

ICETET-2022

VIRTUAL CONFERENCE

**03RD INTERNATIONAL CONFERENCE ON
EMERGING TRENDS IN ENGINEERING AND TECHNOLOGY**

20TH - 21ST JULY 2022



NASHIK



Organized by

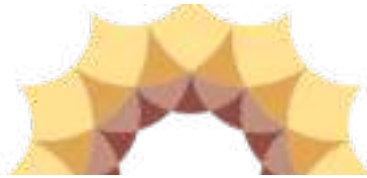
**Department of Mechanical Engineering,
Sandip Institute of Engineering and management,
sandip foundation, Nashik**

Associated by

Institute For Engineering Research and Publication (IFERP)

3rd International Conference on

Emerging Trends in Engineering and Technology



(ICETET - 2022)

Virtual Conference

20th and 21st July 2022

Organized by
Department of Mechanical Engineering,
Sandip Institute of Engineering and management, sandip foundation,
Nashik

Associated by
Institute For Engineering Research and Publication (IFERP)



Rudra Bhanu Satpathy

Founder & Chief Executive Officer

Institute For Engineering Research and Publication.

On behalf of **Institute For Engineering Research and Publications (IFERP)** and in association with **Department of Mechanical Engineering, Sandip Institute of Engineering and management, sandip foundation, Nashik**. I am delighted to welcome all the delegates and participants around the globe to Silicon City College, India. In Association with for the “**3rd International Conference on Emerging Trends in Engineering and Technology**” Which will take place from **20th & 21st July 2022**.

It will be a great pleasure to join with Engineers, Research Scholars, academicians and students all around the globe. You are invited to be stimulated and enriched by the latest in engineering research and development while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the reviewing committee, coordinator (IFERP & SIEM) and all the people involved for their efforts in organizing the event and successfully conducting the International Conference and wish all the delegates and participants for their virtual presence.

Sincerely,



Rudra Bhanu Satpathy



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Rais Tower, 2054/B, 2nd Floor, 'L' West Block, 2nd Ave, Anna Nagar, Chennai, Tamil Nadu 600040, India

PREFACE

The **3rd International Conference on Emerging Trends in Engineering and Technology (ICETET- 2022)** is being organized by **Department of Mechanical Engineering, Sandip Institute of Engineering and management, sandip foundation, Nashik** in Association with **IFERP-Institute For Engineering Research and Publication** on the 20th – 21th July, 2022.

The “**3rd International Conference on Emerging Trends in Engineering and Technology**” was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of “**Engineering and Technology**” which were given International values by **Institute For Engineering Research and Publication (IFERP)**.

The International Conference attracted over 300 submissions. Through rigorous peer reviews 110 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

We are indebted to the efforts of all the reviewers who undoubtedly have raised the quality of the proceedings. We are earnestly thankful to all the authors who have contributed their research works to the conference. We thank our Management for their wholehearted support and encouragement. We thank our Principal for his continuous guidance. We are also thankful for the cooperative advice from our advisory Chairs and Co-Chairs. We thank all the members of our local organizing Committee, National and International Advisory Committees.

ICETET-22

Message form Chairman



Dr. Sandip Kumar Jha

Chairman
Sandip Foundation's

I am very much glad to welcome you all the participant, Keynote Speaker, Session Chairs to the International Conference on Emerging Trends in Engineering and Technology- 2022 (ICETET-2022) organized by Department of Mechanical Engineering, Sandip Institute of Engineering and Management, Nashik in association with Institute For Engineering Research and Publication (IFERP), Chennai, to be held on 20 th – 21 st July 2022. The main motto of the conference isn't just to speak about significant and rising issues of a Specific space but to spread it among other educated people. From last few decades sensational upgrades have been made in the field of science, Engineering Technologies and applications. I trust ICETET-2022 will turn out to be without a doubt the most significant international conference committed to bring out most recent patterns in Science and Technology. As we must promote the efforts in the direction of uplifting the research work, we have welcomed recognized specialists to take an interest in the Technical Program Committee. I hope ICETET-2022 will make you aware of state-of-the art systems and provide a platform to discuss various design issues and challenges

Message form Principal



Prof. (Dr.) Dipak P. Patil

Principal

Sandip Institute of Engineering
& Management
(SIEM)

On behalf of the Organizing Committee and the Department of Mechanical Engineering of SIEM, the hosting department and IFERP, it is my great pleasure to welcome you all to International Conference on Emerging Trends in Engineering and Technology-2022 (ICETET-2022) to be held on 20 th and 21 st July, 2022 at Sandip Institute of Engineering and Management, Nashik in association with Institute For Engineering Research and Publication (IFERP), Chennai. The idea to host the ICETET-2022 in SIEM at Nashik is to bring together Researchers, Scientists, Engineers, Scholars and Students in the areas of Engineering. The ICETET-2022 Conference will cultivate conversations and would like to move members from a wide cluster of topics to start Research and Development and joint efforts inside and across disciplines for the headway of Technology. I feel it is critical to repeat the need to make an interpretation of Engineering and Technology into information to help defeat cultural difficulties. The different topical sessions will exhibit significant mechanical advances and feature their hugeness and difficulties in a universe of quick changes. I invite every one of you to go to the entire sessions and oral introductions and welcome you to associate with the meeting members. The Local Organizing and Conference Committees will put forth any conceivable attempt to ensure that your support will be in fact fulfilling and a pleasurable encounter of our Nashik City.

Message form H.O.D



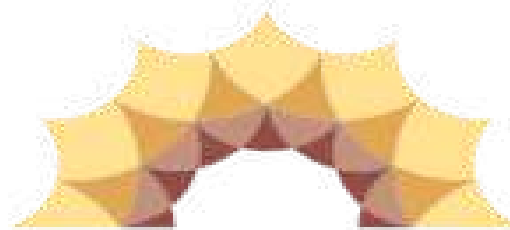
Prof. (Dr.) A. S. Dube
H.O.D

Department of Mechanical Engineering,
SIEM

It gives me immense pleasure to welcome all the students of Under-graduate and Postgraduate courses and Research streams to International Conference of Emerging Trends on Engineering and Technology (ICETET-2022). Department of Mechanical Engineering, Sandip Institute of Engineering and Management, Nashik, Accredited by the National Assessment & Accreditation Council. Mechanical Engineering Department, SIEM is nurturing self-reliant and self-dependent human being to cope with the challenging world of tomorrow. We impart education to empower youth to create a space in the society. Department of Mechanical Engineering, SIEM inculcates the highest values of service to the poor and marginalized in the society. The harmonious mix of the legacy of knowledge and spiritual ambience of our department inspire young minds to be empowered and morally upright. We enjoyed a reputation of excellence in academic scholarship and try to keep abreast of the fast-moving developments in today's scenario. Beckoning new challenges and opportunities, we are marching forward to enhance the quality of this Institution of Excellence. Keeping in see, the exchange of the hour of trans-mainland trade of ideas philosophies in the ongoing years, we have been attempting to accord significance to high tech showing techniques and to situate our energies, assets and infrastructural offices to present courses which are the need of great importance. We understand the need to give both scholarly thoroughness and useful application to understudy learning. I am proud to be part of an institution with a spectacle of fine blend of tradition and modernity.

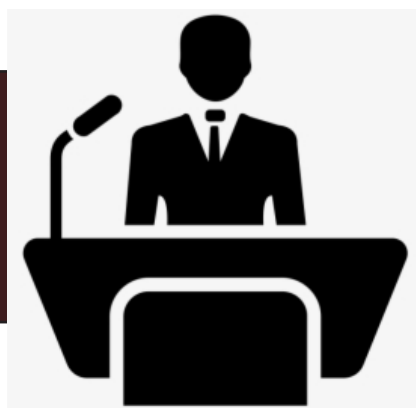
3rd International conference on

Emerging Trends in Engineering and Technology



ICETET - 2022

Virtual Conference | 20th and 21st July 2022



Keynote Speakers

Keynote Speaker Biography



Dr. Sanjay Sethi

Founder and CEO, AntarDhwani, Inc.
San Jose - “Silicon Valley” - California, USA

Dr. Sanjay Sethi has 25 Years of Proven, Versatile, Technology Leadership in the Semiconductor Industry: Engineering and Business Development. He completed his Ph.D. in High-Speed Optoelectronics: University of Michigan, Ann Arbor. Nominated for Best Ph.D. Dissertation Award (1995) He has experience in high-Performance Analog/Mixed-Signal Circuit Design, Hardware Development and Embedded Systems [“Internet of Things” or “IoT”] Engineering: Signal Integrity, Packaging, Board Design also in On-Chip Power and Thermal Management and Semiconductor [Silicon and III-V] Process Development of High-Speed Optoelectronics. He is well versed in technical sales in Enabled Significant Top-Line Revenue Growth, over \$350MM in ASIC Design Wins. Experienced in new product development and Data-Converters like, ADCs and DACs for Wireless and Wire-Line Applications. He has Technical Sales: Enabled Significant Top-Line Revenue Growth, over \$350MM in ASIC Design Wins.

Keynote Speaker Biography



Mr. Fred Haney

President at Dycat Solutions
Alberta , Canada

Mr. Fred Haney is the President of DyCat Solutions, a company which provides innovative solutions to the heavy industrial business sector. He is a recognized leader in developing the most optimum capital efficiency for owners of heavy industrial projects. He has been globally recognized as a subject matter expert for his development of standardized modular designs practices and execution solutions and lean design and execution. Fred has over 40 years' experience in heavy industrial project execution. He has executed various phases of a heavy industrial project, from front end, through detailed engineering, construction, to commissioning and start-up on a global basis. Portfolio assignments included Zero Base Execution development and Subject Matter Expert for Modularization, and Technical Lead on Fluor's 3rd Gen Modular ExecutionSM research and development. He had experience in the role of Subject matter Expert and provided quality assurance throughout the development phase and through the completions phase to ensure that the overall business and project objectives are being achieved.

Keynote Speaker Biography



Dr. Nilaj Deshmukh

Dean (Faculty) and Head,
Mechanical Engineering Department,
Fr. C. Rodrigues Institute of Technology
Vashi, Maharashtra, India

Dr. Nilaj Deshmukh Is a Experienced Dean (Faculty) and Head of Mechanical Engineering Department with a demonstrated history of working in the higher technical education. Skilled in NI LabVIEW, and Experimental Setup. Strong education professional with a Doctor of Philosophy (Ph.D.) focused in Combustion Instability from Indian Institute of Technology, Bombay. Fellow Member of “The Institution of Engineers”, Fellow Member of Council of Vibration” and Member of FMFP. He has completed 20 years in Fr. C. Rodrigues Institute of Technology, Vashi. Join as Lecturer on 1 July 2002 and promoted as Sr. Lecturer, Assistant Professor, Associate Professor. And he has Experienced in new product development and Data-Converters. Dr. Nilaj Deshmukh is a well- known and recognized authority in the domain of theory and the applications of mechanical engineering.

Keynote Speaker Biography

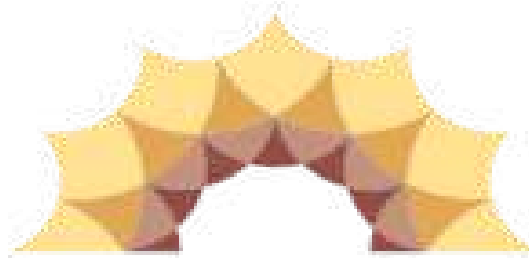


Prof. Mohamed Fayad

Full Professor, San Jose State University
San Francisco Bay Area
California, United States of America

Dr. Mohamed Fayad is a full professor of Computer Engineering at San Jose State University since 2002. Previously, he was J.D. Edwards professor of Software Engineering in the Department of Computer Science & Engineering at the University of Nebraska-Lincoln, from 1999 to 2002. Between 1995 and 1999, he was an associate professor of Computer Science and a faculty of Computer Engineering at the University of Nevada. He has more than fifteen years of industrial experience in addition to ten years as a software architect in companies, such as McDonnell Douglas and Philips Research Laboratory. His reputation has grown by his achievements in the industry—he has been an IEEE distinguished speaker, an associate editor, editorial advisor, a columnist for The Communications of the ACM (his column is Thinking Objectively), a columnist for Al-Ahram Egyptians Newspaper (2 million subscribers), an editor-in-chief for IEEE Computer Society Press—Computer Science and Engineering Practice Press (1995–1997), a general chair of IEEE/Arab Computer Society International Conference on Computer Systems and Applications (AICCSA 2001), and the founder and president of Arab Computer Society (ACS) from April 2004 to April 2007. Dr. Fayad is a well-known and recognized authority in the domain of theory and the applications of software engineering. Fayad's publications are in the very core, archival journals and conferences in the field of software engineering.

