARCH STUDIES USING GRAPH BASED ARTICLE RANKING

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ABSTRACT

Nowadays, the recommendation techniques are becoming more popular as a result of expeditious growth in the information technology and the growing amount of scholarly data. The ultimate objective of the proposed work is recommending the items of potential interest automatically to the users. In modern years, recommender systems are being employed in digital libraries to help researchers in finding relevant articles. This search tool gives the list of relevant articles based on the keywords in the query. It is difficult for a researcher to describe his needs by a limited set of keywords. On the contrary, the results will be similar to all researchers if the keywords are same. The existing recommender systems use the same algorithm to generate recommendations for users without considering their situation. To improve the recommendation, the proposed system incorporates common author relation between articles. The system suggests the articles for users who are having author based search pattern and also recommends conference venue for all researchers to help them to gain more knowledge in their interested area. The principle notion of the project is to determine the users having author based search pattern. To serve this purpose, the system uses pairwise articles with common author relations and most frequently appeared author.

Keywords-Common Author Relation, Frequently Appeared Author, Article Recommendation, Recommends Conference Venue.

[1] INTRODUCTION

To serve the purpose of generating a new research idea and for writing a good article, researchers need to intensively read some scientific articles that are related to their interests.With the rapid

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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IMPROVING ACCESSING EFFICIENCY OF CLOUD STORAGE USING DEDUPLICATION SCHEMES

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Abstract

Data de duplication is one of important data compression techniques for eliminating duplicate copies of repeating data, and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the confidentiality of sensitive data while supporting de duplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this proposed system makes the first attempt to formally address the problem of authorized data de duplication. Different from traditional de duplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new de duplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

Introduction

Cloud computing provides seemingly unlimited "virtualized" resources to users as services across the whole Internet, while hiding platform and implementation details. Today's cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified *privileges*, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the ever-increasing volume of data.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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ON-DEMAND SERVICE SYSTEM USING SOA

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Abstract

The on-demand service system is built based on service-oriented architecture that is going to be a business model through which Normal people can connect with the domestic workers and provide features. Providing services to the people who are in seek for service. Providing jobs to the domestic workers. Allows the administrator to control the entire system with a web enabled back-end user interface. The System consist of two interfaces for the user the web enabled application and an android application for variable access. The On-demand is a system that connects the service providers and people who seek for service. It is based on SOA architecture and also have an advantage of location-based service. Implementation this application, there is no need of much expensive hardware and software, internet connection and a desktop with basic operating system and a browser will be sufficient. The entire system is built for an organization known as passhouse. This system was built in an intention to showcase the efficient utilization of the services which will be very useful for the developers to save time in doing CRUD operations in common language. This can be easily achieved by modifying the data model as per the requirements.

Introduction

Service the action of helping or doing work for someone. It is not as easy the way says. So, to enhance the efficiency service providing process and to reduce the efforts of human and to help them in getting services.we developed this application. It will be useful for medium and small scale business model as it utilizes service oriented architecture as its core of implementation.

In addition to it there was one problem in the pandemic situation is domestic workers like plumbers, carpenters, painters, construction workers were not able to get jobs regularly and the payment that they get is was not fixed and many people were also couldn't able to find a way to contact them as

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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PERSONALIZED RECOMMENDATION OF TOPIC BY INFLUENCE ANALYSIS USING SUPPORT VECTOR MACHINE ALGORITHM

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Abstract

To design a recommendation system for the users to recommend the best topics among the users and to develop a system that promotes the interest of the user by recommending them with customized topics. LDA model is used for extracting all the topics of the user. Popular topics are then analysed and extracted. Influence analysis is carried out to find the influenced topics for the users and the topics are classified to positive and negative topics.Those topics are then ranked using SVM algorithm. Finally recommendation of topics are given to the users.

Introduction

A social networking site is an online platform where people build social relationship with people, organization, friends and peers. Social networking services can be used in desktops, laptops and mobile devices. People form social communities over the network and may share photos, videos, other trending news or real life activities and events with people in their network. Depending on the social media platform, people may contact other people they have connection to and making successfully bigger circles. The success of social networks are dominantly seen over the years with billions of people using them in regular basis. Popular social networks like facebook and twitter have 3 billion active users.

During the last few decades, with the rise of social platforms like youtube, Netflix, Amazon, Flipkart and many other services recommender systems are becoming a part of our lifes. E-commerce suggest to buyers articles that interest them and online adverstisement suggesting the right contents to users with their preference, recommender systems are unavoidable in our daily lives. Recommender systems are algorithms aimed at suggesting the users with the relevant items they wish. Recommendation can be made possible to all fields like movies, books, products or anything else. They also generate a high

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© November 2021| IJIRT | Volume 8 Issue 6 | ISSN: 2349-6002

A Novel Hybrid Algorithm for Securing Data Transfer with machine Learning Disease Prediction

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Abstract - **Data security refers to the process of protecting data from unauthorized access and data corruption throughout its life cycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms. The security system used nowadays uses data encryption software to effectively enhance data security by using an algorithm (called a cipher) and an encryption key to turn normal text into encrypted cipher text. To an unauthorized person, the cipher data will be unreadable. That data can then be decrypted only by a user with an authorized key. Whereas with the improving data insecurity nowadays leads to loss of confidential data as the key is easily hack able because of a single algorithm usage. Diabetes-related complications include damage to large and small blood vessels, which can lead to heart attack and stroke, and problems with the kidneys, eyes, feet and nerves. The risk of most diabetes-related complications can be reduced if diagnosed early. To overcome this problem this project presents a medical application that accepts and analyses a patient's medical data to give a diagnosis to check if he/she is diabetic with an efficient data security system where two security algorithms will be merged to secure the patient's medical data stored and accessed in cloud. In addition, the emerging block chain technologies with the wireless data transfer system, which makes easy the interaction between the data and cloud. The medical data is analyzed and the result is stored securely in a cloud database such as mongoDB as an highly secure encrypted key. The result is received from the database and decrypted in the frontend to view the test results. Thus, this project presents an effective end to end security for medical applications.**

Index Terms - **Data Security, Encryption, Hashing, Hackable, Token, Diabetes.**

I.INTRODUCTION

Data security refers to the process of protecting data from unauthorized access and data corruption throughout its lifecycle. Data security includes data encryption, hashing, tokenization, and key management practices that protect data across all applications and platforms.

Organizations around the globe are investing heavily in information technology (IT) cyber security capabilities to protect their critical assets. Whether an enterprise needs to protect a brand, intellectual capital, and customer information or provide controls for critical infrastructure, the means for incident detection and response to protecting organizational interests have three common elements: people, processes and technology.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively. According to Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges. So what are the factors currently affecting diabetes in India that are making this problem so extreme?

The aetiology of diabetes in India is multifactorial and includes genetic factors coupled with environmental

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

BRAIN TUMOR DIAGONATION USING MACHINE LEARNING

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Abstract

In the medical field, accurate diagnosis is more important for treatment. So we need to implement an efficient diagnosis application for effective treatment. Object detection plays a major role in many areas like medical imaging, aerial surveillance, optimal manipulation and analysis, surgical microscopes, etc. In this work, the LR (Logistic Regression) based Machine Learning (ML) method for classification and global threshold segmentation for pre-processing. In initial stage image acquisition and de-noising will take place and then classification and regression has attained with machine learning techniques.

The SVM algorithm is applied to MRI images for extracting the tumor, and a model is developed to classify the tumor. This paper presents a prototype for Support Vector Machine related object detection, which classifies the images and evaluates whether the image is cancerous or non-cancerous. Determining a brain tumor is usually a very complicated and consumes more time. The MRI images of various patients at various stages can be used for the detection of tumors. Both SVM and Logistic Regression model algorithms helps in detecting the tumor at early stage with high accuracy. Both these models of machine learning helps to detect brain tumor. So far many algorithms have been implemented on how to detect and extract the tumour in medical images, they used techniques such as hybrid approach with Support Vector Machine (SVM), back propagation and dice coefficient. Among these algorithm which used back propagation as base classifier had a highest accuracy of 90%. In this work feature extraction of the medical images of patients' tumors in database is extracted using Histogram of Oriented Gradient, later these images are classified into tumor and non tumor images using SVM.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060313*

EXTRACTION AND PLOTTING OF SPECTRAL AND TEMPORAL FEATURES OF EEG RHYTHMS

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— Despite the medical community's astronomical expansion, understanding the activity of the human brain remains a challenging work for medical specialists, and the quantum of difficulty in treating conditions like epilepsy grows without any limits. As a result, an automatic system that can plot brain waves will be of tremendous assistance to the medical industry in mapping the same with human emotions and the collected information may be utilized to heal and prevent neural disorders using Machine Learning. In this work, the brain waves are obtained in the form of EEG waves and the same is denoised and filtered using renewed techniques and features such as temporal and spectral. These are extracted from the EEG data and fruitful insights are obtained from the same.

Keywords: ***Brain, Medical, EEG, Machine Learning***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Extraction And Plotting of Spectral and Temporal Features of EEG Rhythms ", Journal of Science, Computing and Engineering Research, 6(3), 63-68, 2023.

I. INTRODUCTION

One of the most challenging tasks in developing brain computer interface (BCI applications) is the design of systems that translate the mental imagination of movements to commands without the use of any peripheral nervous system. There are a variety of BCI fields that include brain science, neural engineering, rehabilitation, and brain technology. Developers of BCI systems often use robots and other devices that are fully capable of controlling their mental intentions. One of the most challenging tasks in developing these systems is analyzing the electrical properties of brain waves. These are referred to as brain waves and consist of various rhythmic components. The four major components of brain waves are delta, theta, alpha, beta, and gamma. These are the frequencies that are responsible for carrying the information contained in the overall electrical activity of the brain. To filter out the various ranges of signals coming from the sensors, each component is individually designed to be filtered. In order to implement BCI, the developers need to extract the various rhythmic components of brain waves. During the recording of an electroencephalogram (EEG), the physiological noises generated by the brain are also added. This process is very challenging, as the brain waves are not only carrying the information, they also contain other signals. The effective extraction of these brain waves is very important to the clinical implementation of the BCI.

Thus, rhythmic components of collected brain waves are employed to create a brain computer interface (BCI). Physiological sounds are inadvertently mixed in with pure brain activity data during EEG recording. The extraction of the rhythmic component (RCE) from a noisy EEG is difficult, yet the successful extraction of the brain waves is a critical stage in using the EEG in clinical diagnosis and/or BCI implementation. Apart from just extracting the rhythmic components, advanced techniques are applied furthermore to extract the spectral and temporal data which in turn will be of great use in the healthcare industries. An EEG is a test that detects abnormalities in your brain waves, or in the electrical activity of your brain. During the procedure, electrodes consisting of small metal discs with thin wires are pasted onto your scalp. The electrodes detect tiny electrical charges that result from the activity of your brain cells.