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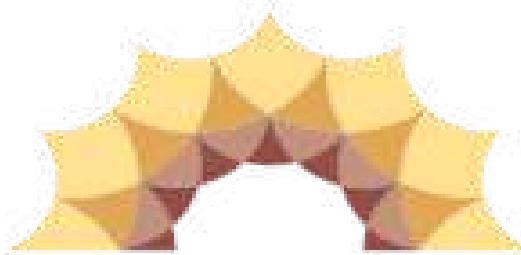
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ABSTRACTS

Wireless Smart Electrified Road for EV With Dynamic and Static Charging By Solar Energy

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Abstract- In this paper, a method of electric vehicles charging with the use of large truck/bus vehicles moving along national highways and provincial roads is proposed and described. The method relies on charging vehicles from trucks while moving either with plug in electric connection or by electromagnetic induction via loosely coupled coils. Open research challenges and several avenues or opportunities for future research on Electric Vehicles Charging are outlined. The proposed method overcomes the disadvantages of the so far known techniques. The advantages of this method compared to the so far proposed methods are a) economical, easy and safe procedure, b) increase of the energy transfer efficiency factor, c) minimization of the delay in vehicle movement during the charging procedure and d) reduction of the environmental contamination with CO₂ or electromagnetic radiation.



IOT Based Smart Production Line

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Abstract -Nowadays, industrial monitoring has vital role in industrial area to monitor and control the industrial applications or equipment. Industrial monitoring is used to know dynamic condition of industrial devices or machines. Industrial Monitoring is used to accomplish fast processing minimize power consumption, to improve quality, lessen expensive systems and global management of industry. There are lot of methods that are available to monitor and control industrial processes like Zigbee, PLC-SCADA, WSN, Internet of Things (IoT) etc. Nowadays, "Internet of Things" is a most favorable technique for industrial process monitoring. IoT is combination of embedded system and communication system in which industrial equipment are connected to internet with the help of wireless sensor network and devices or industrial application can monitor and control through mobiles and laptops. British technology pioneer Kevin Ashton described the word "Internet of Things" in 1999. He described that any physical object in the world can be connected to internet via sensors.



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Design and Fabrication of Filament Extrusion Machine for 3D printer

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Abstract— 3D printing is a form of additive manufacturing technology where a three-dimensional object is created by laying down successive layers of material. It is mechanized method whereby 3D objects are quickly made on a reasonably sized machine connected to a computer containing blueprints for the object. As 3D printing is growing fast and giving a boost to product development, the factories doing 3D printing need to continuously meet the printing requirements and maintain an adequate amount of inventory of the filament. As the manufactures have to buy these filaments from various vendors, the cost of 3D printing increases. To overcome the problem faced by the manufacturers, small workshop owners, the need of 3D filament making machine arises. This project focuses on designing and fabricating a portable fused deposition 3D printer filament making machine with cheap and easily available components to draw 1.75 mm diameter filament

Index Terms—3D printing, Extrusion, Screw Extruder, ABS, Filament Extrusion, Polymer

Excitation System of Synchronous Generator Using Pid and Fuzzy Logic Controller

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Abstract- Synchronous generator excitation control system is one of the most important part of power system. So, this project aims to develop and compare performance evaluation of excitation system for synchronous generator without controller, with PID and fuzzy logic controller. The PID controller and the fuzzy logic controller is developed to improve the performance of the excitation system of synchronous generator. The controller is designed based on the mathematical model of the system using MATLAB simulation techniques in graphical interface using SIMULINK. It was simulated a one machine control to check if the PID controller and the fuzzy logic controller implementation was possible. After that the controller developed was applied in field excitation system to show its behaviour, which results were compared to the results obtained without controller. The controller quality influences the voltage level during steady state operation, and also reduce the voltage oscillations during transient periods, affecting the overall system stability. The simulation results obtained shows that excitation system of synchronous generator with fuzzy controller in more reliable and stable than that of PID controller and without controller. When it comes to between PID controller and without controller, PID controller shows better results.

Keywords- Fuzzy logic controller (FLC), Excitation control system (ECS), Static Excitation system, stability

Protection and Controlling of 3 Phase Induction Motor by Electronic Soft Starter

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Abstract- The project is fabricated to provide a smooth and soft start for 3-phase induction motor. In the starting of 3-phase induction motor, initially motor draws much higher current than its predetermined rated current and then motor reaches its full speed. Because of the high current, there is occurrence of mechanical jerk and high electrical stresses on the windings of the motor. It may results in burning of motor windings. That is why induction motor should start without any jerk and it reaches the rated speed smoothly. This paper is designed to give a smooth and soft start to the induction motor based on the TRIAC triggering by heavily delayed firing angle during starting and when motor reaches full rated speed then delay is reduced to zero voltage triggering. This results in low voltage during starting of motor and the gradually to full load voltage. Thus motor starts slowly and then slowly picks up to full speed. This project consists of a three TRIAC, one for each phase, the output of which is connected to a direct 3 phase induction motor. The capacitor is used with comparator which provides delayed firing angle during starting and then gradually reduced to zero and full voltage is applied to motor and it picks up full speed.

Keywords –3-phase Induction Motor, Microcontroller, TRIAC

Digi-Workshop: A System to Digitalise Vehicle Service Booking and Monitoring

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Abstract— A Paper reviewing the implementation of ‘Digi-Workshop’ app- a new idea aiming at fully digitalising our vehicle servicing process and easing our lives in that regard. The implementation review paper concisely explains this new concept which could greatly enhance or experience with regards to servicing our vehicles. We have successfully created a part of this system which is an android app that provides the customer as well as the vendor all the functionalities proposed in this system. The functionalities on the customer’s end include ability to locate nearby compatible service stations, book services at any of them, get to see the camera views of your vehicle being serviced and talk to the servicemen possibly using VoIP. At the vendor’s end, the app will provide functionality to accept or decline service requests.

Index Terms - Digi-Workshop, Vehicle Servicing, VoIP, IoT, Digital Workshop, Digitalising.

Automatically Load Sharing of Transformer using PLC

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Abstract -As global energy demand is constantly on the rise; power management has been becoming a major issue in the past decades or so due to fewer energy reserves. Power shutdown is a key crisis at present whereas disruption of power can cause a huge production loss for industries which calls for proper power management and monitoring systematically. This report deals with this issue by developing a prototype system and controlling of the system. In this system, power from the mainline is distributed and supplied to certain loads. If the capacity of the distributed load is less than required, then another line will be activated in parallel to prevent power shutdown and avoid production losses. Moreover, this process can ensure safety by tripping the system in case of any fault occurrence. All these are performed in an automated process using PLC.

Key Words- Capacity, Interruption, Load, System, Transformer

Experimental Investigation of Process Parameter in Turning using Design of Experiment

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Abstract- Energy conservation and emission reduction is an essential consideration in sustainable Manufacturing. However, the traditional optimization of cutting parameters mostly focuses on machining cost, surface quality, and cutting force, ignoring the influence of cutting parameters on energy consumption in cutting process. This experimentation presents a multi-objective optimization method of cutting parameters based on response surface methodology (RSM), which is applied to turn S.S 304 in order to improve cutting quality, energy efficiency, Power Factor while reducing energy consumption. The objectives is to establish the correlation between depth of cut, Cutting speed and feed, the power required to the machining operation and the surface roughness of the work piece. The following data is useful and can be used for completing this Analysis.

Keywords- S.S 304, Turning, Energy Consumption, Energy Efficiency, Power Factor, Surface Roughness, Design Of Experiments, Response Surface Methodology

2nd Generation INTEL 8085 Microprocessor and Its Data Transfer Instructions

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Abstract-Microprocessor is a controlling unit of a microcomputer; it is built on a single chip and came into existence in 1971. INTEL 8085 is a first 8 bit microprocessor with 8 bit data lines (D0-D7) and 16 bit (A0-A15) address lines. It is specified by its word size. INTEL 8085 is the most powerful processor that is still being used in many devices. It is a second-generation microprocessor with a large chip size, faster operation, better interrupt handling capability, ability to address large memory space, higher clock frequency and address more I/O ports. Following the success of 8085 processor, Intel introduced many 16-bit, 32-bit and 64-bit formats. Buses are bundle of wires that are used to carry data and address. Microprocessor has only the processing unit embedded inside the control chip and for any system designer, this will require additional external components like RAM, ROM and I/Os. Microprocessors are more commonly used for complex embedded systems applications like laptop desktops, tablets, etc

Index Terms- Microprocessor 8085, Opcode, instructions, interfacing, machine cycles.

Pothole Detection System Using CNN

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Abstract - Potholes create structural damage to roads. They are one of the causes for road accidents and can even result in death in some cases. Early detection of potholes can help to repair the damage and will also reduce the cost of repair. To prevent road accidents we propose an efficient system using deep learning methods. The existing pothole detection techniques consist of several machine learning algorithms like Random Forest, Support Vector Machine (SVM), etc., and deep learning models like YOLO, RNN, Convolutional Neural Network (CNN), etc. In this paper, we have used CNN to train the model with a dataset consisting of 5000 numbers of images and divided into two classes pothole and non-pothole. Since deep learning requires a large number of images, we used data augmentation techniques to increase the dataset. We tested the dataset on different models like CNN and SVM. While comparing the accuracy of trained models the best results were achieved by CNN with an accuracy of 91%. By making this project we will attempt to design and implement an android application, in which we will upload a pothole image manually and by the help of a google map the location of the pothole can be detected and given to the database.

Keywords- Pothole detection, CNN, SVM, Android App Google Map, Database.

Design and Testing of Noval Solar Dryer

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Abstract- The unpredictable rise and frequent scarcity of fossil fuel accelerated the continuous search for an alternative power source. Solar is one of the renewable and sustainable sources of power that attracted a large community of researchers from all over the world. This is largely due to its abundant in both direct and indirect form. As such the development of efficient and inexpensive equipment for the drying of agricultural and marine products using solar power evolved thereby improving the quality of the products as well as improving the quality of life. The use of solar dryers in the drying of agricultural products can significantly reduce or eliminate product wastage, food poisoning and at the sometime enhance productivity of the farmers towards better revenue derived. A solar crop drying system does not solely depend on solar energy to function; it combines fuel burning with the energy of the sun, thus reducing fossil fuel consumption. In this paper a review of the solar dryer is presented. The various design of the solar dryer is reported in the literature thus far is presented.

Industrial Energy Auditing for Increased Sustainability

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Abstract—Maharashtra State Electricity Distribution Co ltd. Commercial Circular No. 320 issued for providing Power supply to individual entrepreneurs coming under one premises for Textile and Non- Textile Industries called as multiparty service. Bhiwandi has approximately 6.5 lakh power looms, which is 33 per cent of country's total power looms. The textile sector has the lowest energy utilisation efficiency and is one of the most energy-intensive industries. Industrial energy efficiency is a key component in the transition of the economy towards increased sustainability. For an industrial company, there are four means to reduce energy costs, implementing energy-efficient technologies, energy carrier conversion, load management, and more energy-efficient behaviour. To reduce specific energy consumption for sustainable development in cost effective way a continuous energy monitoring and process tracking is required. In this paper, we selected an industry (Multiparty service) and carried out the survey, collected required data and did an analysis on how to save energy by reducing energy consumption areas including financial areas as well. Industrial audit plays an important role & has grown in importance over the last several decades as the drive to reduce ever-increasing energy costs and move toward a more sustainable future has pushed it to the forefront.

Keywords— energy audit, textile, efficiency, multiparty, sustainable.

Comparative Analysis of 3D Printed Tensile Component

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Abstract-Objects are manufactured using a variety of methods, one of which is known as 'Additive manufacturing,' which is a popular manufacturing technology because, instead of removing material to form a part, the procedure adds material in sequential patterns to generate the required shape. Although FDM (Fused Deposition Modelling)-based products are used in a variety of areas, their mechanical characteristics are still inferior to those of products made using traditional manufacturing procedures. Tensile tests were performed in this study on two types of materials: PLA (Polylactic Acid) and ABS (Acrylonitrile Butadiene Styrene). To begin, both materials are 3D printed on the X, Y, and Z axes with a 100% infill density. Tensile test performed on MCS Company's Tensile Test Machine, after which the best orientation from all of them is chosen, and tensile test performed for that orientation on determined infill density. Densities of infill are 40, 60, and 80 percent. This will aid in the selection of materials for manufacture based on orientation and infill density.

To Develop A System for maintaining Oxygen Level Inside The Room

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Abstract- The world is changing a lot day by day and with changing world pollution also increases due to the increase in population. A lot of people cannot able to take fresh oxygen air. Also, we have observed the situation of the covid19 over the last few days. All people need to keep their surroundings clean by sanitization which is not possible all time. So we are developing a system that maintains the oxygen level in an enclosed area with the help of sensors and a microcontroller. Our topic is relevant to heating ventilation and air conditioning application this system provide oxygen-concentrated air to an enclosed area like offices, cars, theaters, etc. In a normal atmosphere, oxygen gas exists slightly less than 21% by volume its density is 1.105 relative to dry air. The minimum O₂ concentration allowed where miners normally work or travel in a coal mine is 19.5% oxygen is typically not considered a contaminant as it passes through the mine its concentration becomes less because of oxidation including a fire with underground component and the atmosphere become oxygen deficient. So we use this system.