The charges are amplified and appear as a graph on a computer screen, or as a recording that may be printed out on paper. Your healthcare provider then interprets the reading. During an EEG, your healthcare provider typically evaluates about 100 pages, or computer screens, of activity. He or she pays special attention to the basic waveform, but also examines brief bursts of energy and responses to stimuli, such as flashing lights. Evoked potential studies are related procedures that also may be done. These studies measure electrical activity in your brain in response to stimulation of sight, sound, or touch. The EEG is used to evaluate several types of brain disorders. When epilepsy is present, seizure activity will appear as rapid spiking waves on the EEG. People with lesions of their brain, which can result from tumors or stroke, may have unusually slow EEG waves, depending on the size and the location of the lesion. Wherein this project concentrates on anxiety, traumic disoders, post-traumatic stress, psychotic disorders, depression, bipolar disoders, personality disoders, to stabilize mental strength etc, and since there are several

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604013*

Google Playstore Reviews Prediction Using ML And NLP

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— Play Store is Google's official pre-installed app store on Android-certified devices. It provides access to content on the Google Play Store, including apps, books, magazines, and music, movies, and television programs. Google play store allow the user to download a mobile application and user get inspired by the rating and reviews of the mobile app. A recent study analyzes that user preferences, user opinion for improvement, user sentiment about particular feature and detail with descriptions of experiences are very useful for an application development. The aim is to classify the Google app reviews based on supervised machine learning techniques (SMLT).The analysis of dataset by supervised machine learning technique (SMLT) to capture several information's like, variable identification, univariate analysis, bi-variate and multi-variate analysis, missing value treatments and analyze the data validation, data cleaning/preparing and data visualization will be done on the entire given dataset. To propose a machine learning-based method to classify the Google play store reviews results in the form of positive, neutral or negative best accuracy from comparing supervise classification machine learning algorithms. Millions of mobile apps are available in app stores, such as Apple's App Store and Google Play. For a mobile app it would be increasingly challenging to stand out from the enormous competitors and become prevalent among users. Good user experience and well-designed functionalities are the keys to a successful app. To achieve this, popular apps usually schedule their updates frequently. If we can capture the critical app issues faced by users in a timely and accurate manner, developers can make timely updates, and good user experience can be ensured.

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Keywords: ***Google Playstore, Machine Learning, Natural Learning Process, SMLT techniques.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Google Play store Reviews Prediction Using ML And NLP", Journal of Science, Computing and Engineering Research, 6(4), 61-67, 2023.

I. INTRODUCTION

MOBILE apps keep gaining popularity over the last few years. According to Statista the global mobile internet user penetration in 2016 has exceeded half the world's population. During the third quarter of 2018, Android users were able to choose from 2.1 million apps, while Apple's App Store provided almost 2 million apps. While users have a large number of products to choose from, the apps are facing immensely fierce competition to survive. The popular mobile app stores, such as Google Play and App Store, use the star-rating mechanism to gather users' ratings and feedback. The feedback and ratings can impact an app's ranking on these stores, and further influence its discovery and trial. A survey in reported that only 15%~50% of the users would consider downloading a lowrated app, while for the high-rated apps, the ratio reached 96%. Thus, ensuring good user experience and keeping users engaged can help maintain high download numbers and increase benefits to app developers.

Recent studies showed that frequently updated apps could benefit in terms of increase in ranking. This is the case since the popular app stores factor in the freshness of an app in the ranking process. Additionally, app updates can also improve user experience. Specifically, McIlroy et al. found that the rationale behind updates is often related to bug-fixing (63% of the time), new features (35%), and feature improvement (30%). However, not every update can definitely lead to positive user experience and high ranking. For example, the updated Android and iOS versions of Skype released in June 2017 received a flood of complaints as the new design removed the key functionality andfeatures available in the older version, such as the visibility of online friends .As a result, its user rating on the App Store plunged from 4.5 to 1.5 stars shortly after the update. Such situations are not unusual, and can cause customer churn and losses to app developers. The losses could be limited if the issues were recognized timely. In thi s work, we aim at accurately detecting emerging app issues by analyzing user feedback. IDEA is one of the most recent works that can be directly applied to detect emerging issues/topics from user feedback. IDEA takes user reviews distributed in consecutive app versions as input, and outputs emerging app issues in the level of phrases and sentences. A modified online topic

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060314*

Hiro Card Marker Detection in Augmented Reality

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	20 Mar 2023

Abstract— Augmented Reality is a combination of a real and a computer-generated or virtual world. It is achieved by augmenting computer-generated images on real world. It is of four types namely marker based, marker less, projection based and superimposition based augmented reality. It has many applications in the real world. AR is used in various fields such as medical, education, manufacturing, robotics and entertainment. Augmented reality comes under the field of mixed reality. It can be considered as an inverse reflection of Virtual Reality. They both have certain similarities and differences. This paper also gives us knowledge regarding those major threats that augmented reality will face in the near future and about its current and future applications. It provides a comprehensive study of Augmented Reality. One of the challenges of AR is to align virtual data with the environment. A marker-based approach solves the problem using visual markers, e.g 2D barcodes, detectable with computer vision methods. We discuss how different marker types and marker identification and detection methods affect the performance of the AR application and how to select the most suitable approach for a given application..

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Keywords: *Augmented Reality, Entertainment, Virtual, Computer*

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R , Noble Lourdhu. "Hiro Card Marker Detection in Augmented Reality", Journal of Science, Computing and Engineering Research, 6(3), 69-75, 2023.

I. INTRODUCTION

Augmented Reality has its origin from the word 'Augment' meaning to add or enhance. The term Augmented Reality was given by Boeing Researcher, Tom Caudell. Augmented Reality (AR) is overlapping or augmenting of digital images on real world objects using various AR apps. AR intensifies one's understanding of the real world. AR can be defined as the system in which real and virtual worlds have been combined, there is real time interaction, and the device is registered in 3D. Here, the augmentation is being done in real time. One can say that AR is a technology in between the real reality and the virtual reality. Augmented reality (AR) is one of the technologies gaining increasing interest. By mixing virtual with the real world in different proportions, augmented reality allows a level of immersion that no virtual equipment can provide.

AR systems have been already used in many applications as surgery, inspection of hazardous environments, engineering. Most of those systems, however, only operate indoors and cover relatively small areas.The advances of the computer, vision and wireless technology make possible development of outdoor wireless systems to support complex analysis, decision-making and governing processes.This chapter is organised in four sections. The chapter gives a broad definition of AR systems, discusses AR problems with respect to similar techniques for representing, interacting with 3D worlds (VR and AV) and communicating with mobile users (LBS), and provides classifications of AR systems.

Very often AR is defined as a type of "virtual reality where the Head Mounted Display (HMD) is transparent". The goal of augmented reality systems is to combine the interactive real world with an interactive computer-generated world in such a way that they appear as one environment. As the user moves around the real object, the virtual (i.e computer generated) one reacts as it is completely integrated with the real world.

Augmented Reality allows us to interact with the real and virtual worlds at the same time. It is an example of Intelligence Amplification (IA), as told by Fred Brooks, which means using computer as a tool so as to make it easier for a human to perform a task . Thus, this technology has been applied in many fields some of which have been mentioned below. In Medical, Augmented Reality will be far-reaching in the near future. It is being widely used in healthcare sector where there is a need of visualizing the medical information and the patient within the same physical space. Augmented Reality can be used to perform surgeries and can help surgeons perform real time surgeries without being physically present near the patient. Some of the real life examples where AR is being used in medical field. Eye Decide is a medical app which simulates the impact of specific conditions or medicines on a person's vision using a camera. E.g Eye Decide can demonstrate the impact of cataract. Accu Vein app uses a handheld camera

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604014*

Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— The present paper has introduced an innovative, efficient and real-time cost beneficial technique that enables users to hear the contents of text images instead of reading through them. It combines the concept of Optical Character Recognition (OCR) and Text to Speech Synthesizer (TTS) using a webcam. The major problem faced by visually impaired people these days is that they are unable to do text recognition on their own, which forces them to depend on others for their day to day activities such as reading newspapers, letters sent through post, referring books etc. The ultimate aim of the project is to help the visually impaired people to recognize the text. When a printed text is shown in front of the webcam it has to capture the image, extract the text from the image and should read out the text either through computer audio or headphones. Text-to-Speech (TTS) is the ability of a computer to produce spoken words by converting text to voice. In other words Text-to-Speech software is a speech synthesizer that vocalizes text in real time in a natural way. This paper describes the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module.

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Keywords: ***OCR, TTS, Speech, webcam, voices.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired", Journal of Science, Computing and Engineering Research, 6(4), 68-73, 2023.

I. INTRODUCTION

Languages are the oldest way of communication between human beings whether they are in spoken or written forms. In the recent era, visual text in natural or manmade scenes might carry very important and useful information. Therefore, the scientists have started to digitize these images, extract and interpret the data by using specific techniques, and then perform text-to-speech synthesis (TTS). It is done in order to read the information aloud for the benefit and ease of the user.

Text extraction and TTS can be utilized together to help people with reading disabilities and visual impairment to listen to written information by a computer system. Optical character recognition is employed to recognize and extract the words and finally the extracted text is converted to appropriate speech using text-to-speech synthesizer. The proposed algorithm is tested on images representing different scenes ranging from documents to natural scenes. Promising results have been reported which prove the accuracy and robustness of the proposed algorithm and encourage its practical implementation in real world scenarios. This project has represented the innovative idea as well as a low cost technique that is used to hear the contents of the text image without reading them. It combines the concept of OCR and TTS. This system is used to help the blind people to interact with computers effectively through a vocal interface.

OCR is defined as the electronic or mechanical conversion of handwritten script or printed text images into machine-encoded text. A character recognizer would recognize the segmented characters one by one. This technique is referred to as "segmentation-based" OCR. Optical Character Recognition emanates from technologies involving telegraphy and creating reading devices for the blind.

An OCR system is made up of both hardware and software. The service aims to analyze a physical document's content and convert the elements into a script that can subsequently be utilized for processing data. For example, consider postal and mail sorting services. OCR is critical to their capacity to rapidly process source and return addresses so that correspondence may be sorted more efficiently. Optical character recognition has been applied to a number of applications. In other words, OCR systems transform a two-dimensional image of text, that could contain machine printed or handwritten text from its image representation into machine-readable text. OCR as a process generally consists of several sub-processes to perform as accurately as possible.

NOVEL METHOD OF REAL TIME FIRE DETECTION AND VIDEO ALERTING SYSTEM USING OPEN-CV TECHNIQUES

M. Karthikeyen, N. Ramya, M. Sai Priya and C. Yuvalakshmi

ABSTRACT

Fire detectors play a very important role. It helps in detecting fire at an early stage. Commercial fire detecting systems usually have an alarm signaling, with the help of a buzzer. In this paper, computer vision-based fire detection is used. In the proposed model a webcam is used as an alternative of surveillance camera for monitoring the interiors of buildings. The video is processed using open CV techniques using fire detection (Hue, Saturation, Value (HSV)) algorithms and if a fire is detected, a short duration of the live video is sent to the security or the higher officials followed by an alert message. Thus the number of peoples stuck in the fire blazing area can be rescued. In the existing system, MATLAB tool is used for processing. While in the proposed system, Open CV techniques are used for processing. Open CV has more functions for computer vision and its processing time is less. Using this project, fire can be detected at early stage without any false alarming strategies and peoples can be rescued thereby.

Index Terms- Open CV, Capturing the video, Fire detection, Alert to the user.

Referencetothis paper should be made as follows:

*M. Karthikeyen, N. Ramya, M. Sai Priya and C. Yuvalaks**hmi**, (2021), "Novel Method Of Real Time Fire Detection And Video Alerting System Using Open-CV Techniques" Int. J. of Electronics Engineering and Applications, Vol. 9, No. 1, pp. 43-50, doi 10.30696/IJEEA.IX.I.2021.43-50*

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IJRETS: International Journal Of Research In Engineering, Technology And Science,
Volume XIII, Issue VIII, November.2020, ISSN 2454-1915, www.ijrets.com,
1st online international conference on informatics, robotics, construction & communication, 2020

RENI THE AI ONE

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ABSTRACT

In the developing field of technology the role of artificial intelligence is vital today but all AI does not solve the user requirements till now. To solve this we have developed an AI Engine. ReNi: The powerful AI Engine and smart assistant which we developed. It converts all speech into actions and behaves like a human assistant. The main feature of this AI engine is it detects calls and answers like a human to other end user like Google Duplex, book tickets when you ask, power control and system control of all devices, and also has a services of Google, Facebook, Whatsapp, and YouTube.This AI Engine also have Intelligence of Hacking and Skill set that are used to get authentication access of Google, Facebook, Whatsapp, of targeting user and also provide camera access ,location access and so on many information it can provide. It's very useful for Cyber Crime Department.The Advantage of this AI Engine is it can communicate to all nearby devices and all third party applications.The main goal of this presentation is to explain how ReNi works and the reason it was constructed and how it is automating all the tasks and responding faster like other AI, what are all the key components and ideas behind. We have working prototype to explain and demonstrate the AI Engine's functionality too.

I. INTRODUCTION

Artificial Intelligence (AI) has grown dramatically and becomes more and more institutionalized in the 21st Century. In this era of interdisciplinary science, of computer science, cybernetics, automation, mathematical logic, and linguistics, questions have been raised about the specific concept of AI.

As early as the 1940s and 1950s, scientists in the field of Mathematics, Engineering, and Computer Science had explored the possibilities of artificial brains and were trying to define the intelligence of the machine.

In 1950, Turing presented the famous "Turing Test" which defined of the concept of "Machine Intelligence". On this background, the origins of AI can be traced to the workshop held on the campus of Dartmouth College in 1965, in which McCarthy persuaded participants to accept the concept of "Artificial Intelligence". It is likewise the beginning of the first "Golden age" of AI.

AI aims to extend and augment the capacity and efficiency of mankind in tasks of remaking nature and governing the society through intelligent machines, with the final goal of realizing a society where people and machines coexist harmoniously together.

The next comes Machine learning which is an application of AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FINGER VEINAUTHENTICATION SYSTEM USING DEEPLEARNING IN ALEXNET ALGORITHM

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Abstract

Vascular-based biometrics is increasing in importance due to their accuracy and security. Finger vein- basedbiometric systems elegantly solve the problems associated with fingerprint systems. The vein-based authentication system is a promising biometric model for personal identification in terms ofits security and ease of use. Vein patterns can only be taken from a living body. Therefore, it is natural and conclusive evidence that a subject whosc veins have been successfully struck is alive. The finger vein detection technique was improved using a neighborhood elimination technique to reduce repetitive features in the removed finger vein-specific image. The neighborhood elimination technique is used to remove redundant data while retaining effective raw data for subsequent processing.

Keywords—Finger vein image authentication, deep learning, Convolutional neural network, Vein-based authentication

INTRODUCTION

The interest in modern societies has increased as Internet and network technologies are developed and implemented for remote user authentication or identity detection methods. The modernization also includes traditional security systems such as key locks or ID cards, which can improve the security of critical locations such as ATMs, banks, nuclear power plants, etc. These and other different scenarios drive more complex systems based on biometric data, because it is impossible for a malicious person to produce the data. These systems are commonly known as biometric identification systems. Pattern this goal, it is necessary to combine hardware design and programming procedures. With the help of hardware design, the system can instruct the user to act correctly so that the pattern is easily recognized. Software

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604016*

IOT based Health Machine for covid-19 with Matlab

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— Thenovel CoronaVirus(COVID 19) is a pandemic of unimaginable proportion and magnitude that is posing a great challenge worldwide to the medical industry in the 21st century. It has completely changed the texture of life to agreater extent.IoT isconsideredasoneofthefastestgrowingtechnologyinthemedicalandindustrial fields. The proposed device can help the patients by checking their health status through monitoring and diagnosing patients. This paper presents a measuring and recording device for heart rate, body temperature and CT imaging. An Arduinodevicewithsensorswillbeusedtomeasuretheserecordsandsendthemtothecloudserver.

Keywords: *IoT, Arduino, COVID-19, Sensors, Cloud server*

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H. "IOT based Health Machine for covid-19 with Matlab", Journal of Science, Computing and Engineering Research, 6(4), 80-85, 2023.

I. INTRODUCTION

The novel epidemic disease of the coronavirus (COVID-19) is becoming a pandemic and spreading all over the world. COVID-19 first originated in the city of Wuhan in the Hubei Province of China. COVID-19 is a type of Severe Acute Respiratory Syndrome (SARS) that spreads through the minute droplets of respiration via sneezing, coughing, interaction among normal and susceptible or patients in close proximity. The COVID-19 respiratory droplets can be inhaled or transmission spread through the mouth, eyes, or nose by touching the surface where the droplets land. The disease has affected the whole world with about 106,358,244 COVIDcontact with an infected person. The drops containing the living virus can spread up to three feet and attack another person's mucous membrane when the patient coughs or sneezes without covering the mouth. People who are in close contact with someone with SARS are at high risk, meaning they live or work with SARS or have direct contact with the person by any means. The SARS-COVID transmission and contamination can

be controlled by isolating and remote monitoring of the susceptible and patients. The rapid growth in the usc of smart sensors, smart watches, smart phones, and mobile technology in daily life and healthcare sector results in having a significant impact on the world. The healthcare services' providers and experts are taking advantage of a reduction of invasive methods which lead to the cut-off of transmission of viral diseases.confirmed cases and 2,320,798 deaths. SARS-COV is transmitted from person to person through close interaction and

contact with an infected person. The drops containing the living virus can spread up to three feet and attack another person's mucous membrane when the patient coughs or sneezes without covering the mouth. People who are in close contact with someone with SARS are at high risk, meaning they live or work with SARS or have direct contact with the person by any means.

The SARS-COVID transmission and contamination can be controlled by isolating and remote monitoring of the susceptible and patients. The rapid growth in the use of smart sensors, smart watches, smart phones, and mobile technology in daily life and healthcare sector results in having a significant impact on the world. The healthcare services' providers and experts are taking advantage of a reduction of invasive methods which lead to the cut-off of transmission of viral diseases.

Although, there is a variety of modeling approaches that have been proposed so far for prediction and evaluation of the COVID-19 disease, there are more questions that can still be answered. There are some related works that sensitivity analysis used in their studies. They used this technique only for special variables and parameters.

II. IMPLEMENTATION

In this proposed method, Arduino MEGA microcontroller is used to interface with the sensors and to the communication devices. The DHT 11 (Temperature) sensor, heart rate sensor are interfaced with the micro controller to regularly monitor the patients' health. The person's heath is continuously monitored by these sensors and if there is any abnormality the controller sends alter message to the doctors through IoT. The LCD is used to update the latest information of the patient. The IOT module is used to update the information to the cloud which can be accessed through healthcare workers. The CT imaging's are diagnosed by Image processing and the treatment is coordinated according to the infection rate. Henceproper

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604018*

Multipurpose File Transfer and File Inquiry

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— A Company wants to sync their files based on the configuration. Also inquire files based on Metadata. The Preconditions are the API will transfer files across local, FTP, sFTP locations. A REST API will be able to retrieve documents based on metadata. The post conditions are the data files should be transferred according to the requirement. The Success case would be the data files should be transferred according to the requirement, the Documents can be retrieved based on the metadata. The high volume PDF file migration is achieved by converting the PDF files to Base64.

Keywords: ***File transfer, File Inquiry, FTP, STMP, API..***

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H "Multipurpose File Transfer and File Inquiry", Journal of Science, Computing and Engineering Research, 6(4), 90-96, 2023.

I. INTRODUCTION

Computer users spend time every day interacting with digital files and folders, including downloading, moving, naming, navigating to, searching for, sharing, and deleting them. Such file management has been the focus of many studies across various fields, but has not been explicitly acknowledged nor made the focus of dedicated review. In this paper we present the first dedicated review of this topic and its research, synthesising more than 230 publications from various research domains to establish what is known and what remains to be investigated, particularly by examining the common motivations, methods, and findings evinced by the previously furcate body of work.

We find three typical research motivations in the literature reviewed: understanding how and why users store, organise, retrieve, and share files and folders, understanding factors that determine their behaviour, and attempting to improve the user experience through novel interfaces and information services. Relevant conceptual frameworks and approaches to designing and testing systems are described, and open research challenges and the significance for other research areas are discussed. We conclude that file management is a ubiquitous, challenging, and relatively unsupported activity that invites and has received attention from several disciplines and has broad importance for topics across information science.The client is a Finance based company and a premier mulesoft clients with Hybrid implementation. As of now they are using a file system and manual process to retrieve files, but the client needs to automate the same.There are customer related documents(.pdf files) for loan processing which are received from multiple channels like FTP, sFTP.

Source	Destination	File name Pattern
FTP	File	*loan*
SFTP	FTP	*profile*
SFTP	File	*statements*

CustomerName	Date	File
x	12122021	CustomerName_Date.pdf

Fig 1. Functional Requirements

The documents are then manually transferred to multiple locations like Local File, FTP and sFTP. This process needs to be automated based on a configuration file which will be located at a common location. All the files need to be retrieved by the client which are there in File Destination based on the metadata. This metadata is again kept in a configuration file.