We use PSA technology. to separate oxygen and other gases from ambient air to maintain the indoor air quality which gives comfort to human lives. Oxygen is used in a variety of chemical processes and for medical purposes throughout the world pressure swing absorption has become a viable alternative to cryogenic distillation for the separation of oxygen from air with an advanced absorbent like zeolite PSA process is inherently complex because its dynamic process.

In these LiX zeolite absorbents was utilized in a PSA process for oxygen generation with the goal of designing a cycle for high recovery and a low bed size factor and its high use in medical purpose. Its size is about 0.5 mm this provides a range of operating conditions from which to determine how to best utilize zeolite to develop a large PSA process also it was found that LiX zeolite is in fact an enhanced

Designing a Medical Alert System for patients in Intensive Care Units using Internet of Things (IoTs) Technology: Smart Monitoring Online

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Abstract- It has been witnessed that the members of family of the patients are not allowed into the ICUs or IICUs in hospitals. As a consequence the family doesn't get information about the condition of their patients.. In the present paper, an IoT approach is used for this type of situation. IoT explores new dimensions of the patient's care through real-time health monitoring system to the families of the patients.. Through IoT application, all data, including live videos, regarding patients will be available on mobile or laptop, so that they can see the current situation of the patients. The system includes a micro-controller (Arduino Yun) board, health monitoring sensors, GSM module, which serves as an Intelligent Real-Time IoT based System for monitoring patients in ICUs and IICUs from far distant places also.

Keywords- Arduino Yun Board, IoT, GSM module, Wi-Fi module, telehealth, health parameters.

Power Quality Improvement Using Dynamic Voltage Restorer

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Abstract - Power quality is the very important factor in today's situation. It is important especially, when the sensitive devices are introduced to use in daily basis, which are very sensitive to the quality of power supply. Due to the variations in standard voltage, frequency and current the power quality problem is occurred in the system. This results in the failure of sensitive equipment connected to power supply. Sensitive industrial loads and utility distribution networks suffer from various types of outages and service interruptions which may result in a significant financial loss.

To maintain the power quality supply of standard values the custom power devices are used to overcome the power quality problems. The simulations were conducted in MATLAB/Simulink to show the DVR-based proposed strategy's effectiveness to smooth the distorted voltage due to harmonics. The device considered in this work is Dynamic Voltage Restorer. This paper presents modelling, analysis and simulation of a Dynamic Voltage Restorer (DVR) constructed in Simulink environment. In this work, PLL based d-q controller and Discrete PWM pulse generator are used for the control purpose. Here, different supply voltage conditions are considered for linear loads (R-load, R-L load). The main problems occurred in power supply are voltage sag, voltage swell, and voltages unbalances. To overcome this the dynamic voltage restorer is used. The role of DVR to compensate load voltage is sensed during the different supply conditions like voltage sag, voltage swell, and supply voltage unbalance, and to provide the required voltage to safe operation of load.

Key Words- Dynamic voltage restorer, FACTS, total harmonic distortion, sag, swell, harmonics.

Design and Development of Solar Panel Cooling System

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Abstract - Green technologies are becoming more and more common nowadays. Thousands of photovoltaic (PV) panels and solar collectors have been installed all over the world. A photovoltaic solar cell generates electricity by receiving solar irradiance. The temperature at which a PV module effectively works is an equilibrium point temperature between the heat generated by the PV module for maximum efficiency and at the same time some of the heat losses to the surrounding environment. The temperature of photovoltaic modules increases when it absorbs solar radiation, causing a decrease in efficiency. This undesirable effect can be partially avoided by applying a solar panel cleaning unit with fluid circulation on the photovoltaic module. The desire to increase the effectiveness of PV panels led to the development of solar collector systems. This project presents a solution focused on increasing the efficiency of photovoltaic modules by reducing losses due to warming photovoltaic cells. The solution consists of a solar panel cleaning & water-cooling system applied to the photovoltaic module. To achieve the cooling system for increasing photovoltaic panel efficiency.

Keywords- solar panel, efficiency, water cooling.

Performance Improvement in Gas Water Heating System

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Abstract- Gas water heaters take a major part in the Indian household appliances, while the existing water heater have either low efficiency because of the single utilization of energy. Rising energy prices and other economic pressures have created more interest in energy efficient hot water systems which reduce monthly expenses and at same time provide reliability and comfort. Gas geysers are one such device, which are energy efficient and economical at same time. In this research work basic idea is to analyse the change in amount of heat transfer and calculating overall efficiency of a gas water heater by making small changes in the design of the heat exchanger of a gas geyser. A new structure of heat exchanger in the gas water heater is proposed in this project, which provide higher efficiency. The factors which are going to be use like Temperature, and Time will be identified to improve heat transfer efficiency. The water heaters thermal efficiency rate was determined for a typical modification of water heater. This modification was carried out by changes in heat exchanger in gas geyser that is by adding two layers in top of heat exchanger to utilize all energy from flame. A small-scale experiment was set up and conducted in Home. Heat flow through a gas geyser was calculated firstly without use of any modification and then experiment was again performed with same condition to that of first after addition of the modification, so as to calculate percent change in heat efficiency. Thus, we get higher efficient gas heating system.

Keywords- Gas geyser, Heat exchanger, Modification in heat exchanger, water recirculation.

Methodology for the Parameter Estimation of Diode Model for PV Cell or PVModule

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Abstract - Renewable energy is the energy that is collected from the renewable sources which are naturally and replenished on a human time scale. Sunlight is the important sources of energy which can be used to provide energy in the important area such as electricity generation, conversion of solar energy into the electricity etc. But the Solar cells have a high degree of non-linearity and they possess parameter which must be accurately designed. This paper is the review on parameter estimation and optimization with different methods with considering SDM, DDM and TDM of PV cell with different objective function with support of literature about Simulink model and the single diode model characteristics by software tool. As per the research due to the nonlinear characteristics of PV cell optimization is the best tool to identify the nonlinear model and its known and unknown parameters. With this concept firstly we have to identify the all unknown parameters using analytical method and then apply the optimization method which is the best and suitable for all three different methods. Keywords: PV Cell, PV module, SDM, DDM, TDM, Optimization method.

FAR and FEW Review in Blockchain Technology and its Applications

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Abstract- The word “Fad” has become contagious with the advent of Blockchain technology where new currencies are sprouting from it, which affords preferable characteristics and features such as no intermediators, decentralization and smart contracts in which everyone knows about it, alongside, autonomy, verification, etc. The work, first accomplished the review about Blockchain itself, mainly its origin, structure of blockchain, types of blockchain with comparison with other features, uses of blockchain application in various fields, blockchain interoperability, use cases of blockchain, energy consumption, in-depth comparison of the blockchain protocols and the complete list of Block use cases. Additionally, the Blockchain security in the network particularly in internet (Web Attacks) is focused. To be precise, we reviewed and categorized various real time attacks based upon the Blockchain ecosystem. Lastly, the challenges and research trends of the blockchain are discussed which helps to achieve more and efficient blockchain ecosystem. The work will also exhibit the future direction and recommendations which will help out the budding researcher.

Keywords - Blockchain; decentralization; Blockchain security; web attacks

Estimation of Seasonal Variation in Module Temperature Model Coefficient for Hetero Junction with Intrinsic Thin Layer Technology (Hit) PV Module

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Abstract-PV installed capacity has been rapidly increasing recently, according to a research by the International Energy Agency (IEA). However, given to their reliance on weather and environmental conditions, deploying PV systems to generate power is a significant challenge and can be considered environmental factors, particularly ambient temperature, wind speed and direction, humidity, solar intensity and spectral distribution of irradiation. The standard test condition (STC) for PV modules is never accurately met at outdoor environment. So it is necessary to improve the performance of Photovoltaic system in a real time environment by considering the seasonal effects. Understanding the influence of spectral fluctuation with regard to season necessitates knowing the value and trends of spectral parameters. This research is particularly essential in the context of the Indian subcontinent because of seasonal variations in spectrum-related parameters for high-efficiency solar photovoltaic technology. The efficiency and output power of hetero junction with intrinsic thin-layer technology (HIT) PV technology assessed for site match the efficiency and output power estimated using module temperature, according to the findings. For that Root Mean Square Error (RMSE) factor is considerable.

Keywords- Photovoltaic module, Hetero junction with intrinsic thin-layer technology (HIT), Spectral variation, module temperature, Root Mean Square Error (RMSE), Standard test condition (STC).

Design and Development of Mobile Operated Smart Solar Gardening Robot

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Abstract - Manual spraying of pesticides and herbicides to crops and weed inhibitors onto the field are quite laborious work to humans. Manual trimming of selected unwanted plants or harvested crops from the field is also difficult.

Our project proposes a multipurpose solar powered, flexible, Remote Controlled, semi-automated spraying robot with 4 Degrees of Freedom (DoF) in spatial movement, with an additional plant mowing equipment.

The robot is designed to spray pesticide/insecticide directly onto individual lesions minimizing wastage or excess chemical spraying, hence making the system cost effective and also environment friendly. It is designed to cut down undesired plants selectively by remotely controlling the start and stop of the mowing system.

Alternatively, it also serves the purpose of maintaining lawns and sports field made of grass. The same system can be used for water spraying and mowing the grass to desired levels, leading to proper maintenance of the field.

The robot is designed to move at 1.4m/s, with an effective spraying area of 0.98 sq. m. by the nozzle and an effective cutting area of 0.3 sq. m. by the mower, when stationary. The prototype has a battery back-up of 7.2hrs under minimum load conditions.

Key Words- Microcontroller, Ardiuno nano, Motor, Driver, Hc-05, Hollow cone nozzle ,1N40007 Diode Spraying, Relimate

Responses of Brassica Rapa to Varying Light Intensities and Types of Nutrient Solution Grown Under Hydroponic System

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Abstract- The fact that agricultural activity is dependent on the availability of land makes matters even more complicated when the climate is shifting dramatically. In this perspective, soilless system production is an appealing choice since it offers the possibility of reusing land that has been unproductive as a result of pollution or illness for agricultural uses while simultaneously reducing the amount of water that is consumed. According to the findings presented in the accompanying discussion and conclusions, the light intensities that are received in treatments consisting of one, two, and three layers all have an impact on the growth and development of Brassica rapa. The covered group with three layers of the net gave the best results in terms of both growth and development when compared to the control group, which only had one layer of net covering. The levels of light and nutrient solutions had a significant impact, respectively, on the expansion and maturation of the Brassica rapa plant. As the number of Brassica rapa layers increases, the output of the Brassica rapa yield has been shown to have better growth and development responses, most notably in plant yield. The effects of nutritional solutions on plant production, fresh weight, water consumption, and nutrient content in leaf tissue showed that there were no significant differences in the interactions between these variables. According to the findings of the study, gathered nutrients have the potential to be used as fertilizer, which will cut down on the need for mineral fertilizer in hydroponic systems. The temperature of the environment is one of the most important abiotic factors that might impede the process of development, production, and dissemination. It is possible to draw the conclusion from the results that the cultivar has a greater capacity to react to the effects of cold stress.

Keywords- Hydroponics, Brassica rapa, responses, interaction, climate change

Design, Optimization and Thermal Analysis of Disc Brake Rotor of Two-Wheeler

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Abstract - A brake is a device by means of which artificial frictional resistance is applied to moving machine member in order to stop the motion of a machine. In the process of performing this function the brakes absorb kinetic energy of the moving member and dissipate the absorbed energy in the form of heat. The main objective of these work is to investigate the temperature field and structural Field of the disc brake rotor during breaking. The distribution of the temperature depends on pressure induce the temperature rise of disc brake. The repetitive breaking of the vehicle leads to heat generation during breaking event. The structured and Transient thermal Analysis of the rotor of disc brake is aimed at evaluating the performance of disc brake rotor of two-wheeler Bajaj pulser under severe backing condition. The three-dimensional modelling of disc brake done by using Catia v5 and analysis done by using Ansys workbench 14 and the of steady state analysis to find deformation and von mises stress established in the disc for all designed disc brake and the thermal analysis to evaluating temperature distribution and hence, best design of rotor disc suggested based on their performance of in the terms of heat dissipated.

Keywords- Disc Brake Rotor, Intermediate Patterns, Static Structural Analysis, Steady State Thermal Analysis

Design and Analysis of Composite Drive Shaft

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Abstract- An automotive drive shaft is a most important torque transmitting part which is subjected to high torsional and shear stress. Composite material drive shaft has more strength to weight ratio, high corrosion resistance and wear resistance as that of conventional drive shaft. In this work the study of conventional and composite material drive shaft is done. The finite element analysis using ANSYS static analysis and ANSYS Composite Pre-Post (ACP) is done on both the shaft with conventional and composite drive shaft which consists of 3 layers of aluminium and 2 layers of glass fibre in the orientation of +45°, both are with same thickness but different diameters to avoid torsional buckling. So as a result, the composite drive shaft withstands with less deformation and stress distribution over each layer when maximum torque of Maruti omni is given. Also, with higher strength to weight ratio it also optimizes the weight of the shaft and the vehicle also. So is beneficial to use the composite drive shaft rather than using the conventional mild steel drive shaft.

Keywords- Drive shaft, composite material, mild steel, aluminium, glass fibre, strength, weight, ACP.