A. **Non Functional Requirements:**

1. Error handling **strategy:**

a. In case of invalid data (ex- wrong Metadata or File not present) send an email to the Ops Team.

b. Retry mechanism for calls to file connections (ideally 3 times) before raising error(transient/connectivity).

2. Request frequency:

a. Upto 2 requests per 5 minutes.

3. Compliance:

a. Expose HTTPS endpoints

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604019*

Real-Time Facial Recognition Based Student Proctoring System Using KNN Algorithm

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— Individual uniqueness and individuality are their faces. In this project, human faces are automatically used for attendance tracking purpose. Student attendance is essential for any college, university, and school. The traditional way to record attendance is to call the student's name or registration number and the attendance will be recorded. The time required for this purpose is a major concern. Assume that the course will take approximately 60 minutes and registration for attendance will take around 10 minutes. For any teacher, this is a waste of time. To avoid these losses, this project uses an automated process based on image processing. This project uses face detection and face recognition. Face detection is used to locate the face area, and face recognition is used to mark the presence of the understudy. KNN algorithm is used for obtaining the machine learning model alias KNN Classifier. A classifier of all students in the class is saved, and attendance is recorded if each student's face matches one of the faces in the trained model.

Keywords: *KNN Algorithm, Facial Recognition, Real Time, Classification.*

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Citation: Varalakshmi K, Dharma Prakash V, Noble Lourdhu, Deepika H. "Real-Time Facial Recognition Based Student Proctoring System Using KNN Algorithm", Journal of Science, Computing and Engineering Research, 6(4), 97-103,2023.

I. INTRODUCTION

Attendance is of prime importance for both the teacher and student of an educational organization. So it is very important to keep a record of attendance. The problem arises when we think about the traditional process of taking attendance in the classroom. Calling the name or roll number of the student for attendance is not only a time-consuming problem but also needs energy. So an automatic attendance system can solve all the above problems.

There is an automatic attendance making system that is currently used by many institutions. One such system is the biometric technique. Although it is automatic and a step ahead of the traditional method it fails to meet the time constraint. The student has to wait in queue for attendance, which is time taking. This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly mandatory. This system eliminates classical student identification such as calling the name of the student or checking the respective identification cards of the student, which can not only interfere with the ongoing teaching process but also can be stressful for students during examinations sessions.

Face recognition is part of computer vision. Face recognition is used to identify a person in a biometric method based on the image on their face. A person is identified through biological traits. Human eyes can easily recognize people by simply looking at them but the concentration span for human eyes has its limit. Hence, a computerized method is invented to perform face recognition. Face recognition includes the operations of automatic detection followed by verifying a person from either a picture or video. Although face recognition has been researched extensively, there are still challenges to overcome such as: Misalignment, Pose Variation, Illumination Variation, Expression Variation. Face recognition is a part of biometric identification that extracts the facial features of a face, and then stores it as a unique face print to uniquely recognize a person. Biometric face recognition technology has gained the attention of many researchers because of its wide application. Face recognition technology is better than other biometric based recognition techniques like finger-print, palm-print, iris because of its non-contact process.

Recognition techniques using face recognition can also recognize a person from a distance, without any contact or interaction with the person. Face recognition techniques are currently implemented in social media websites like Facebook, at airports, railway stations. Facebook uses the facial recognition technique for automating the process of tagging people. For face recognition we require a large dataset and complex features to identify a person in all conditions like change of illumination, age, pose, etc. Recent research shows there is a betterment in facial recognition systems. In the last ten years there has been

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A PROVABLE CONTEXTUAL RETRIEVAL STRATEGY IN THE PUBLIC CLOUD USING OPTIMAL MATCHING OVER SECURED DATA

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Abstract

Semantic searching over encrypted data is a crucial task for secure information retrieval in public cloud. It aims to provide retrieval service to arbitrary words so that queries and search results are flexible. In existing semantic searching schemes, the verifiable searching does not be supported since it is dependent on the forecasted results from predefined keywords to verify the search results from cloud, and the queries are expanded on plain text and the exact matching is performed by the extended semantically words with predefined keywords, which limits their accuracy. In this paper, we propose a secure verifiable semantic searching scheme. For semantic optimal matching on ciphertext, we formulate word transportation (WT) problem to calculate the minimum word transportation cost (MWTC) as the similarity between queries and documents, and propose a secure transformation to transform WT problems into random linear programming (LP) problems to obtain the encrypted MWTC. For verifiability, we explore the duality theorem of LP to design a verification mechanism using the intermediate data produced in matching process to verify the correctness of search results. Security analysis demonstrates that our scheme can guarantee verifiability and confidentiality. Experimental results on two datasets show our scheme has higher accuracy than other schemes.

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Introduction

Inherent scalability and flexibility of cloud computing make cloud services so popular and attract cloud customers to outsource their storage and computation into the public cloud. Although the cloud computing technique develops magnificently in both academia and industry, cloud security is becoming one of the critical factors restricting its development. We have proposed a verifiable semantic searching scheme that extends the query words to get the predefined keywords related to query words, then they used the

IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AGRICULTURAL PRODUCT PRICE AND CROP CULTIVATION PREDICTION BASED ON DATA SCIENCE TECHNIQUE

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ABSTRACT

Among worldwide, agriculture has the major responsibility for improving the economic contribution of the nation. However, still the most agricultural fields are under developed due to the lack of deployment of ecosystem control technologies. Due to these problems, the crop production is not improved which affects the agriculture economy. Hence a development of agricultural productivity is enhanced based on the plant yield prediction. To prevent this problem, Agricultural sectors have to predict the crop from given dataset using machine learning techniques. The analysis of dataset by supervised machine learning technique(SMLT) to capture several information's like, variable identification, uni-variate analysis, bi-variate and multi-variate analysis, missing value treatments etc. A comparative study between machine learning algorithms had been carried out in order to determine which algorithm is the most accurate in predicting the best crop. The results show that the effectiveness of the proposed machine learning algorithm technique can be compared with best accuracy with entropy calculation, precision, Recall, F1 Score, Sensitivity, Specificity and Entropy.

INTRODUCTION

Data science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data, and apply knowledge and actionable insights from data across a broad range of application domains.The term "data science" has been traced back to 1974, when Peter Naur proposed it as an alternative name for computer science. In 1996, the International Federation of Classification Societies became the first conference to specifically feature data science as a topic. However, the definition was still in flux.The term "data science" was first coined in 2008 by D.J. Patil, and Jeff Hammerbacher, the pioneer leads of data and analytics efforts at

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060406*

B&W Image Colorization Using Computer Vision And Deep Learning

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

Abstract— Previous approaches to black and white image colorization relied on manual human annotation, which frequently resulted in desaturated results that were not believable as true colorizations. The project attempts to generate a plausible color version of a greyscale photograph given as input. It's a fully automated process for creating beautiful, lifelike colorization. By framing the challenge as a classification job, it accepts the problem's underlying ambiguity and uses class re-balancing during training to increase the diversity of colors in the end result. The system is trained on over a million color images and is implemented as a feed-forward pass in a CNN during testing. By a large margin, this strategy surpasses earlier methods. It also shows that colorization can be an effective pretext task for self-supervised feature learning when employed as a cross-channel encoder. On a variety of feature learning benchmarks, this technique achieves cutting-edge results

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Keywords: ***Colorization, CNN, VGG, Deep learning, Image Coloring***

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Citation: Dr Palson Kennedy R, Jonisha S, Bersikin Libina T, Vasantha Raja S S. "B&W Image Colorization Using Computer Vision And Deep Learning" Journal of Science, Computing and Engineering Research, 6(4), 18-23, 2023.

I. INTRODUCTION

Grayscale refers to digital photographs in which each pixel's value represents solely the light's intensity information. Only the darkest black to the brightest white are often displayed in such images. To put it another way, the image only features black, white, and grey hues, with grey having many levels. The value of each pixel in a grayscale image is proportional to the number of bits of data utilized to represent it. Grayscale image is a one-dimension (channel) image and the value of a grayscale image is commonly represented by 8 bits, that is, the pixel value of a pixel is represented by a combination of eight binary values. As a result, pixels have a value range of 0–255,with a total of 256 grayscale levels.

An RGB image is a three-dimension (channel) image, also known as a true colour image, is saved as an m-by-n-by-3 data array that defines the red, green, and blue colour components for each individual pixel. A palette is not used in RGB images. Each pixel's colour is determined by a combination of the red, green, and blue intensities stored in each colour plane at the pixel's location, where the red, green, and blue components are each 8 bits. This results in a possible palette of 16 million colours. True colour image is a term that refers to the precision with which a real-life image can be replicated

We will convert a grayscale or black and white image to a brilliant colour image in this project. However, the purpose of this project is to create a realistic colorization that may potentially trick a human observer, rather than to retrieve the original ground truth colour. As a result, our goal becomes much more attainable: model enough statistical relationships between the semantics and textures of grayscale images and their colour counter parts to yield visually appealing results.

We tackle the problem of automatic image colorization by (a) designingan appropriate objective function that handles the multimodal uncertainty of the colorization problem while capturing a wide variety of colours(b) introducing a novel framework for testing colorization algorithms that could be applied to other image synthesis tasks, and (c) training on a million colour images to set a new high-water water mark on the task. Second, we introduce the colorization taskas a competitive and simple way for self-supervised representation learning,with state-of-the-art results on a variety of benchmarks.

II. RELATED WORKS

HINT BASED COLORIZATION [1] Levin et al. proposed a simple but effective method that incorporates user colorization hints in a quadratic cost function, requiring that neighboring pixels in space-time with similar intensities have similar colours. The hints are provided in the form of imprecise coloured "scribbles" on the grayscale input image, and the method is capable of producing high quality colorizations with no additional information about the image. Extensions to this approach have improved its performance even more: Huang et al. used adaptive edge

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

DATA-DRIVEN DECISION SUPPORT FOR OPTIMIZING CYBER FORENSIC INVESTIGATIONS

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Abstract

The venture known as "Data-Driven Decision Support for Optimizing Cyber Forensic Investigations" is a web based application. This software provides facility for confirming criminal offenses, Problems, losing individuals to DIG. This software provide facility for reporting online crimes, online complaints, missing persons show criminal list and details on web page. Any number of public can complaint through online. Each user first makes their login to server to share their availability. An effective way to begin this task is to develop a mission statement that incorporates the core functions of the unit, whether those functions include high-technology crime investigations, evidence collection, or forensic analysis. However, Cyber forensic contains steps to investigate or collect the data It is defined as the processes and tools used in investigations and gathering evidence. Some of the instruction will be provided as a default such as category wise. By analysing the investigation report, process will be optimized to reduce the investigation process.