Parameter comparison of batteries for electric vehicles

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Abstract- In today's automobile industry, battery-powered electric vehicles are starting to play an important role. Because there are so many different types of batteries in today's electric vehicles, it's difficult to know which one is best. This research compares the autonomy of an electric vehicle with several types of batteries, such as Lithium Ion (Li-Ion), Molten Salt (Na-Ni₂), Nickel Metal Hydride (Ni-MH), and Lithium Sulphur (Li-S), all of which have different properties. The use of four different types of batteries for hybrid and electric vehicles in determining the efficacy of this research effort is unique. The autonomy of the vehicle and the operating efficacy of these various battery types on a real-time driving cycle, as digitised by computer simulation.

Keywords— Electric bicycle, Batteries, Energy efficiency, Energy storage capacity

Production of Single Cell Protein from Mosambi, Pea and Peanut waste by *Saccharomyces Cerevisiae*

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Abstract- Handling of waste is a key challenge which ultimately leads to a profit. The daily residue from the farms causes pollution and effects environment. The way to deal with this waste is produce a high proteinaceous product which reduce the scarcity of proteins and also reduce the risk of proteins deficiency that causes disease. These kinds of protein generated by residue are best alternative for meat and pulses. In this study, the amount of protein is determined after several pretreatments of Mosambi peel, Pea peel, Peanut Shell. Due to high moisture content in mosambi it takes time to dried and also suffer with other problems like when you hydrolyzed mosambi with water and HCL then solution become thick rapidly and create difficulties to handle. Yeast utilized in the process it influences the quality of SCP feed and provide a potential route for recycling the agriculture waste into a valuable product. No additional steps are required to minimize the effect of nucleic acid that ultimately makes SCP Production cost effective. The final yield of SCP is calculated by Lowry's method and the maximum quantity was obtain in Mosambi peel than Pea and least in Peanut.

Keywords- SCP, Mosambi peel, Peanut peel, Pea peel, *Saccharomyces Cerevisiae*.

Transformerless Inverter Topologies for Grid-Connected PV System

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Abstract— A PV system that is transformerless is compact, efficient and cost-effective. But when grid-connected, the constraint to transformerless design is posed by the leakage current problem that exists due to parasitic capacitance of the PV panel. To mitigate this issue in the absence of isolation transformer, various special inverter topologies have been developed by modifying the conventional half bridge and full bridge inverter topologies with the objective of maintaining the common mode voltage (CMV) constant and hence suppress the leakage currents. Among the major and most popular ones are H5, HERIC and NPC topologies which have been studied in this paper. The paper aims at creating a basic circuit structure along with circuit parameters, working & control and finally the simulation results pertaining to CMV and leakage current along with other parameters of relevance for the three topologies. A comparison of them given at the end would help to get a complete overview.

Index Terms— Grid-connected PV System, Leakage Current, Common Mode Voltage, H5, HERIC, NPC.

α -Amylase inhibition by using different plant sources to check Antidiabetic property

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Abstract- Diabetes is one of the top ten most lethal diseases in the world. According to a 2019 WHO report, the dating rate has climbed by 70% since 2000. Diabetes is also entirely responsible for an increase in the male death rate of approximately 80% since 2000. Diabetes mellitus is characterized by hyperglycemia (increase in blood glucose level). In type 2 diabetes, the pancreas either does not make enough insulin or does not utilize insulin properly. There are many pharmacological approaches available to treat diabetes (type-1 & type-2), for type one diabetes oral hypoglycemics drugs are available like insulin secretion enhancers – sulfonylureas, meglitinides, dipeptidyl peptidase-4 inhibitors, and to overcome insulin resistance drug-like biguanides and thiazolidinedione. Till now there is no cure available for the same. One of the areas of our research is in antidiabetic drugs Alpha-amylase inhibitors, the enzyme involved in the digestion of carbohydrates which is secreted by the pancreas and salivary glands specifically acting on α -1,4 glycosidic linkage of carbohydrate/starch polysaccharides hydrolyses to them into small chain dextrin's. alpha-amylase can greatly decrease the post-prandial rise in glucose levels and is a hence essential technique for the management of diabetes mellitus. In this research work, we have done work on some new plants having anti-diabetic activity plants and medicinally active parts like Fresh leaves of Peepal (ficus religiosa), Hibiscus, Mango (mangifera indica), Tulsi (ocimum sanctum), Seeds of Fenugreek (trigonella foenum-graecum), Pulp of Gooseberry (Phyllanthus emblica), Bitter gourd (momordica) and Jamun (eugenia jambolana) were collected from the Bichpuri Village, Uttar Pradesh, India. In this study we found that, the highest percentage of inhibition on 1ml concentration is 39.13% Peepal (ficus religiosa) leaves. The highest percentage of inhibition on 2ml concentration is 36.95%

Substrate Integrated Waveguide Band Pass Filter Design for K band Applications

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Abstract-This paper presents a substrate integrated waveguide band pass filter. The proposed filter is designed by making the cavities in the substrate integrated waveguide. Initially, a substrate integrated waveguide is designed and simulated and the propagation constant is investigated. Then a substrate integrated waveguide cavity band pass filter is designed and simulated. The various parameters of the filters, such as return loss and insertion loss, are also analyzed. The designed filters show the band pass filter characteristics in the K band applications that are useful for future millimeter wave applications.



Air Quality Index Prediction of Bangalore City using various Machine Learning Methods

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Abstract- Air pollution is a severe problem in the present time whose implications are getting more dire with each passing day. In India alone over 1.6 million people have died due to air pollution and its related factors in 2019. To clearly understand air pollution, we need to identify the primary factors contributing to it and to try and predict the conditions in the future. Therefore, the assessment and forecasting of air quality is crucial. The Air Quality Index (AQI) is the standard measure of air quality and is calculated based on the average concentration of particular pollutants over a set time interval. Prediction models created using various Machine Learning methods will be created to try and predict the AQI levels using the data by India's Central Control Room for Air Quality Management of Bangalore City over the past 10 years. The created models will also be tested for their accuracy using different metrics and the best performing model will be determined. Using evaluation metrics, it's found that Stacking Ensemble, XGBoost, Random Forest and Decision Trees perform the best, with XGBoost and Stacking Ensemble performing the best in terms of R2 and RMSE whereas Random Forest and Decision Trees have the best MAE values.

Time Cost Optimization Applied in Transit Camps - A Review

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Abstract- This article is evaluation of transit camps(temporary structures) on the scale of time & cost. The subsequent improvement in“transit camps”, continues to develop the lifestyle of people residing in slum areas. This article examines the financial and time savings by planning, scheduling of activities,with qualitative outputs and ease for the people residing in these camps. Considering the current scenario and available data by the literature reviews, it demonstrates the advantages and benefits of transit camps for a project. Additionally, this study focuses on the time cost optimization of activities which may reduce delays and indirectly help in economic savings with advanced construction management techniques.

Keywords- Transit Camps, financial savings, scheduling, qualitative outputs, management techniques.



Analysis and Design of Multistorey Building for Different Location of Shear Wall

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Abstract— shear wall techniques are a type of lateral force resisting technology that is usually applied in high-rise buildings. To be effective, efficient, and perfect, the shear wall position must be determined. The impact of shear wall location in multi-storey building is investigated in this paper. The study is based on a G+8 (9-storey) residential building with a 3021.0 square foot base plan and a 3.5 m average floor height. A 9-storey RCC building subjected to seismic loads in zones III and V is considered in the analysis. This investigation utilizes staad pro V8i software and three different models with variable shear wall orientation in the structural system to analyse important factor such as base shear, storey drift, and storey displacement. Three different shear wall positions were investigated: one without a shear wall (model-1), one with a shear wall in the middle of the periphery (model-2), and one with a shear wall at the periphery corner (model-3). The RCC framed structure will be subjected to lateral and gravity loads as per the IS criteria, with the results analysed to determine the shear wall location.

Keywords— Location of shear wall, Base shear, Seismic analysis, STAAD.Pro V8i software.

Physical parameters and media optimization for the production of HPV 16 VLPs in *Pichia pastoris*

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Abstract- CCervical cancer represents a major global challenge for public health as it is the most relevant consequence of human papillomavirus (HPV) infection. It is considered to be the most common cancer among women worldwide. Recombinant virus-like particles (VLPs) of HPV have been produced and shown to be a promising vaccine candidate in preclinical studies. However, the high production cost of HPV VLP leads to the higher cost of vaccines so that the female in developing countries are not able to take this costly vaccine. Hence, in this study, we have used *Pichia pastoris* as a host system, developed its clones to produce HPV 16 L1 VLPs, and tried to enhance the productivity by checking the effect of various physical parameters as well as media components. The one-factor-at-a-time (OFAT) approach was used to study the effect of different variables like medium pH, temperature, harvest time and methanol concentration etc.

Keywords- VVirus-like particles (VLP), Human Papillomavirus (HPV), Vaccine

Evaluating Frontal Crash Test of Developed Vehicle Chassis Frame Structure to Identify Crashworthiness Through Scaled Model for Injury Reduction

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Abstract- Vehicle accidents can result in a wide range of injuries depending on the severity of the impact. The safety of passengers is the most important aspect in the vehicle industry. Collision-induced frame deformation could result in serious injuries. Most of the deaths in such cases are caused by excessive impact force and deceleration pulses on the human body. Accidents occur despite all human efforts to prevent them. It has been observed that many deaths and serious injuries occur in accidents that are tolerable. Unfortunately, capsulitis occurs because the vehicle's protective systems, such as seats, restraint systems, and cabin strength, were insufficient to protect the occupants in the event of an accident. Which could otherwise be harmless. To maximize survivability in a crash, the tolerance of humans to absorb sudden acceleration must be understood, and the vehicle must be designed to maintain cabin integrity up to the limits of human tolerance. This would be possible with the careful application of energy-absorbing techniques that reduce the accelerations experienced by the occupants. In this paper, an experimental crash test for full frontal impacts is performed on a developed prototype chassis frame to reduce the Cash Pulse during the accident.

Cross Language Information Retrieval for Code-Mixed Kannada-English Queries

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Abstract- Though there has been a lot of Natural Language Processing work done towards languages, such as English, Arabic, Chinese similar efforts for Indian languages are still in its infancy. Kannada is one of popular south Indian languages. It is proposed in this research work to experiment Information Retrieval of Kannada English code mixed queries. A paradigm which understands, and processes code mixed queries is proposed. The entire work is divided into four modules. Initially, Language Identification module identifies language of each word of the code-mixed query which is followed by back transliterating Romanised kannada words in the query to its native script using transliteration module. The mixed script query resulted from previous module is fed to a translation model to obtain two monolingual queries of Kannada and English languages. Finally, monolingual search queries of Kannada and English languages are used to retrieve relevant documents for the input code mixed query.

Keywords- Kannada Language, Language identification, Transliteration.

Efficient FPGA Architecture Design and Analysis of LMS Adaptive Filter

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Abstract- Due to the explosive growth of multimedia applications, the demand for high performance and low power DSP is getting higher and higher. Most widely used fundamental device performed in DSP system is FIR Digital filters. During the past several years researches are done on design methods to reduce the complexity of the FIR filters. The easiest way of designing the FIR filter is by MAC structures than windowing method. MAC is an essential core which is used in every DSP. MAC is composed of an adder, multiplier and accumulator. Speed, area and performance are the major constraints of the MAC structures. In this paper, concentrating on different MAC structures like Vedic Multiplier based MAC, Modified Booth Multiplier based MAC, Distributed Arithmetic based MAC and Offset Binary based MAC. Proposed MAC unit is efficient in terms of speed and complexity. Comparing these methods and finding the better one in terms of area, delay, and clock speed, latency and throughput. The best method is applied to FIR filter and designs an efficient architecture in terms of area, delay, latency and throughput. Speed of convolution operation of FIR filter is improved using MAC architecture. The coding for architectures are done using Verilog and simulation, synthesis is performed in Xilinx 14.7 Integrated Simulation Environment version.

Improved Bit Swapping LFSR and Response Analyzer Model For Energy Efficient Bist Applications

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Abstract- Linear Feedback Shift Registers (LFSRs) have been employed as test pattern generator in BIST for decades; however an emerging problem with design constraints leads a lot of improvements in this field. This paper presents a switching activity optimized bit swapping LFSR method to generate test patterns for a given primitive polynomial LFSR TPG. Here test patterns generated from LFSR transform into multiple test patterns. And to accommodate extended output response analyzes during testing using modified Multiple Input Signature Register. In order to increase the fault coverage reconfigurable LFSR with improved reseeding is used in LFSR generation phase. In order to support wide range of CUTs length of TPG can be modified with parametric initialization. The BS-LFSR is combined with modified MISR that reduces the average and peak power (scan and capture) in the test cycle or response to a signature analyzer. These techniques have a substantial effect on overall testing peak-power reductions with improved fault coverage or testing time.

Keywords- Linear feedback shift register (LFSR), BIST, test pattern generator (TPG), MISR and fault coverage etc.