Introduction

Modern science and technology has revolutionised the field of crime solving and has made the process much faster and more reliable. The word Forensic refers to all the science and technology used in the solving of crime. The aim of this Forensic Management System is to manage the large volumes of data that are produced in the process of solving crimes by the application of scientific methods and modern technology. When creating a new case file the system will be able to store specific information in categories. This system can be used to easily collaborate on case files, temporary user profiles can be created if the other department does not implement this system.

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0603010*

Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines

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Article Information

Received	:	08 Jan 2023
Revised	:	21 Feb 2023
Accepted	:	07 Mar 2023
Published	:	19 Mar 2023

Abstract— Alzheimer's is a type of dementia that causes problems with memory, thinking and behavior. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks. Dementia is not a specific disease. It's an overall term that describes a group of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities. Alzheimer's disease accounts for 60 to 80 percent of cases. Vascular dementia, which occurs after a stroke, is the second most common dementia type. But there are many other conditions that can cause symptoms of dementia, including some that are reversible, such as thyroid problems and vitamin deficiencies. Dementia is a general term for loss of memory and other mental abilities severe enough to interfere with daily life. It is caused by physical changes in the brain. Alzheimer's is the most common type of dementia, but there are many kinds. The input data is taken from the dataset repository. In our process, we are taken the Alzheimer's disease dataset as input. The system is developed the machine learning algorithm such as Support vector machine and logistic regression. The results shows that the performances metrics such as accuracy, sensitivity and specificity.

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Keywords: ***Alzheimer's Disease, Dementia, Machine Learning Algorithm, SVM and Logistic Regression.***

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Citation: Dr Palson Kennedy R, Vasantha Raja S S, Jonisha S, Bersikin Libina T. "Early Detection of Alzheimer's disease with Blood Plasma Proteins Using Support Vector Machines ", Journal of Science, Computing and Engineering Research, 6(3), 46-51,2023.

I. INTRODUCTION

ALZHEIMER's disease (AD) is the leading cause of dementia and poses a significant social and economic challenge. It is responsible for more than half of all cases of dementia. Over 50 million individuals currently suffer from dementia worldwide with a projected increase to 152 million by 2050. No cure for AD has been discovered, but there is intense effort to develop new clinical interventions that may slow or halt the disease. Such interventions are aimed at early (including preclinical and prodromal) stages of the disease prior to extensive cell damage, when it is thought treatment is more likely to be effective. Alzheimer's disease and related dementias (ADRD) have become a major public health concern in the United States. An estimated 5.6 million Americans aged 65 and older (10% of the US population) were living with ADRD in 2019, and this number is expected to grow dramatically as the population continues to age. By 2025, the number of Americans aged 65 or older with ADRD is expected to reach 7.1 million, nearly a 27% increase from 2019, and by 2050, this population is projected to be 13.8 million, with the highest growth among those in ADRD's advanced stage. Persons with ADRD require progressively extensive assistance in their daily lives, the majority of which is provided by family members, friends, and other unpaid caregivers. It is estimated that in 2018, American caregivers of persons with ADRD provided 18.5 billion hours of informal unpaid assistance, valued at $233.9 billion. Family caregivers (hereafter "caregivers") of persons with ADRD are expected to make important care decisions for their family members with ADRD on a daily basis. However, these caregivers report being unprepared for their roles and responsibilities, uninformed about care options, and unsupported by professionals in their decision making. Care giving for persons with ADRD is stressful, and it can severely affect the caregiver's own health and well-being. There is an urgent need to better prepare caregivers to manage their daily lives and those of their family members with ADRD, yet there are critical knowledge gaps regarding the types and amounts of information that caregivers may want to have in order to better manage ADRD. To provide patient-centred care for people with ADRD and enhance caregivers' quality of life, we must address those gaps.

Artificial intelligence (AI) is showing great promise in areas of health care—in precision treatments, patient education, virtual assistance, and cost reduction. Some attempts have been made to apply AI for persons with

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604011*

Enhancement of Short Term Prediction Using modified LSTM

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

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Abstract— In today's economy there is a profound impact of the stock market. The main aim of stock market prediction is to predict the future values of the financial stocks of a company. Predicting the stock market is the toughest task in the field of computations. The recent trend in stock market prediction uses the machine learning technology which makes predictions based on the values of current stock market indices by training on their previous values. Stock market prices depend very much on demand and supply. High demand stocks will increase in price while heavy selling stocks will decrease. Fluctuations in stock prices affect investor perception and thus there is a need to predict future share prices and to predict stock market. The historical stock prices include opening, closing, volume weighted average price, turnover, trade values are more helpful in estimating the future of a stock. In existing method stock prices are predicted by using several machine learning algorithms like Linear Regression, Long short term memory (LSTM), Autoregressive integrated moving average (ARIMA). This project proposes modified LSTM algorithm to get better results for short term prediction of stock prices and may yield increase in accuracy.

Keywords: ***Close, LSTM, Machine Learning, Open, Stock market prediction, Turn over, Volume.***

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Citation: Vasantha Raja S S, Jonisha S, Bersikin Libina T, Senthilkumar K. "Enhancement of Short Term Prediction Using modified LSTM ", Journal of Science, Computing and Engineering Research, 6(4), 46-54, 2023.

I. INTRODUCTION

Stock market consists of various buyers and sellers of stock. Stock market prediction means determining the future scope of market. A system is essential to be built which will work with maximum accuracy and it should consider all important factors that could influence the result. Various researches have already been done to predict stock market prices. The research is done over business and computer science domain. Sometime the stock market does well even when the economy is falling because there are various reasons for the profit or loss of a share. Predicting the performance of a stock market is tough as it takes into account various factors. The main aim is to identify the sentiment of investors. It is usually difficult as there must be rigorous analysis of national and international events. It is very important for an investor to know the current price and get a very close estimation of the future price.

The financial market is a dynamic and composite system where people can buy and sell currencies, stocks, equities and derivatives over virtual platforms supported by brokers. The stock market allows investors to own shares of public companies through trading either by exchange or over the counter markets. This market has given investors the chance of gaining money and having a prosperous life through investing small initial amounts of money, low risk compared to the risk of opening new business or the need of high salary career. Stock markets are affected by many factors causing the uncertainty and high volatility in the market. Although humans can take orders and submit them to the market, automated trading systems (ATS) that are operated by the implementation of computer programs can perform better and with higher momentum in submitting orders than any human. However, to evaluate and control the performance of ATSs, the implementation of risk strategies and safety measures applied based on human judgements are required. Many factors are incorporated and considered when developing an ATS, for instance, trading strategy to be adopted, complex mathematical functions that reflect the state of a specific stock, machine learning algorithms that enable the prediction of the future stock value, and specific news related to the stock being analysed. Investors in stock market would like to make better profit by analyzing market information.

Time-series prediction is a common technique widely used in many real-world applications such as weather forecasting and financial market prediction. It uses the continuous data in a period of time to predict the result in the next time unit. Many time series prediction algorithms have shown their effectiveness in practice. The most common algorithms now are based on Recurrent Neural Networks (RNN), as well as its special type - Long-short Term Memory (LSTM) and Gated Recurrent Unit (GRU). Stock market is a typical area that presents time-series data

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

STOCK MARKET PRICE PREDICTION USING RANDOM FOREST AND SUPPORT VECTOR MACHINE

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Abstract

In the past decades, there is an increasing interest in predicting markets among economists, policymakers, academics and market makers. The objective of the proposed work is to study and improve the supervised learning algorithms to predict the stock price.Stock Market Analysis of stocks using data mining will be useful for new investors to invest in stock market based on the various factors considered by the software. Stock market includes daily activities like Sensex calculation, exchange of shares. The exchange provides an efficient and transparent market for trading in equity, debt instruments and derivatives. Our aim is to create software that analyses previous stock data of certain companies, with help of certain parameters that affect stock value. We are going to implement these values in data mining algorithms and we will be able to decide which algorithm gives the best result. This will also help us to determine the values that particular stock will have in near future. We will determine the patterns in data with help of machine learning algorithms.

Introduction

Machine learning is a subfield of computer science, but is often also referred to as predictive analytics, or predictive modeling. Its goal and usage is to build new and/or leverage existing algorithms to learn from data, in order to build eneralizable models that give accurate predictions, or to find patterns, particularly with new and unseen similar data.

magine a dataset as a table, where the rows are each observation (aka measurement, data point, etc), and the columns for each observation represent the features of that observation and their values. At the outset of a machine learning proposed system, a dataset is usually split into two or three subsets. The minimum subsets are the training and test datasets, and often an optional third validation dataset is

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 3, March 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060313*

EXTRACTION AND PLOTTING OF SPECTRAL AND TEMPORAL FEATURES OF EEG RHYTHMS

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Article Information

Received	:	09 Jan 2023
Revised	:	22 Feb 2023
Accepted	:	03 Mar 2023
Published	:	19 Mar 2023

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Abstract— Despite the medical community's astronomical expansion, understanding the activity of the human brain remains a challenging work for medical specialists, and the quantum of difficulty in treating conditions like epilepsy grows without any limits. As a result, an automatic system that can plot brain waves will be of tremendous assistance to the medical industry in mapping the same with human emotions and the collected information may be utilized to heal and prevent neural disorders using Machine Learning. In this work, the brain waves are obtained in the form of EEG waves and the same is denoised and filtered using renewed techniques and features such as temporal and spectral. These are extracted from the EEG data and fruitful insights are obtained from the same.

Keywords: ***Brain, Medical, EEG, Machine Learning***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Extraction And Plotting of Spectral and Temporal Features of EEG Rhythms ", Journal of Science, Computing and Engineering Research, 6(3), 63-68, 2023.

I. INTRODUCTION

One of the most challenging tasks in developing brain computer interface (BCI applications) is the design of systems that translate the mental imagination of movements to commands without the use of any peripheral nervous system. There are a variety of BCI fields that include brain science, neural engineering, rehabilitation, and brain technology. Developers of BCI systems often use robots and other devices that are fully capable of controlling their mental intentions. One of the most challenging tasks in developing these systems is analyzing the electrical properties of brain waves. These are referred to as brain waves and consist of various rhythmic components. The four major components of brain waves are delta, theta, alpha, beta, and gamma. These are the frequencies that are responsible for carrying the information contained in the overall electrical activity of the brain. To filter out the various ranges of signals coming from the sensors, each component is individually designed to be filtered. In order to implement BCI, the developers need to extract the various rhythmic components of brain waves. During the recording of an electroencephalogram (EEG), the physiological noises generated by the brain are also added. This process is very challenging, as the brain waves are not only carrying the information, they also contain other signals. The effective extraction of these brain waves is very important to the clinical implementation of the BCI.