Comparative Investigation for the Optical and Molecular Properties of Various Lead Selenide Nanocrystalline Structures

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Abstract- Nanocrystalline structures of Lead Selenide in the form of pallet grown by precisely adjusted temperature with pressure and thin film grown by chemical bath deposition method are compared on the scale of their optical and molecular properties. The optical properties of Lead Selenide pallet and thin film have been studied by UV-VIS-NIR spectrophotometer. The molecular properties of Lead Selenide pallet and thin film have been studied by Fourier Transformed Infrared Spectroscopy (FTIR). Band gap of both the nanostructures evaluated by UV-VIS-NIR spectrophotometer analysis using Tauc's equation and Tauc's plot. The calculated optical band gap for Lead Selenide pallet form is 4.22 eV and Lead Selenide thin film is 3.53 eV. The FTIR analysis gives the molecular functional groups present in both the nanostructures. The FTIR analysis suggest the presence of bonded structure like alcohol and alkene in both the nanostructures.

Impact of ADR in Cyberspace: The Need to Adopt Global Alternative Dispute Resolution Mechanisms

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Abstract- This paper discusses the potential aspects and scope of alternative dispute resolution mechanisms for which will be further used for the resolution of Internet-related disputes and to furthermore to address the challenges of Massive Online Micro-Justice, i.e. an online justice system that aims at solving a massive amount of micro Internet-related disputes affecting citizens and companies alike around the globe that are presently submitted to online platforms and decided by them. Moreover, this paper discusses the challenges faced by various online platforms to deal with the myriad of micro cases they are confronted with on a daily basis by reference to the massive amount of removal requests which have been submitted to Google following the confirmation by the Court of Justice of the European Union of the Right to Be De-indexed. On this basis, this paper pleads for the development of global policies governing online alternative dispute resolution mechanisms which is critical to avoid fragmentation and which is necessary to maintain equitable access to justice in cyberspace. In this respect, this paper discusses the use of the Uniform Domain Name Dispute Resolution Policy (UDRP) as a possible source of guidance for such global dispute resolution mechanism.

Keywords- Alternative Dispute Resolution (ADR), Online Dispute Resolution (ODR), cyberlaw, right to be des-indexed, Uniform Domain Name Dispute Resolution Policy (UDRP)

Application of constructed wetland treatment system for waste water -A case study with feasible design.

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Abstract- Recycled water is a reliable source of water that must be taken into account in a formulation a sustainable water policy. Water reuse is increasingly being integrated in the planning and development of water resources. They help to increase water availability, prevent coastal pollution and enhance water resources and nature conservation policies. The waste water generated on daily basis can be recycle and reuse by the application of natural processes for its treatment. The constructed wetland involved into a reliable. sewage water treatment technology for various type of waste water. The water is pumped into the wetland cell where plants and microorganisms feed on it reducing pollutants & removing odorous gases, with only partial volume, loss through evaporation and transpiration it removing ammonia, phosphorus, nitrogen and many other substances from the water. The presence study aims to developed waste water treatment facility for boys hostel located in Nashik with the help of providing feasible design of constructed wetland. The outcomes of the design are helpful for the proper treatment of waste water by natural process.

Design, Analysis & Weight Optimization of Lift Panel Using Composite Materials

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Abstract- Conventional structures used in industrial fields are usually bulky and heavy. Due to weight factor the power consumed while its working is higher. So instead of using a homogenous metallic structure an alternative of composite sandwich structure can be used. Composite offers both good strength and low weight. So, as a combination it is comparable better than regular homogenous metallic structures. Major advantage of composite is better strength to weight ratio. This paper discusses the use of composite material in the core or cross section which is then sandwiched between steel panels so that an efficient structure can be prepared. This structure is analyzed in ANSYS for deformation and stresses. The structure is tested for compressive strength which is then compared to the conventional lift for strength and weight. Overall weight reduction of the lift and ultimately reduce the power consumption is the main purpose of this paper.

Keywords- Composite Material, Sandwich Structure, ANSYS, Weight Optimization

Fractional Order DC Link Voltage Control of DFIG based Wind Turbine using Teaching Learning based Optimization Algorithm

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Abstract- Control of non-linear system is always significant subject of investigation in many fields of engineering applications. The Fractional order control has been emerged as an effective modelling and control strategy for complex non-linear systems since last decade. Also, recently intelligent control strategies based on various AI techniques shown their efficiency in various fields such as process control, power system, renewable energy, etc. This paper proposes an optimal DC link voltage control scheme based on novel teaching learning based optimization (TLBO) assisted fractional order controller for efficient control of doubly fed induction machine based wind turbine (WT) system. In this work, TLBO is used to obtain the optimized values of tuning parameters of proposed fractional order proportional integral (FOPI) controller. The FOPI is considered to be more effective and improves the performance of DFIG-WT system. Simulation results of proposed TLBO based fractional order control are compared with GA and PSO tuned FOPI controller. The simulation results obtained are expedient that TLBO tuned FOPI is more prominent and effective in DC link voltage control.

Use of Plastic Waste for Flexible Pavement Road

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Abstract- Plastic is abundantly found everywhere due to its easy availability and low cost. The management of plastic waste disposal has become a significant and crucial issue around the world in recent years. In order to increase the mechanical stability of bituminous mix roads, technicians had to improve bituminous mix characteristics due to a scarcity of landfills and the growing cost of disposing of waste plastic materials. It has become necessary to use waste plastics in building activities to ensure their safe disposal. The polymer which is used in modification of bituminous mixes is Polyethylene Terephthalate (PET). This waste polymer modified bitumen mix has effective water binding properties. When this plastic is mixed with hot bitumen, it melts and forms an oily film over the bitumen, which is then put on the road surface like a regular tar road. This study summarizes the experimental efforts on use of polyethylene terephthalate (PET) in bituminous mix flexible pavements the adoption of this innovation is not only enhanced road construction but also increased road life, while also helping to improve the environment and providing a source of revenue.

Keywords- polymer modified bituminous mix, plastic waste, Polyethylene Terephthalate (PET).

Development of a Medical device for Telemedicine Applications

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Abstract- Telemedicine is a multi-disciplinary concept that encompasses various fields such as physiology, biomedical instrumentation, and telecommunications to provide medical assistance from a remote location. It is a delivery of services in healthcare, where distance is the main factor, by all healthcare experts employing information and communication technologies for the transmission of valid information for diagnosing, treating, and preventing disease and injuries. It is a productive solution for many limitations in health care services such as shortage of doctors, geographical distance to cover, and large population. In spite of a number of advantages, the practical phenomenon of telemedicine is so far not up to scratch due to the high cost of instruments used in telemedicine systems. In the measurement process of health parameters, sensors play a very important role in tracking the parameters accurately. The design system employs for monitoring the parameters of temperature, pulse rate, SpO₂, heart rate, respiration rate, systolic and diastolic blood pressure. The system provides access to the graphic video information of the patients from a remote location using IoT technology.

Numerical Investigation of Bio-Inspired Honeycomb Structure in Energy Absorption for Crashworthiness

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Abstract -To ensure safety during a collision, the impact energy must be orderly absorbed or completely dissipated. Biomimetics is centered on the idea that there is no model better than nature for developing something new, so here the structural integrity of honeycomb is encountered. In the same way in the field of crash safety in order to avoid or reduce frontal crash impacts, a crash absorbing element is essential such as crash box. In this research process a geometry of suitable cross section is designed in CATIA, then according to desired energy absorption, force, and displacement, the force-impact resistance simulation was done using ANSYS, and then a prototype of Aluminium honeycomb core was fabricated and tested for force acceptance on impact test under specific load. After that its SEA characteristics were studied accordingly the comparison between conventional and bio inspired energy absorber is done along with the validation of results.

Keywords- Crash safety, biomimetics, Aluminium Honeycomb, impact test, ANSYS, deformation, energy absorption.

Numerical Investigation on Structural Integrity of Electric Vehicle Batteries

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Abstract- We all use lithium-ion batteries in our day-to-day lives, most commonly for things like powering mobile phones and laptop computers, but in near future we are going to use them for a much greater range of different things. For example, we are already seeing Lithium-Ion Battery powered Electric Vehicle on the streets. However, as we move to more and more demanding applications, it's crucial that we understand how these batteries can operate safely. Quite a lot of heat is generated within these cells during failure and the failure could spread to neighbouring cells. We have to see how and when the failure begins in vehicle and what the consequences of that failure are. So, for this purpose a perfect and safe case for Lithium-ion cells has to be developed and analyse it under suitable conditions during vehicle crash. The case should have enough strength to withstand short circuit or fire during crash where it should not penetrate through cell case and damage or destroy the vehicle where it can also hurt or kill the occupant. The analysis of the case will be done virtually through software like ANSYS or LS-Dyna

Keywords- ANSYS, Electric Vehicle, Lithium-Ion, LS-Dyna

Hybrid Machine Learning Algorithm for Self-Compacting Concrete's Flexural Asset

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Abstract- The flexural strength of self-compacting concrete(SCC) is dependent of type, property and quantity of materials used for the mix. The relationship often requires the utilization of the intelligent algorithms. They are random forest and xgboost to derive a predictive model that fits into an experimental dataset. This paper attempts to address the 7 machine learning algorithms from python (logistic regression, Naive Bayes, K-nearest neighbors, support vector regression, decision tree, random forest, and xgboost)and taking best two algorithm to create a single coading and comparing the results. Total two hundred forty seven self-compacting concrete flexure strength mix design are collected on a dataset. containing cement, mineral admixture, fine aggregate, coarse aggregate, water/binder ratio, chemical admixture and fibers are used for train the algorithms. 80% of dataset was used for training and 20% of data are used for testing. As a result random forest and decision tree algorithm has high accuracy of 71.72% and 69.7% respectively. Whereas both algorithms have similar type of work procedure, so third higher accuracy algorithm xgboost of 56.57% are used. Further, these two algorithms are combined to form a single coading to achieve high accuracy. All the dataset's are used as training for new coading. As the result, the use of hybrid algorithm of random forest and xgboost algorithm improved the accuracy of the model with 80.8%. Aalso, these algorithms predicted a very good flexural strength values for different SCC mixes.

IoT Based Dynamic Operations to Automate the Machinery Tools for Agriculture

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Abstract—Climate change has had a negative impact on the performance of the huge percentage of India's crops over the past 20 years. Prior to harvest, crop yield predictions and fertilizer prediction would aid farmers and policymakers in deciding on the best course of action for marketing and storage. Before cultivating on an agricultural field, this project will help farmers determine the yield of their crop and will also suggest the right fertilizer for the crops, assisting them in making the right choices. It makes an attempt to solve the problem by creating a prototype of an interactive prediction system. The dataset is collected from the IOT sensors, data like soil moisture, temperature, humidity, soil type, NPK. The collected dataset is processed using data analytics technique. The cleaned and pre-processed data are trained on machine learning algorithms. The machine learning algorithm helps to analyse the crop yield for the next sowing and also suggest the fertilizer for the better yield. An easy-to-use web-based graphic user interface will be implemented in such a system as the farmer will be informed of the outcome of the prediction. As a result, there are numerous methods or algorithms for big data analysis in predict yield and fertilizer prediction, and with the aid of those algorithms, one can predict crop yield and suggest fertilizer using algorithms like the Random Forest algorithm(RF) and SVM.

Keywords- Agriculture, Machine learning, Crop Yield Prediction, Fertilizer Prediction

A Study of Risk Assessment and Prioritization in Public Cloud

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Abstract- Cloud computing is the delivery of hosted services, including software, hardware, and storage, over the Internet. Public cloud providers offer a wealth of telemetry across users, access controls, compute, storage, and other fully managed services. Despite this wealth of data, it is found that most successful cloud attacks are due to misconfiguration and mismanagement of cloud infrastructure. Cloud security solutions are generally deployed and used to help protect workloads running in both private clouds and across the major public cloud services from cloud computing companies. In a large cloud infrastructure, just detection and suggested remediation of risks is not enough. With hundreds of risks being detected each day, it is important for the user to know which risks to tackle first. Risk prioritization is the process of determining which risk you should act upon first. This should be based on the likelihood of a risk and the impact that it would make. In large cloud infrastructures with multiple users and cross accounts, a solution that just detects security risks is not enough. It is essential that the user knows which risks among the ones detected pose the largest danger to their business. This paper studies various risk assessment and techniques and compares them, focusing on the study of assessment in Amazon Web Services (AWS). It also details the issues faced in designing a generalized risk prioritization solution for all cloud service providers as well as infrastructures.

Performance Evaluation of Mini-Air Cooler Operating on Solar Energy

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Abstract- Science is basically “passive” observation of the universe, as it exists to generate knowledge. Engineering is making use of that knowledge to meet human needs by creating machine, systems, process and technologies that have not previously existed. Design and manufacturing are the synthetic part of engineering practice. Manufacturer has received a lot of attention recently for very good economic reasons.

The use of renewable energy resources is increasing rapidly. Following this trend, the implementation of large area solar arrays is to be considered. Due to energy drivers that include uncertainty in oil prices and environmental concerns, effective management of energy system is a priority. Energy policy can focus on three areas to improve energy system like renewable energy supply, efficiency improvement and demand reduction. The functionality of solar cooler is dissimilar as that of the traditional coolers. The solar energy is harvested and stored in a battery.