Thus, rhythmic components of collected brain waves are employed to create a brain computer interface (BCI). Physiological sounds are inadvertently mixed in with pure brain activity data during EEG recording. The extraction of the rhythmic component (RCE) from a noisy EEG is difficult, yet the successful extraction of the brain waves is a critical stage in using the EEG in clinical diagnosis and/or BCI implementation. Apart from just extracting the rhythmic components, advanced techniques are applied furthermore to extract the spectral and temporal data which in turn will be of great use in the healthcare industries. An EEG is a test that detects abnormalities in your brain waves, or in the electrical activity of your brain. During the procedure, electrodes consisting of small metal discs with thin wires are pasted onto your scalp. The electrodes detect tiny electrical charges that result from the activity of your brain cells.

The charges are amplified and appear as a graph on a computer screen, or as a recording that may be printed out on paper. Your healthcare provider then interprets the reading. During an EEG, your healthcare provider typically evaluates about 100 pages, or computer screens, of activity. He or she pays special attention to the basic waveform, but also examines brief bursts of energy and responses to stimuli, such as flashing lights. Evoked potential studies are related procedures that also may be done. These studies measure electrical activity in your brain in response to stimulation of sight, sound, or touch. The EEG is used to evaluate several types of brain disorders. When epilepsy is present, seizure activity will appear as rapid spiking waves on the EEG. People with lesions of their brain, which can result from tumors or stroke, may have unusually slow EEG waves, depending on the size and the location of the lesion. Wherein this project concentrates on anxiety, traumic disoders, post-traumatic stress, psychotic disorders, depression, bipolar disoders, personality disoders, to stabilize mental strength etc, and since there are several

JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604013*

Google Playstore Reviews Prediction Using ML And NLP

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— Play Store is Google's official pre-installed app store on Android-certified devices. It provides access to content on the Google Play Store, including apps, books, magazines, and music, movies, and television programs. Google play store allow the user to download a mobile application and user get inspired by the rating and reviews of the mobile app. A recent study analyzes that user preferences, user opinion for improvement, user sentiment about particular feature and detail with descriptions of experiences are very useful for an application development. The aim is to classify the Google app reviews based on supervised machine learning techniques (SMLT).The analysis of dataset by supervised machine learning technique (SMLT) to capture several information's like, variable identification, univariate analysis, bi-variate and multi-variate analysis, missing value treatments and analyze the data validation, data cleaning/preparing and data visualization will be done on the entire given dataset. To propose a machine learning-based method to classify the Google play store reviews results in the form of positive, neutral or negative best accuracy from comparing supervise classification machine learning algorithms. Millions of mobile apps are available in app stores, such as Apple's App Store and Google Play. For a mobile app it would be increasingly challenging to stand out from the enormous competitors and become prevalent among users. Good user experience and well-designed functionalities are the keys to a successful app. To achieve this, popular apps usually schedule their updates frequently. If we can capture the critical app issues faced by users in a timely and accurate manner, developers can make timely updates, and good user experience can be ensured.

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Keywords: ***Google Playstore, Machine Learning, Natural Learning Process, SMLT techniques.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Google Play store Reviews Prediction Using ML And NLP", Journal of Science, Computing and Engineering Research, 6(4), 61-67, 2023.

I. INTRODUCTION

MOBILE apps keep gaining popularity over the last few years. According to Statista the global mobile internet user penetration in 2016 has exceeded half the world's population. During the third quarter of 2018, Android users were able to choose from 2.1 million apps, while Apple's App Store provided almost 2 million apps. While users have a large number of products to choose from, the apps are facing immensely fierce competition to survive. The popular mobile app stores, such as Google Play and App Store, use the star-rating mechanism to gather users' ratings and feedback. The feedback and ratings can impact an app's ranking on these stores, and further influence its discovery and trial. A survey in reported that only 15%~50% of the users would consider downloading a lowrated app, while for the high-rated apps, the ratio reached 96%. Thus, ensuring good user experience and keeping users engaged can help maintain high download numbers and increase benefits to app developers.

Recent studies showed that frequently updated apps could benefit in terms of increase in ranking. This is the case since the popular app stores factor in the freshness of an app in the ranking process. Additionally, app updates can also improve user experience. Specifically, McIlroy et al. found that the rationale behind updates is often related to bug-fixing (63% of the time), new features (35%), and feature improvement (30%). However, not every update can definitely lead to positive user experience and high ranking. For example, the updated Android and iOS versions of Skype released in June 2017 received a flood of complaints as the new design removed the key functionality andfeatures available in the older version, such as the visibility of online friends .As a result, its user rating on the App Store plunged from 4.5 to 1.5 stars shortly after the update. Such situations are not unusual, and can cause customer churn and losses to app developers. The losses could be limited if the issues were recognized timely. In thi s work, we aim at accurately detecting emerging app issues by analyzing user feedback. IDEA is one of the most recent works that can be directly applied to detect emerging issues/topics from user feedback. IDEA takes user reviews distributed in consecutive app versions as input, and outputs emerging app issues in the level of phrases and sentences. A modified online topic

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.0604014*

Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	12 April 2023

Abstract— The present paper has introduced an innovative, efficient and real-time cost beneficial technique that enables users to hear the contents of text images instead of reading through them. It combines the concept of Optical Character Recognition (OCR) and Text to Speech Synthesizer (TTS) using a webcam. The major problem faced by visually impaired people these days is that they are unable to do text recognition on their own, which forces them to depend on others for their day to day activities such as reading newspapers, letters sent through post, referring books etc. The ultimate aim of the project is to help the visually impaired people to recognize the text. When a printed text is shown in front of the webcam it has to capture the image, extract the text from the image and should read out the text either through computer audio or headphones. Text-to-Speech (TTS) is the ability of a computer to produce spoken words by converting text to voice. In other words Text-to-Speech software is a speech synthesizer that vocalizes text in real time in a natural way. This paper describes the design, implementation and experimental results of the device. This device consists of two modules, image processing module and voice processing module.

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Keywords: ***OCR, TTS, Speech, webcam, voices.***

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Citation: Vijayanarayanan A, Savithiri R, Lekha P, Abbirami R S. "Image Processing Based on Optical Character Recognition with Text to Speech for Visually Impaired", Journal of Science, Computing and Engineering Research, 6(4), 68-73, 2023.

I. INTRODUCTION

Languages are the oldest way of communication between human beings whether they are in spoken or written forms. In the recent era, visual text in natural or manmade scenes might carry very important and useful information. Therefore, the scientists have started to digitize these images, extract and interpret the data by using specific techniques, and then perform text-to-speech synthesis (TTS). It is done in order to read the information aloud for the benefit and ease of the user.

Text extraction and TTS can be utilized together to help people with reading disabilities and visual impairment to listen to written information by a computer system. Optical character recognition is employed to recognize and extract the words and finally the extracted text is converted to appropriate speech using text-to-speech synthesizer. The proposed algorithm is tested on images representing different scenes ranging from documents to natural scenes. Promising results have been reported which prove the accuracy and robustness of the proposed algorithm and encourage its practical implementation in real world scenarios. This project has represented the innovative idea as well as a low cost technique that is used to hear the contents of the text image without reading them. It combines the concept of OCR and TTS. This system is used to help the blind people to interact with computers effectively through a vocal interface.

OCR is defined as the electronic or mechanical conversion of handwritten script or printed text images into machine-encoded text. A character recognizer would recognize the segmented characters one by one. This technique is referred to as "segmentation-based" OCR. Optical Character Recognition emanates from technologies involving telegraphy and creating reading devices for the blind.

An OCR system is made up of both hardware and software. The service aims to analyze a physical document's content and convert the elements into a script that can subsequently be utilized for processing data. For example, consider postal and mail sorting services. OCR is critical to their capacity to rapidly process source and return addresses so that correspondence may be sorted more efficiently. Optical character recognition has been applied to a number of applications. In other words, OCR systems transform a two-dimensional image of text, that could contain machine printed or handwritten text from its image representation into machine-readable text. OCR as a process generally consists of several sub-processes to perform as accurately as possible.

International Journal of Computer Engineering and Applications,
Volume XII, Special Issue, May 18, www.ijcea.com ISSN 2321-3469





A SECURE CLOUD – BASED WEB APPLICATION AGAINST POLLUTION ATTACK AND CONVINCING FILE TECHNIQUES

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ABSTRACT:

Cloud is the collection of virtualized and interconnected networks that consists of parallel and distributed system. Security and privacy of information is the biggest challenge for cloud adoption which can be overcome by employing encryption and security techniques. Pollution attacks are the abrasive threat to cloud data in which the intruders inject malicious packets into the network. This paper provides a solution for the pollution attack which able to spot the presence of an attack while fetching the data from cloud storage. Before uploading data to cloud it is encrypted using RC5 algorithm. Hashing techniques are employed to detect polluted contents. The content distribution network (CDN) servers transmits data along with calculated hash value. The network peers applies the same hash algorithm to compute hash code for the received data. These two hash values are compared to identify any pollution during transmission. Though the cloud storage providers are safe in practice, some authorities may force them to reveal user secrets or confidential data on the cloud. The proposed system also provides solution to preserve user data confidentiality and integrity after outsourcing. Some entities may intercept communication between user and cloud storage providers to release user secrets by using government power or by other means which results in data leakage. In order to avoid data leakage and to increase trust level between the Cloud Service Provider (CSP) and the user, we propose a solution of creating proxy file which will be delivered to other entities.

INDEX TERMS --- Cloud Computing, Pollution attack detection, Data Integrity, Authentication, and Proxy File Creation.

[1] INTRODUCTION

Providing protection for the cloud data is a factor which affects the rate of cloud adoption. Security of data to the cloud represents a key concern for users, system designers and service providers. A Cloud is a pool of virtualized computer resources. A cloud can host a variety of different workloads including batch style backend jobs and interactive and user-facing application. Cloud Computing is one of the significant development that utilizes progressive computational power and upgrades data distribution and data storing facilities. Cloud information repository is involved with issues of information integrity, data security and information access by unapproved users. The cloud supports redundant, self-recovering, highly scalable programming models that allows workloads to recover from many unavoidable hardware/ software failure. Cloud computing leverages its low cost and simplicity to benefit for both users and providers. It providers that means of accessing the application over internet i.e., to create, configure, customize the online application. The cloud computing resources can be used without any interaction of service provider. It allows thousands of services to work simultaneously. Among the many risks to data security, pollution attacks represent one of the most dangerous threats to data integrity i.e., the ability of ensuring data trustworthiness. In this kind of attack, malicious entities take control of one or more storage resources to corrupt (pollute) data (or parts of it) so as to hinder data availability.