The battery is in turn connected to the solar cooler for the power sources. This is very innovative mechanical project on solar air cooling. Solar air conditioning has great potential. Sunlight is most plentiful in the summer when cooling loads are highest.

Design and development of portable bricks machine using natural leaves

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Abstract- To handling of natural leaves bricks making machine is depend upon various parameters such as a amount of leaves number of brief and requirement of quantities for brittle handling of this machine. We need to keep table in one position. Surface soil nutrients are declining as we are using chemical spraying fertilizers on crops and hence reducing soil requirement And if it continues like this, the soil will become barren. For that, we need to use organic fertilizers, ie natural bricks and organic fertilizers, instead of chemical fertilizers.

Effect of Ageing on Performance of Ice Plant Test Rig

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Abstract -Refrigeration is the process of maintaining a temperature of a system lower than the temperature of surrounding by continuous removal of heat. Its aim being to freeze ice, cool product and space to desired temperature. The basic of modern refrigeration is the ability of liquid to absorb enormous quantities of heat as they boil and evaporate. One of the most important applications of refrigeration is to produce ice for commercial application with minimum utilization of energy. Ice plant is used to produce ice from the potable water placed in standard cans in tank. It is used to produce the refrigeration effect. Ice plant is based on the simple refrigeration system which uses vapour compression refrigeration. The project aims to design experiment test set up for commercial as well as experimental purpose in Refrigeration and Air conditioning laboratories. The ice plant test rig is used to evaluate capacity of the ice plant, calculate coefficient of performance (COP) of the system, to reduce the refrigeration time and plot the system performance on P-H chart. The model is analysed for its cooling capacity assumed per unit mass flow rate of refrigerant. As per the study of research paper, physical and chemical properties of different refrigerants, we concluded that R134a is best suitable refrigerant for the proposed system. Brine is better suited as a secondary refrigerant for the requirements of the system due to its excellent properties over conventional secondary refrigerant.

Key Words: Refrigeration, Compression, refrigerant, Ice Plant, Evaporation, Coefficient of performance (COP)

Design and Modification of Banana Fiber Extraction Machine

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Abstract—The present report is aimed at to design and develop a modified machine to extract highquality natural fibers from the banana pseudo stem. Manual extraction of banana fiberproduces not only quality of fiber but also it much time consuming. Labor expense is quite high and output is quite low. Hence efficient extraction of banana fiber can only be possible through mechanization. Now-a-days machines exist for extracting for banana fiber but are manually operated and cannot be applied for higher production. The other main disadvantages of existing machines are impurities present in rolled fiber. It consumes time and the process is not safe. So it cannot be recommended for large scale production. So our aim is to develop modified machine suitable for mass production and which will yields good quality of fiber to increase the production rate and quality of fiber.

Index Terms—High quality, efficient, mass production, fibers.

Thermodynamic Simulations of Combined Power and Ejector Cooling System

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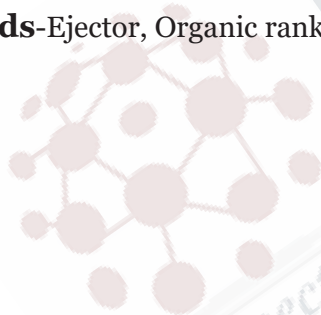
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Abstract- Combined power and cooling system are proposed for cogeneration, which integrates the ejector cooling cycle with the Rankine cycle. A low-temperature heat source such as industrial waste heat or solar energy can be used to drive the Rankine cycle. This system will provide electricity and a cooling effect simultaneously. A simulation was carried out to analyze the cycle performance using Water as the working fluid. Generating efficiency of 85.6%, and isentropic efficiency of 78.1%, can be obtained at a generating temperature of 473 K, 553 K, 593 K, 392 K, or 646 K. Simulation results show that the proposed cycle cannot use water as a working fluid So the organic fluids.

Keywords-Ejector, Organic rankine cycle, Refrigeration cycle, Zeotropic mixture



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Design and Development of Earth Analyzer

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Abstract— The estimation of crop based on the soil is essential nowadays for increasing the yield. In this paper, a soil-based crop selection and fertilizer management system has developed and a normalized approach to characterize the composition of bare soil, metalloids, and mesological parameters. From the statistical analysis, we collect the data for various soils and which crop is suitable for cultivation to produce maximum yield for a particular field. Various sensors, such as humidity sensor, temperature, and camera, are used to control and monitor the agriculture field. In this study, the area around Nashik, Maharashtra has been considered for the crop selection of that area. Irrigation is controlled by water level sensors, GSM, and a controller. An APP has developed to identify a suitable crop for the agriculture area, and it can easily install in the farmer's mobile phone itself. Simulation has done using Mat lab for four different crops. The results indicate that the proper utilization of fertilizers protects the agricultural field and increases productivity. An experimental setup is developed and tested under different test conditions.

Index Terms—Introduction, methodology, Process, Future Scope etc.

Review of Various Techniques of Optimization of Machining Parameter of Inconel-718 for Green Manufacturing

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Abstract- This paper presents the findings of review of various techniques of optimization of machining parameter of Inconel-718. It elaborates the findings of an experimental investigation into the effects of cutting speed, feed rate, depth of cut, nose radius and cutting environment of Inconel 718 material on CNC turning machine. The main objective of proposed work is to determine the influence of controllable parameters on machining characteristics of Inconel-718 and to achieve the optimum parameters for sustainable and efficient turning. Controllable cutting parameters such as cutting velocity, feed rate and depth of cut were selected at different level for experimentation and its green manufacturing. Extensive study is done on the resulting surface roughness, surface subsurface hardness, tool wear and chip morphology. The results obtained from each of the tool were thoroughly analysed and finally the optimized parameters are obtained for efficient machining of Inconel 718.

Key Words - Speed, Depth of cut, Inconel-718

Design & Fabrication of Silage Packaging Machine for Agricultural Application

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Abstract— Silage-making is a fermentation process aimed at preserving forage in its wet state away from air. One is seeking to lose minimum dry matter and nutritional value and to avoid creating products toxic to the animal. Good silage is light brown in color, has a sharp taste and little smell as its lactic acid content is right. It is very stable and can be kept for years if required. While we were thinking about how to alleviate the hardships of the farmers, with the intention of doing something new in agriculture, we came with idea that the dairy business associate with agriculture, and the fodder for the animals on which this dairy business operates. It takes efforts and a lot of man power. And to keep up with the current situation with modern technology, with started thinking of silage packing machine. We observed 2 – 3 machines in this regard. But considering the size and money of the machine, the machine was beyond the reach of small farmers. So started thinking how we can compact the size and reduce the cost of machine so any farmer can afford the machine. This machine develop by us will use for silage bag compaction application. By using this machine will reduce the man power, labour cost, effort & time for silage making

Index Terms—Introduction, methodology, Process, Future Scope etc.

Design and Implementation of Material Handling Trolley in Heat Treatment Section

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Abstract- Heat treatment in the industry is a special process. Earlier it was observed that, Material Handling was done in a Manual Manner by using a trolley operated by 2 Operators. The distance to be covered is around 60 cms to 75 cms. Considering various possible alternative mechanisms for Automation, like Hydraulic Piston and Cylinder Mechanism, Lead Screw Mechanism and Gear Train System and Rack and Pinion Mechanism. Considering the limitations in space and from the maintenance perspective, Rack and Pinion mechanism is selected. Plummer Blocks are also incorporated to provide the support to the shaft and to reduce the vibrations. The trolley weighs around 1000 kg (10000 N) with 4 containers of various cleansing fluids and dimensions 154 cms x 154 cms x 120 cms are selected. By using Rack and Pinion Mechanism, time required in travelling operation reduced by 30.19% per cycle. This indicates that the reduction in travel time increases the Production rate, Less chances of Accidents, Reduction in Operators Fatigue and the number of operators required also decreased.

Effect of Working Fluid & Pipe Material on Performance of Heat Pipe

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Abstract- The heat pipe is a passive device equipped for transfer high amounts of heating during generally small cross-sectional area, and with small temperature contrasts. It is a progressively viable device used to transmit heat. The principal of heat pipe is an empty chamber by cylinder or square loaded up with a vaporizable working fluid. Presently it is created to cryogenic, nano heat pipe. Heat pipe can be found in devices that we make use in wide range in heat transfer as cooling and heating, for example, PC device, sun power board and extra hardware, work and business that have a lot of heat transformations in this way, need cooling devices. Heat pipe system is also used for heat management. Manufacturing, processing plants, sun oriented heat and extra mechanical structures profit by this and spare a lot on vitality costs. Stores and more structures can have a great deal of vitality investment funds by decreasing cooling loads and expanding indoor regulator settings through heat pipe innovation. Heat pipe are even used to manufacture structures on permafrost and balance out the temperature to keep the permafrost from solution. This paper gives an exhaustive review of the condition of applications, materials and execution of current heat pipe devices.

Analysis and Design of Precast Rcc Box Structure by Pushing Method as per IRC And IRS codes in Different Traffic Conditions

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Abstract—This paper is related to the design of RCC box structure and its behaviour in different traffic conditions by considering combination of loads as per IRS and IRC codes. The analysis of the culvert is done by considering various possible load cases involving dead weight of concrete, super imposed dead load (SDL) and earth pressure by ultimate limit state and serviceability limit state. The loads are taken according to the IS Bridge Rules and the precast box is analyze for these loads utilizing STAAD Pro. The structural elements must be constructed to withstand the highest possible shear force and moment.

Keywords— Box culvert, Analysis and design of box structure, Railway Bridge

Use of Cold Formed Sections for Construction of School or Similar Structures in Inaccessible Terrain

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Abstract— In steel construction, cold formed steel and hot rolled steel are the two most common forms of structural steel that are employed. An inaccessible terrain is the area which is difficult to reach, in that condition the transportation of hot rolled steel sections is not possible because the hot rolled sections are heavy in weight hence, the cold formed sections are more suitable for the construction. The cold formed section is light in weight and have more capacity to resist the lateral load. Frames are the primary and purlins are the secondary members in the building built using cold-formed sections. Due to the thin in section, the buckling behavior of section occurred in the compression element, especially in flexure, hence it is able to resist greater bending moment. In this study, using IS801 equations, the gross sectional properties are calculated by conventional method and are compared with the staad.pro section wizard section properties. These section properties are used to develop the best frame configurations for the country's various wind zones. I have created and analyzed the model for the different wind zone in India using staad.pro software. The results obtained after this analysis will provide the best section configurations. The theoretical investigation is also been carried out of the section.

Keywords— cold-formed sections, hot-rolled sections, buckling behavior, inaccessible terrain, dynamic analysis, staad.pro.

Dynamic Analysis of High-Rise Structure Resting on Raft-Pile Foundation

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Abstract- A piled raft foundation emerging as most efficient and economical foundation. The pile-raft foundation is raft foundation supported with piles where load bearing capacity of both is taken into consideration while designing. In pile-raft analysis the behaviour of isolated footing, raft foundation and combination of pile-raft foundation is to be determined. This project comprises of G+22 storeys residential building located in Nanik's Luxuria Building, at Byramji Town Near Nelsion Mondela Square, Nagpur. Raft foundations is the favourite choice for most of the designers but now days due to constraints of cost increment, decreasing availability of land because of rapid industrialization & urbanization there is growth in vertical direction resulting in many high rise building coming up. This has resulted in heavy load, complicated stress conditions and limitation of bearing capacity of soil. This results in settlement of high rise buildings. As a solution to the settlement problem of high rise buildings number of piles are used and new type of foundation called as combined piled raft foundation is coming up in a big way. Combined piled raft foundation is an efficient foundation for medium rise buildings in which the superimposed load is transferred to the soil by the combined action of pile and raft and facilitates settlement reduction. Raft and pile are combined in a view to reduce the overall settlement of the structure. The aim of this project was to reduce the Settlement and Soil bearing pressure within the permissible limit.

Keywords- Pile, Raft, Pile Raft, foundation

Study of Mahout Machine Learning Component in Hadoop Ecosystem

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Abstract- In today's digital era, where every other work is being shifted to digital platform, there has been a tremendous explosion of data that is being generated online. This abundance in data comes from different social media platforms like facebook, twitter, youtube, etc. that experiences a massive increase in their data repository every single day. Such a fast growing voluminous data is called as big data. The way of handling Big data is different than the way followed for handling small scale data. The various components of hadoop ecosystem are used for the efficient management and processing of big data. If processed properly using the appropriate machine learning techniques, large amount of useful insights can be obtained from the big data. These insights can assist the stakeholders to take effective decisions that can boost the company's performance in the long run and at the same time it will provide them with an extra edge over their competitors. Various machine learning techniques and corresponding algorithms are available these days for performing data analytics. Apache Mahout is one such machine learning tool that comes as a part of Hadoop Ecosystem which provides users with a collection of different machine learning algorithms that can be used to perform big data analytics. This study presents an analysis of the features of the Mahout framework of Hadoop. Also it provides an overview of different case studies where the machine learning techniques of mahout framework have been applied for analysing big data generated from various social media platforms, and sectors like finance and education, etc. The report also mentions in brief the alternate machine learning libraries available for use.