However, to unlock their full potential, various problems need to be properly addressed, including performance of data access, as well as data availability and security. Why cloud computing are used, explosive growth in application, extreme scale content generation, extra ordinary rate of digital content consumption, exponential growth in computer capabilities, newer architecture. Advantages of cloud is first one is Cost efficient ,building our own server and tools in time consuming as well as expensive also, we need to order, pay for installation and configuration expensive hardware. Second one is Reliability, it guarantees 24 x 7 and 365 days of service, if any server fails then hosted applications and services can be easily transmitted to any of the available servers. Third one is unlimited storage, we can access as much or little that we need. Cloud computing has a different types of pollution attacks, they are Denial of service attack, Cloud malware injection attack, Side channel attack, Authentication attack. When denial of service attack defines, any type of attack where the attackers attempt to prevent legitimate users (member, employee, account holder etc.) from accessing the services. The second attack, Malware injection attack is done via compromised FTP. Password is send to hacker then a hacker may inject or the hacker then uses your ftp password to access our website and add malicious iframe coding to inject other visitor who browse your website. Inline frame is a HTML element that allows an external webpage to be embedded into HTML document. Inline frame can be inserted anywhere within a webpage layout. Third attack,

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060402*

An Investigation of Low Power VLSI Design Techniques

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Article Information

Received : 30 Jan 2023
Revised : 02 Mar 2023
Accepted : 18 Mar 2023
Published : 08 April 2023

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Abstract—low power has become a major subject in the electronics industries of today. For the design of VLSI chips, power dissipation has taken on equal importance to performance and area. The main issues below 90nm due to increased complexity are lowering power usage and overall power management on chip. Due to the requirement to lower package costs and increase battery life, power optimization is crucial for many systems. In low power VLSI designs, leakage current also has a significant impact on power management. An growing portion of integrated circuits' overall power dissipation is being accounted for by leakage current. This paper discusses numerous power management techniques, methodologies, and tactics for low power circuits and systems. Future challenges for designing low power high performance circuits are also discussed.

Keywords: ***VLSI, Low Power, Power Dissipation, leakage current, process nodes, power management.***

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Citation: R.Dinesh Kumar, M.Ramkumar Prabhu, K.Lakshmi Priya, M.Renuga, K.S.Senthil Kumar, V.Vennisa. "An Investigation of Low Power VLSI Design Techniques", Journal of Science, Computing and Engineering Research, 6(4), 05-09, 2023.

I. INTRODUCTION

The benefit of combining low-power components with low-power design strategies is more important than ever before. As components get smaller, more battery-powered, and require more functionality, the need for lower power consumption is rising considerably. In the past, area, performance, and cost were the three main concerns for VLSI designers. The secondary problem was power consideration. Due to the extraordinary development and success of personal computers and wireless communication systems, which require high-speed computation and extensive functionality with minimal power consumption, power is now a major challenge. Applications have different reasons for wanting to cut back on power consumption. The objective is to maintain an appropriate battery lifetime, weight, and packaging cost for the category of micro-powered battery-operated portable applications, such as cell phones. The objective is to decrease the power dissipation of the electronics component of the system to a level that is around half of the overall power dissipation for high performance portable computers like laptops. The general purpose of power minimization for high performance non-battery operated systems, like workstations, is to lower the system cost while ensuring long-term device reliability. Process technology has pushed power to the forefront of all elements in such designs for such high performance systems.

Power consumption from leakage has joined switching activity as the main power management concern at process nodes with technology below 90nm. Over the past ten years, a variety of strategies [15] have been created to address the continuously aggressive power reduction requirements of the majority of high performance. The fundamental methods of low power design, such as clock gating to cut down on dynamic power and multiple threshold voltage (multi-Vt) to cut down on Leakage current, are well known and supported by current tools [17]. We may examine the number of changes in circuit design using Figure 1 by looking at power dissipation [15].

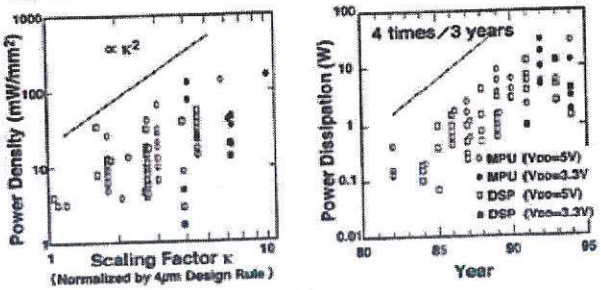


Fig. 1: Power dissipation Evolutions [15]

II. STRATEGIES OF LOW POWER

Table I. Strategies for low power designs

Design Level	Strategies
Circuit/Logic level	Logic styles, transistor sizing and energy recovery
Operating System Level	Portioning, Power down

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JSCER
ISSN: 2708-1079

Journal of Science, Computing and Engineering Research (JSCER)
Volume-6, Issue- 4, April 2023.
DOI: *https://doi.org/10.46379/jscer.2023.060401*

An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine

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Article Information

Received	:	30 Jan 2023
Revised	:	02 Mar 2023
Accepted	:	18 Mar 2023
Published	:	08 April 2023

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Abstract— An integrated motor-drive and battery charging (IMB) system based on the BLDC is proposed in this paper, where field winding of is integrated as the filter inductance of the front-end DC/DC converter. In the driving mode, the coupling relationship between the front-end DC/DC converter and rear-end inverter for BLDC is deduced, and the corresponding basic control method is given to achieve the independent control of the front-end DC/DC converter and rear-end inverter based on the power balance of the cascade converter. While, due to the constraints analysis of the IMB system in the dynamic procedure, an optimized tri-loop control strategy of speed, power and dual-threshold voltage is proposed to improve output performance. Finally, the simulation model and experiment platform are established to verify the effectiveness and the steady and dynamic performance of the IMB system with the proposed driving control strategy.

Keywords: ***Doubly salient electromagnetic machine (DSEM), electric vehicle (EV), integrated motor-drive and battery-charging (IMB) system, split field windings.***

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Citation: A.Antonycharles, Dr.S.Dinakar Raj, S.L.Sreedevi R.Tamilamuthan, Dr.G.Irin Loretta, A.Vijayalakshmi. "An Integrated Motor-Drive and Battery-Charging System Based on a Split-Field-Winding Doubly Salient Electromagnetic Machine", Journal of Science, Computing and Engineering Research, 6(4), 1-4, 2023.

I. INTRODUCTION

Development of electric vehicles and this for charging convenience, there is an urgent need for high-power onboard chargers for electric vehicles to achieve quick battery charging in the parking condition. Due to the advantages of high efficiency, high power factor and high power density, the permanent magnet synchronous machine (PMSM) has been widely employed the driver in the electric vehicles, and the driving inverter with the property of four quadrant operation could be adopted as the onboard charging converter to obtain the integration of the driving and fast charging functions .Several integrated topologies of driving and charging based on PMSM or Brushless DC machine BLDC have been presented in the literature, the armature windings of the PM machines are exploited as the filter inductances of the grid-side rectifier to achieve the compact volume for the onboard charging system. While, due to the existence of permanent magnet in PM motor, there are some serious problems of PM machine used in the integrated motor drive and battery-charging (IMB) system, especially in the charging mode. In order to eliminate the output torque generated by the phase currents of the reutilized armature windings of PM machines in the IMB system, the split-phase windings with three supplementary outputs are proposed in and , and the neutral point of the phase windings is employed to parallel the three-phase windings as the inductor. The multiphase machines with the extra degrees of the freedom of the windings reconstructions are proposed in . It can be seen that the phase windings reconstruction is necessary for shaft torque cancelation of PM machine in the charging mode. Moreover, for the safe operation during the charging process, a current sharing and current ripple reduction method is proposed in, and the demagnetization effects should also be considered for the proposed PM machine. Another issue is that the low inductance of the reutilized armature windings of PM machines could not meet the demand of the grid side rectifier, and it will lead to the low power factor and efficiency of the grid power. Thus, the dual traction motors or dual-stator windings are adopted in series to enlarge the inductance for charging current ripple reduction in and . However, it can be seen that the complexity and cost of the IMB system based on PM machine increase, and the control strategy of the system becomes more complex. Therefore, non-permanent magnet motor such as induction machine (IM) and switched reluctance machine (SRM) with the low-cost property and higher armature inductance have been applied to the electric vehicles. Several integrated IMB systems based on the

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A SECURE FRAME WORK FOR GOVERNMENT TENDER ALLOCATION USING BLOCK CHAIN

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Abstract

Block chain technology is an advanced database mechanism that allows transparent information sharing within a business network. It stores data in block that are linked together in a chain. It most safe,secure and fast. Our project is to create web application to the people who lodge a complaints to the government regarding common problems. The complaint where move to the respective departments and the problem which can be solved were hold and report back to the government. The government will allocate the tender to the contractors the satisfying coded amount is chosen then transactions starts more secure using block chain technology.

The existing system is lacking to process the data in a short period of time with the less efficiency and implemented in block chain technology the existing algorithm used consensus mechanism, ECDSA and RSA.In the proposed system to overcome the existing implementing SHA 256 algorithm in the real time database collected from the website gov.tender.an and in the existing datasets government procedure and comparing them. The performance measures of this experimental results areexplainedinthecomparison, accuracy,precision,recallandefficiency.This project gives the good result in the SHA 256 than consensus algorithm.

Keyword---Block chain, SHA256 algorithm, Distributed Ledger TechnologyINTRODUCTION

There have been different endeavors to carry out the innovation to make government processes paperless and immediate, for example, web based tagging frameworks, internet giving of tenders, documenting expense forms,and so on. Albeit a large portion of these frame works appear to be hearty and very much carried out, everyone of them depend on the possibility of a focal server that has a weak link, as

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CAR LANE DETECTION USING NUMPY WITH OPENCV PYTHON

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Abstract

Driver support system is one of the most important features of the modern vehicles to ensure driver safety and decrease vehicle accident on roads. Apparently, the road lane detection or road boundaries detection is the complex and most challenging tasks. It is including the localization of the road and the determination of the relative position between vehicle and road. A vision system using onboard camera looking outwards from the windshield is presented in this paper. The system acquires the front view using a camera mounted on the vehicle and detects the lanes by applying few processes. The lanes are extracted using Hough transform through a pair of hyperbolas which are fitted to the edges of the lanes. The proposed lane detection system can be applied on both painted and unpainted roads as well as curved and straight road in different weather conditions. The proposed system does not require any extra information such as lane width, time to lane crossing and offset between the center of the lanes. In addition, camera calibration and coordinate transformation are also not required. The system was investigated under various situations of changing illumination, and shadows effects in various road types without speed limits. The system has demonstrated a robust performance for detecting the road lanes under different conditions.

Keywords—Image processing, Hough Transform, Python, Deep learning.

Introduction

The emergence of vehicles has liberated human feet from long journeys. In a modern society where almost every household has a car, people enjoy the convenience of travel, but also face many traffic hazards. To help make the driving safer and more intelligent, intelligent driving uses various sensing and detection equipment along with advanced algorithms to acquire, process and analyse the collected data promptly, so that driver can be alert to potential dangers and vehicles can be controlled automatically.

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IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Contact Tracing Using Machine Learning

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Abstract

Contact tracing is a critical tool in the fight against infectious diseases, including the ongoing COVID-19 pandemic. Traditional contact tracing methods involve manually identifying and notifying individuals who have come into contact with an infected person. However, with the increasing scale of outbreaks, manual contact tracing has become increasingly difficult and time-consuming.

Machine learning can help automate and enhance the contact tracing process. In this context, ML algorithms can analyze large volumes of data to identify potential transmission chains, predict the likelihood of an individual being infected, and prioritize high-risk individuals for testing and isolation. This paper presents an overview of recent research on contact tracing using machine learning. The paper covers ML techniques and their applications that involve Clustering and DBSCAN Algorithms and Proximity Graph. Additionally, the paper discusses the challenges and ethical considerations associated with using ML in contact tracing, such as data privacy and bias. Overall, this paper highlights the potential of ML to improve the effectiveness and efficiency of contact tracing, ultimately helping to curb the spread of infectious diseases.

Keywords—contact tracing, outbreaks, transmission chains, isolation, clustering and db scan algorithm

Introduction

Contact tracing is a crucial tool in the fight against the spread of infectious diseases such as COVID-19. It involves identifying and notifying individuals who have come into contact with an infected person in order to reduce the risk of further transmission. Contact tracing is the process of finding people who may have come into contact with an infected person ("contacts") and collecting additional information about them in the field of public health. Public health strives to reduce illnesses in the population by tracing the contacts of infected individuals, testing them for infection, isolating or treating the infected, and tracing their

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DIGITAL STUDENT ID CARD USING RFID TECHNOLOGY (DIGITAL INSTITUTE)

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Abstract

This project is an IoT-based solution designed to replace traditional ID cards for students and faculty members in educational institutions .The system will utilize sensors and microcontrollers to capture and transmit each user's unique identifier, such as a biometric signature or NFC tag, RFID to a cloud-based platform.

The platform will then verify the user's identity and provide access to various functions for both students and faculty members, as well as college management functions for administrators. The system will provide a more secure and convenient way to verify identities, reducing the risk of identitytheft and fraud.

By using this IoT-based system, users will no longer need to carry a physical ID card, and the data collected will be encrypted and securely stored in the cloud. Additionally, the system can be easily integrated with existing campus securitysystems, providing a comprehensive security solution for the institution.

Overall, this project aims to leverage IoT technology to enhance security, convenience, and efficiency in the verification of identities within educational institutions.

Keywords—NFC-Near Field Communication, RFID-Radio Frequency identification, IoT- Internet ofThings.

INTRODUCTION

In today's rapidly advancing technological world, the adoption of Information Technologies (IT) is changing the way we do business. Mobile devices, such as smart phones, have become ubiquitous and are constantly Evolving to make our lives easier and more convenient. One of the latest developments in smart devices is Radio frequency identifier (RFID), which allows data transmission over short distances. RFID has a wide range of applications, including ticketing, access control, and mobile payments. It can also be used to bootstrap different types of connections, such as Bluetooth or Wi fi.

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CAR LANE DETECTION USING NUMPY WITH OPENCV PYTHON

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International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-8 Issue-4, February 2019

Smart Clothes with Bio-Sensors for ECG Monitoring

P.Sakthi Shunmuga Sundaram, N.Hari Basker, L.Natrayan

Abstract: ***Aging society leads to more demands on health care system. The study shows that cardiovascular diseases are the most common and threatening diseases to the elderly. Moreover, more and more elderly live alone recently. Therefore, a total solution for elderly home care leads the way. In this study, we develop smart clothes to record three lead electrocardiography (ECG). Our system consists of (1) the conductive fiber clothes with four electrodes to acquire physiological signals, (2) a gateway to digitize, process and upload raw data to the server, and (3) the service server to analyze data and make a health profile. The system had been applied to the elderly community to evaluate performance. The experiment results show the average accuracy of ECG data is 86.82%. Thirty-five volunteers (age > 65, 15 male and 20 female) feel the smart clothes comfortable and easy to use than the traditional medical device.***

Index Terms: Smart Wearable Device; Smart Clothes; Long-Term Care; Electrocardiography; Bio-Sensor

I. INTRODUCTION

The advance of medical technology, average life expectancy increase rapidly lead the apparent trend to an aging society in many countries [1,2]. Aging society causes the growth of health expenditure. Therefore, the demands on health and aged care systems germinate rapidly [3]. The study shows that approximately 75% of the elderly have one or more chronic diseases, among which cardiovascular disease is one of the most common diseases. Currently, cardiac patients rely on regular health checks to assess the condition. But the examination period in hospital is short, may not diagnose the potential risk of the disease. Only long- term, continuous monitoring, and recording of daily cardiac physiological signals can cause early warning and prevention. Besides, more than 28% elderly populations (8.8 million women, 3.8 million men) currently live alone in the United States [5]. In case of emergency, nobody can provide them first aid treatment. Therefore, elderly health management becomes a critical issue. To meet this demand, in the past decades, many successful healthcare applications have been presented to monitor user's electrocardiography. However, these systems still have some drawbacks [6, 7]. For example, the Holter, a portable device for continuously monitoring the electrical activities of the heart for 24-72 hours, can provide 12 Leads ECG non-real-time records. But the methods are awkward and uncomfortable for long-term use, so it's not suitable for elderly home care. Since the limitation of electrode setup, size and price of the record, the holter just can be used in clinical diagnosis but losing the end-user viewpoint [8]. Jie Wang developed the wireless Sensor-Based Smart-Clothing Platform for ECG Monitoring [9]. But this system adopts a fabric electrodes technology to record only one lead ECG signal. In this study, we propose a total solution of healthcare platform for the elderly. In this proposed system, it provides light, cheaper and comfortable sensing device, long-term (more than 40 hours and rechargeable) and continuously ECG signal collection and transmission. Our system consists of smart clothes with four electrodes to collect three lead ECG signals, a gateway to digitize and transmit the ECG data by Bluetooth to the smartphone and the back- end analysis system to analyze ECG data.

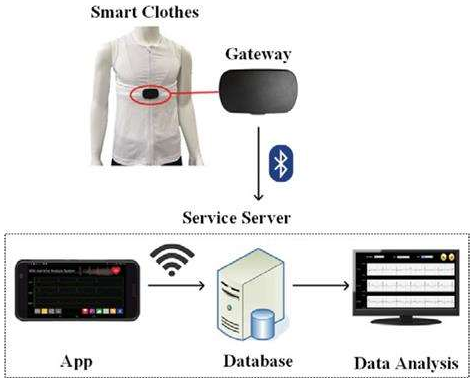


Fig. 1 System architecture

II. MATERIALS AND METHODS

The overall system architecture is shown in Fig. 1. Our system consists of three parts including (1) Smart clothes measure three first physiological signals (Lead I, Lead II, and Lead III). (2) Wireless Gateway digitizes the ECG signal, removes noise and uploads data to smartphone or tablet. It can also save ECG raw data in SD card real time. (3) The service server displays ECG waveform, stores the data into the database, and analyzes R-peak of the collection data. Smart clothes are made of conductive fibers. To make the elderly more convenient to put on smart clothes, they are designed with a front zipper which is shown in Fig. 3(a). There are 4 electrodes (Fig. 3(b)) on smart clothes. Electrode I and II are on each side of the shoulder. Electrode III and IV are below each side of the armpit (about 10cm below).

Manuscript published on 28 February 2019.
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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue III, Mar 2019- Available at www.ijraset.com

Smart Mirror with Voice Assistant

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Abstract: ***Technology is constantly evolving in the current world and becoming more intelligent towards the future. With the fast progressing world, time is of the essence. This paper describes the design and implementation of a smart wall mirror called "Magic Mirror". It is a device that can function both as a mirror and an interactive display displaying content such as time, date, weather and news simultaneously. The device is also enabled with the popular voice AI Google Assistant which enables a natural conversational interface between the user and the mirror. The Magic Mirror consists of various functionalities like real time data and information updates, voice commands, microphone and webcam. The user can interact with the magic mirror using voice commands. With the AI voice kit, a more interactive approach is established and makes it easier for the user to navigate through the device. The goal of this project is to make life easier for the common man by keeping him up to date with all the information surrounding him and around the world. It also helps him have a healthy and organized lifestyle by keeping a scheduled timetable.***

Keywords: Magic Mirror, Raspberry Pi 3, Raspbian, Internet of Things;

I. INTRODUCTION

In this world everyone needs a comfortable life. Modern man has invented different technologies for his purpose. In today's world, people need to be connected and they are willing to access the information easily. Whether it is through the television or internet, people need to be informed and stay in touch with the current affairs happening around the world. The Internet of Things means interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data. The Internet of Things with its enormous growth expands its applications to the living environment of the people by changing a home to smart home. Smart home is a connected home that connects all type of digital devices to communicate with each other through the internet. Our lifestyle has evolved in such a way that optimizing time is the most important thing. Our work is based on the understanding that we all look at the mirror when we go out, so what if the mirror became smart. A common approach for building a smart mirror is to use a high quality two- way mirror, a LED monitor, a frame to hold the glass and monitor, and a web browser with python to provide the software features and drive the display.

This project has been developed with the idea of making a home smart to save time. The Internet transformed our lives by connecting us more easily to information and other people in the virtual world. The state of innovation currently is to provide more information with minimal interaction to get it. The device that has been researched and designed is called "Smart Mirror". It is a wall mounted mirror which displays relevant items to the user such as weather, time, date, temperature, humidity and news and other fields of interest. IoT emerged from the idea of remotely monitoring objects through the Internet.

II. PROPOSED METHOD

A. Smart Mirror as a Mirror

We can see our view as we can see it in a natural mirror while looking and grooming with the help of one way mirror with high concentration of aluminum content.

B. Smart Mirror as an Information System

Time, Date, Weather details and news are fetched from online using predefined URL. News is fetched from websites like CNN, BBC or any local news channel of the particular region, etc. Popular weather information website is available in the Internet. DHT22 -digital sensor can be used to get the humidity and temperature details. DHT22 can be connected to GPIO pins of Raspberry Pi board using jumpers.

C. Smart Mirror as Voice Assistance

The AI Google Assistant recognizes the user's voice command and responds according to the command given. It provides an interactive experience and makes it easier for the user to converse easily

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