Keywords- Big Data, Hadoop, Machine Learning, Mahout, Data Analytics.

A Review on Machining of Polymer Composite Reinforced with Natural Fiber

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Abstract— Natural-fibre-reinforced polymer (NFRP) composites are becoming a viable alternative to synthetic fiber based composites in many industrial applications. Machining is often necessary to facilitate assembly of parts in a final product, the application of natural fibre reinforced polymer composites and natural-based resins for replacing existing synthetic polymer or glass fibre reinforced materials in huge. Automotive and aircrafts industries have been actively developing different kinds of natural fiber, mainly on hemp, flax and sisal and bio resins systems for their interior components. High specific properties with lower prices of natural fiber composites are making it attractive for various applications. This paper reviews some of the recent work on machining of natural fibre reinforced polymer composite.

Keywords— Composite materials, NFRPs, NFRCs Machining

Eliminating the dependency on ground water by switching from intermittent water supply to continuous water supply in Pan city Chandigarh - A case study

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Abstract -In the early 50's when the city of Chandigarh was developed, the population of the city was sparse and the yield of tube wells was sufficient to meet the water supply demand of the city. As such, the water supply of the town was based on ground water sources. Over the passage of time, the population manifolds of the city have increased considerably. The usage of surface water was added later in the year 1983 but the water table in Chandigarh city has been found depleting like many states of India. In this scenario, if city of Chandigarh having one million population is provided with continuous water supply this might appear that addition of continuous water supply will worsen the water balance, but the situation is different from hypothetical hypothesis. On the contrary, introduction of continuous water supply using surface water alone could result not only in the saving of ground water levels for the coming years but also in the overall consumption of water. The society as a whole would benefit from the project as reduction in water borne diseases, emission level reduction of Green House Gases and lesser stress of storing water. The case study presents data of water tables collected from the authentic sources, ground visits, comparison of generation and usage of ground water sources. The case study is an attempt to detail out the methods to reduce dependencies on ground water and adopt continuous water supply scheme while strictly maintaining the norms set by regulatory agencies of India (CPHEEO) i.e. 150 Litres per Capita per Day.

EEG Emotion Recognition using Different Feature Extraction Techniques

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Abstract- Researchers from the fields of engineering, psychology, and neuroscience are collaborating to create a low-cost and simple gadget with the goal of better understanding emotions. In addition, researchers in the field of affective computing are working to develop machines that can identify, interpret, and process human emotions. Therefore, developing new methods to inductively assess grievance, stress, and feelings through natural interaction and conversation, or making emotionally intelligent computers that reduce negative feelings, can be a desirable research direction in emotion recognition and regulation. In continuation with this work, we are working with EEG signals. Different features like PSD, DE, DASM, RASM, and DCAU are extracted from preprocessed data. These features and a combination of them are then given to a 1D convolution neural network (CNN) to recognize emotions. The 1DCNN is used because they work well on fewer data, and we can train them with standard computers. We have achieved the highest accuracy of 99% with DE+DASM features, which shows that the asymmetry measure of the brain is important in emotion recognition. Also, our work is helping to build a low-cost diagnosis system, which is useful to society.

Multiclass Motor Imagery Classification using conventional neural networks and common spatial pattern Features

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Abstract- Motor imagery (MI) is a tool that the brain-computer interface (BCI) uses to enable impaired people to control various external equipments. The research suggests a four-class Motor Imagery (MI) classification approach that distinguishes between the tongue, left hand, right hand, and foot movements utilizing common spatial pattern (CSP) and conventional neural network (CNN). The common spatial pattern (CSP) generates optimal variance by projecting EEG signal data into different time-space. The proposed conventional neural network (CNN) model is trained using the variance features obtained from the common spatial pattern (CSP). It provides a validation accuracy of 88.49% on the BCI IV 2a dataset, outperforming EEGNet, C2CM, MB3DCNN, SS-MEMDBF, and FBCSP. The testing results show (0.8666) kappa value for subject-dependent classification. The results indicate that the proposed method may become an outstanding alternative for multi-class Motor Imagery (MI) categorization.

Analysis of COVID-19 Lung Computed Tomography Scan Images using Segmentation

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Abstract- In December 2019, a coronavirus (COVID-19) originating in China spread all over the world. The World Health Organization reported that there are around 199 million positive COVID-19 cases and 3.4 million deaths logged globally. However, for laboratory diagnosis of COVID-19, the real-time reverse transcription polymerase chain reaction (RT-PCR) testing technique is used, but it has more false positive cases. Another diagnosis method for COVID-19 is imaging techniques such as X-rays and CT scans. Detecting COVID-19 via X-ray is a difficult undertaking. Identifying COVID-19 positive cases using computer tomography (CT) scan images is the latest modality for medical diagnosis, but it is demanding and subject to human errors, which are made by clinicians. Hence, the CT scan images are first preprocessed, and then the particular region of the preprocessed images is segmented using a segmentation process to identify a infected region in the CT scan Lung images and also assesses the performance metrics such as mean, standard deviation, skewness, kurtosis.

Keywords— COVID-19, Computer Tomography, Segmentation, Convolutional Neural Network, Classification, X-ray, Reverse Transcription Polymerase Chain Reaction, Sensitivity, Specificity, Accuracy

Transit Supportiveness of Land Use along MRTS in Faridabad City, India

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Abstract-Urban transport is one of the most significant components shaping urban development and living. An important challenge for urban planning is to prepare a city development plan based on the principle of mix land use and pedestrian walkability. MRTS projects are highly investment demanding and require long term funding for sustainability. The study of integration of land use along with the transit system is needed to support the MRTS projects. Transit supportive land use analysis make possible in changing the land use of transit station for future development. In this study the transit supportiveness of land use are evaluated along MRTS stations areas with 'Contributory Rule' as defined by Chrisman. The land uses of the study area are considered on the basis of Faridabad development plan 2011 and as per actual sites/projects. An area of 800 metre radius along MRTS station area, which represents a comfortable ten minute walking distance, is considered for analysis of existing conditions of the land use.

Keywords-Transit Supportive land use; Urban land policy, Development plan, TOD zone and walkability.

Comprehensive Review on Recognizing the Effects of Extreme Heat on Poultry Birds in Tropical Environments

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Abstract— Excessive heat is one of the most significant ecological issues that poultry producers globally must deal with. Heat stress has a variety of negative consequences for poultry birds laying hens, consist of decreased reproductive performance, slower growth, and lowered egg quality. Poultry and egg quality and safety Moreover, Poultry suffers harm as a result of heat stress. Recently, there has been an increase in public awareness and concern about welfare. Furthermore, heat stress's harmful impact on poultry health have garnered considerable attention and concern recently. Heat stress's impact on poultry productivity and immunological response has been thoroughly researched. However, we know relatively little about the underlying mechanisms that cause the claimed effects, regarding poultry behaviour and welfare when exposed to extreme heat. Heat stress causes birds to death, resulting in lower productivity and a worse return on investment. Many studies have been published that have focused on intervention measures to deal with heat stress. Heat stress affects chicken behaviour, welfare, and immunity, as well as egg production, resulting in significant financial losses for the farmer. Some of the management measures used to decrease the harmful impacts of excessive heat in poultry production include ventilation, bird density, dietary manipulation, and mineral and electrolyte supplementation. For efficient poultry production and welfare, environmental variance must be controlled.

Index Terms— Humidity, Poultry Bird, chicken, Heat Stress

Blockchain based False Information Detection using Majority Voting

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Abstract- Recently, the detection of false information on social media is becoming an evolving research that draws enormous attention. False information is deliberately written to mislead readers to think fake data, making it hard and nontrivial to identify news content-based data; therefore, to assist create a determination; we need to include additional data, such as social media user commitments. Exploiting this additional information is complicated in and of itself as the social commitments of users with fake news generate data that is large, noisy, incomplete and unstructured. False information has been around for centuries and detecting press-rich fake news has been a common subject in the research community with the emergence of social networks and modern-day journalism at its peak. Given the difficulties of identifying fake news research issue, researchers around the world are attempting to comprehend the fundamental features of the problem statement. Blockchain based false information detection using Majority voting can better handle this problem. Our aim is to use various machine learning algorithm for false information detection in blockchain framework and based on majority voting final prediction about the information should be given. As blockchain is immutable, the information in the blockchain is protected, it is almost impossible to alter the information in the blockchain.

Index Terms— False Information, Machine Learning, Block Chain, HMAC, SHA256.

Design and Analysis of Trailing Arm of Bajaj Auto-Rickshaw

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Abstract: An auto rickshaw is a three wheeled motor vehicle with one front steering wheel. Due to their inexpensive pricing, low operating expenses, and maintenance requirements, auto rickshaws are most frequently encountered in developing nations. Because the rear suspension of three-wheeler vehicle rickshaws offers a simple structure, the trailing arm mechanical system is frequently employed. The trailing arm is a crucial part of the suspension system since the suspensions regulate how the wheels move, keeping the car on the road. The most effective method for calculating a structure's strength under known boundary and load conditions is finite element analysis (FEA). The optimization is carried out using FEA methodology. 3D model of a trailing arm is drawn in SOLIDWORKS, and ANSYS is used for numerical solutions. Finally, ANSYS results are validated through experimental results.

Keywords: Trailing arm; Optimization; FEA; ANSYS

Smart Home Automation Using Adaptive Mape-K Loop: An Example

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Abstract- Designing a system which works in dynamic operating conditions where the change is continuous and uncertain is difficult. the complexities of a self-adaptive software system can be realised by the MAPE-K feedback loop (monitor, analyse, plan execute -knowledge). A lot of research is being put into the realisation of IoT in various smart systems and yet there a much difference between the real-time application and where the research stands. Though the information about the self-adaptive mechanisms is limited, this paper discusses the MAPE-K feedback loop in a smart home automation system in brief. An example of how this can be achieved is also explained for a better understanding of the MAPE-K loop.

Index terms- MAPE-K feedback loop, Adaptive control, Smart home, IoT.



Video Analysis for Weapon Detection and Alerting

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Abstract— The crime rate across the globe has increased mainly because of the frequent use of hand held weapons during violent activity. Law-and-order situation must be in control for a country to progress. Whether we want to attract investors for investment or to generate revenue with the tourism industry, all these needs is a peaceful and safe environment. So the early detection of potentially violent situations is of paramount importance for citizens security. So we aim to develop a smart surveillance security system detecting weapons specifically guns and knives so that we can alert people. We will connect a buzzer to our application in order to produce the sound .The methodology would be like, it takes video input through the web cam or CCTV and checks if there is a weapon. if there is a weapon it will find the type of weapon and alerts people around.

Development of Generic Framework for Payment Gateway related to Consumer Applications

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Abstract- Consumer Applications or E-commerce websites uses payment methods for the transaction, where users complete their payment using various methods like card payment, internet banking, unified payments interface (UPI) or cash payment. Many a times while transacting the process and payment fails due to various reasons as wrong One Time Password (OTP), UPI pin, passwords or Card Verification Value (CVV). This payment failure may happen due to misreading or sometimes when someone unauthorized person tries to access the personal accounts and enters wrong details. Many organizations creates and work on their dashboard to analyze their product, sell/consumption and other factors of their web-app or business. This project mainly focuses on the creation of dashboard to analyze fraud detection and prediction using machine learning algorithm and neural network respectively. The main objective to build is to analyze frauds happening in consumer application related to payment gateways along with future predictions related to frauds and some key performance indicators (KPI). The methodology used in the fraud detection is KNN classification algorithm which classifies if the payment is a fraud payment or the authentic payment. Along with this future trends of fraud was also predicted using LSTM neural network where a data generated from KPI and fraud detection was passed through it. The input data dataset have various number of defined classes in it, so that the detection and prediction of fraud will be easier along with the KPIs like return of investment, cart abandonment rate and payment conversion rate. The model detects the frauds in payment with 97% accuracy. The dataset used was custom and was used for testing and training purpose.

Key Terms—KNN, LSTM, KPI, Cart abandonment, payment conversion, return of investment, Fraud detection.

Industry Perspective on Engineering Campus Recruitment Process

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Abstract- To recruit the brightest students and researchers, educational institutions must have a strong business presence. In India, software services businesses are the most active recruiters. A good reputation on university campuses is crucial for companies wanting to hire talented staff. Students who do not study in computer science or information systems are more likely to pick a job based on their brand image. This study seeks to understand the industry's perspective on engineering college recruitment. To achieve this goal, researchers studied the future of campus placements in India and analysis of Indian campus recruitment parameters. This study used qualitative data presentation based on grounded theory. This study involved interviewing IT industry contacts who make recruiting decisions for engineering graduates via campus recruitment.

Keywords- Campus, Recruitment, Students, Placement, Industry



connecting engineers...developing research

Design & Development of Fatigue Testing Machine

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Abstract- Many engineering machines and mechanical components are subjected to fluctuating stresses, taking place at relatively high frequencies and under these conditions' failure is found to occur. This is called fatigue failure. And this led to the invention of a fatigue testing machine. In view of effective design that will not fail accidentally, this research is conceived. This testing machine will determine the strength of materials under the action of fatigue load. Specimens are subjected to repeated varying forces or fluctuating loading of specific magnitude while the no. of cycles are counted till the breakage of specimen and results are plotted.

Keywords- Fatigue Failure, Fatigue Stress, S-N Curve, Endurance Limit, Fatigue Testing, fatigue load

Optimization of Total Cycle Time of Tempering Process

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Abstract-Supply chain researchers are confronted with a dizzying array of research questions, many of which are not mutually independent. This research was motivated by the need to map the landscape of research themes, identify the potential overlapping areas and interactions, and provide guidelines on the areas of focus for researchers to pursue. Potential interaction and the areas of overlaps were identified, classified, and integrated into the compelling sets of ideas for the future research in the field of SCM we believe these ideas provide a forward-looking view on those things that will become important as well as those that researchers believe should be focused on. This paper is a review of optimization studies of total cycle time in internal supply chain management. After a lot of literature survey, we find that the problem is total cycle time we should focus mainly focus on the total cycle time shorter total cycle time is desirable. lead times is the amount of time required for a product or time spent producing or manufacturing a product from raw material to finished product. as the total cycle time limit the supply chain response to the changing demand, variabilities, and uncertainties. The balanced scorecard is used for performance measurement and also as a reference for the internal business processes. AHP Analytical hierarchy method is used for the decision-making of cycle time. two industry case studies as been done wherein one we find the problem and assist the alternative to furnace tempering as induction and applied the methods and result were outstanding.

Keywords- Supply chain management, Internal supply chain, Balanced Scorecard, Analytical Hierarchy process, total cycle time, Induction Tempering.

Review of Eco-Friendly Cleaning Machine

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Abstract- In order to address this problem, we have designed, fabricated and tested a 'Mechanically Operated Road Sweeper' proto type that is financially viable and socio-economically beneficial. This machine works on simple principle of centrifugal motion of cylindrical brush throwing dust particles from road surface in the container, use local material sand is cheap with respect to other machine sand is efficient as well. This can be used in the side area of roads where dust has been piled up in maximal amount. We have performed detailed mathematical calculation and analysis for design specification of each and every part of the machine components and made a prototype design in Solidworks. Then after we successfully fabricated using conventional fabrication tools and tested its performance.

Key Words- Mechanically Operated Road Sweeper, Socio-economically

Hybrid Electricity Generation on Highway

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Abstract: Energy development is the field of activities focused on obtaining sources of energy from natural resources. These activities include production of conventional, alternative and renewable sources of energy, and for the recovery and reuse of energy that would otherwise be wasted. Energy conservation and efficiency measures reduce the demand for energy development, and can have benefits to society with improvements to environmental issues.

Societies use energy for transportation, manufacturing, illumination, heating and air conditioning, and communication, for industrial, commercial, and domestic purposes. Energy resources may be classified as primary resources, where the resource can be used in substantially its original form, or as secondary resources, where the energy source must be converted into a more conveniently usable form. Non- renewable resources are significantly depleted by human use, whereas renewable resources are produced by ongoing processes that can sustain indefinite human exploitation.

Comparative Study of Design of Water Tank Using IS3370:2009 and IS3370:2021

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Abstract: Water storage structure is an important structure in every part of the world to fulfill the growing need of a population. In India, for designing such structures with adequate safety and workability, Indian standards (IS) 3370:2009 were used till now. Recently bureau of Indian standards introduced a newly revised code for Concrete Structures for Retaining Aqueous Liquids i.e., IS3370:2021. In this code, as per the new edition guidelines, a completely limit state method is adopted and, in this method, significant changes have been made such as an increase in minimum reinforcement criteria, detailed spacing criteria, newly addition of water tightness classes, further reduction in crack-width limitation, etc., In this study, an elevated RCC circular water tank is designed using IS3370:2021 as well as IS3370:2009 and it further elaborates comparative design analysis which has been performed. Because of this recent upgrade in Indian standards, there has been no study available to understand the difference in the design with respect to 2009 and 2021 codes. This study helps to understand the implications of new design clauses and its effects on the economy and various structural implication occurred due to the new design methodology.

Keywords: Crack width, RCC, limit state method, Water tightness, IS3370:2021, IS3370:2009, Retaining Aqueous liquid

RSVP protocol in Internet of Multimedia Things

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Abstract- When it comes to the actual world, networks are shared by millions of people and have a limited amount of bandwidth, as well as unpredictability when it comes to their availability. Protocols like Resource Reservation Protocol (RSVP) are used to govern the quality of service (QoS) that Internet applications may get for their data flows. The ability to detect that various apps have varying network performance needs is a key feature. In this work, a simulation of a multicast session contrasts the ARRP and RSVP time delays in detail.



Design and Fabrication of Coin Operated Portable Mask Vending Machine

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Abstract- Mask has become the most commercial products in current Covid Situation. The stress on the multiple Mask resources is a result of many factors. On the one hand, the rapidly rising covid and changing lifestyles have increased the need for new Mask. If opportunity costs were taken into account, it would be clear that in most rural areas, households are paying far more for Mask than the often - normal rates charged in urban areas. Also, if this cost of fetching Mask which is almost equivalent. Now a day's vending machines are available and operated on only one coin but our aim is to design Mask vending machine which is operated on different coins.. Mask has become the most commercial products of the Current pandemic. To avoid these problems, this project titled "Design and fabrication of coin operated portable mask vending machine" is proposed to deliver the mask to the public by using the sensors and microcontrollers based on the Mechatronics principles. It will be more cheap and economic for the bulk production. Due to COVID-19, there are some set of rules to be followed in this pandemic situation. Usage of face mask or coverings is one of the preventive measures suggested to further avoid the spread of virus. The mask vending machine provides access of mask to places that are inaccessible because of various factors, particularly in remote areas. Also, the time spent for going for a hospital and drug store can be avoided.

Keywords: Vending Machine, Mask, Coin, Covid-19

A Novel Odd-Even Configuration for Mitigating the Impact of Partial Shading on PV Generation

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Abstract: Researchers have looked at a variety of PV system facets in this context of partial shading throughout the years. It involves investigating methods for tracking maximum power points (MPPT), methods for tracking global peak power points under partially shadowed situations, reconfiguration, array topologies, distributed maximum power point tracking methods (DMPPT), etc. Multiple Maximum Power Points (MPPs) are produced by PSC, which lowers a PV array's maximum power. To reduce the impacts of PSC for diagonally advancing shading a unique PV array design called the Odd Even Configuration (OEC) has been developed, and performance study has been done. Comparisons between the performance of the proposed OEC and some of the existing configurations like, SP-TCT, TCT and BL-TCT have been made in this paper. The MATLAB/Simulink environment is used to model all of the PV array layouts under consideration. With the least amount of power loss and enhanced performance, the suggested OEC design is determined to be superior to other configurations for all PSCs taken into consideration.

Index terms: Odd even Configuration (OEC), Series Parallel (SP), Total-Cross Tied (TCT), SP-TCT, BL-TCT.

Sequence Alignment based Generation of Regular Expression by Bottom-up Approach

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Abstract: A regular expression is a sequence of characters describing a pattern of text. It is a standard technique supported by most programming languages. Many prior natural language processing (NLP) studies in the clinical domain have used regular expressions in designing their NLP solutions. These regular expressions are typically created by software developers working with domain experts. Since there is no standard way to generate or test regular expressions, their maintenance and extension is a challenge.

Given the wide use of regular expressions, computer algorithms have been developed to automatically discover them from training text samples. A key challenge in learning regular expressions is the huge search space of candidates since each text string may be matched by numerous expressions. To reduce the search space and select the valid expressions, two main learning approaches have been employed. The top-down approach often starts with domain experts supplying seed patterns; they are then transformed or modified until satisfying predefined evaluation metrics have been achieved. This paper presents method for creating regular expression from free text using sequence alignment algorithms.

Keywords: Sequence generation, sentence alignment, key extraction, regular expression

Analysis of IR drop ,Signal Electromigration ,And Self-Heating Effect Using Flat and Hierarchical Method in FinFET Technology

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Abstract—VLSI industry has been rapidly growing where multiple processors can be implemented on a single chip. In physical design of a chip main factors to be considered are timing closure, congestion, and power. Compare to 180nm and 90nm designs were not much complicated due to less transistor density as going to lower technology nodes chip size, area, length will decrease that impact on packaging and cooling issues, so it is necessary to estimate the power at the early stage of design. Power analysis is done immediately after placement and routing stage of the chip. Power analysis can be performed in two methods one is flat method and other is hierarchical method. In flat method of analysis, the data of both top level and block level is given as input data to calculate the results whereas in hierarchical method of analysis the Power Grid View (PGV) of hierarchical block is designed which is then given as input. In hierarchical runs the sub-blocks are black boxed. The simulation is carried out using the Voltus IC Integrity Solution tool from cadence for a chip designed in 16nm FinFET technology. The results obtained from the flat method of analysis takes 2X the runtime compared to hierarchical method which would be unfavorable for very much larger circuits. The IR drop in VDD and VSS are 11.69 mW and 11.02mW respectively in flat method and 12.32 mW and 13.26 mW for VDD and VSS in hierarchical method of analysis. The accuracy is more obtained in flat run due to its transparency in logic functions.

Keywords—Fin-type Field Effect Transistors (FinFET), Signal electromigration (SEM), Self-Heating effect (SHE)

A Comparative Study of Different Models of CNN Like VGG16, Inception v3 And Xception for Plant Disease Prediction

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Abstract—In the area of image identification today, deep learning algorithms have emerged as efficient tools. One of the deep learning technologies, convolution neural networks, achieved notable results in this domain. Convolution Neural Network's success in image identification has inspired researchers to expand their use of the technology in agriculture, where it can be used to identify varieties of plants, detect pathogens, monitor the health of plants, and much more. A comparative study of three CNN pre-trained models is presented in this paper, namely VGG16, Inception v3, and Xception. Studying this CNN model, help us to understand how they extract the fine-grained picture characteristics from a single input, and shows how to prevent overfitting and greatly improve the deep learning capabilities. The inception model will execute numerous transformations that will be applied to the same input and the results will be combined into one result. As part of the Xception architecture, deep separable convolutional layers are first stacked and residual connections are used to complete the spatial mapping before 1x1 channel correlations. Using VGG, the decision function is made nonlinear without changing the receptive fields. Based on the results analysis, the hybrid model acquires a greater accuracy of 85%. So this can be used in various application like monitoring distracted driver, plant disease prediction, weed detection and many more.

Index Terms—Deep Learning, Inception V3, Vgg16, Xception

Review of Intelligent and Adaptive Instructional Content Creation Techniques

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Abstract: The purpose of this research is to identify existing intelligent learning content production methodologies utilized in learning systems, as well as to assess the material's level of adaptability to the system. In order for the system to be intelligent, instructional features of content had to be observed. Today, artificial intelligence in e-learning is a developing field of study. It addresses the learner's problem and seeks to customize and enhance the learning experience. A lot of research is in progress to find a comprehensive approach for adaptive and intelligent content generation systems that can give effective learning to a large number of real-life learners. This paper gives a quick review of current instructional content creation techniques.

Keywords: Intelligent content creation, Adaptive Learning systems, AI for content creation

Deep CNN using Backpropagation with RELU function

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Abstract- Pattern recognition applications, especially handwritten character recognition, is one of the most widely used applications of Backpropagation Neural Networks (BPNN). Character recognition field is a champion among the most significant territories in the field of pattern recognition. Many works are going on in this field. By using the binarization and various pre-processing technique it can improve the quality of manuscripts or handwritten papers collected and can make these scripts clearer. So that it will be easier for recognition steps. Machine learning systems provide machine recognition ability just like human beings. Deep CNN with backpropagation models are used for classification of character images and by using 3 different models with Rule Activation Function (ReLU). This is a significant stage as it's successful working improves the recognition rate and lessens the misclassification in accomplishing great execution of hand-written materials. The simulation shows that Model 1 achieved accuracy up to 87.6% on unseen data while Model 2 achieved an accuracy of 81.60% and 3% accuracy, respectively. Similarly, loss (cross-entropy) was the lowest for Model 1 with 0.15 and 3.17 for training and testing, followed by Model 2 with 0.7 and 4.2 for training and testing, while Model 3 was the last with loss values of 6.4 and 3.69.

Design and simulation of NanoMOSFET

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Abstract- Carbon Nano Tube consists of multi shells, one inside another, contributes good conductance compared to that of the Single-walled.

Depending on way that they are rolled up, each shell can have a distinct chirality, and multiwalled shells are always metallic. Due to the intricacy of their construction and characterisation, modelling and electrical analysis of Multi-shell Carbon Nano Tube based devices are seldom addressed. In this paper, Carbon Nano Tube Field Effect Transistor of Multi-shells is analytically modelled and simulated to study its electric performance characteristics. Various device parameters viz., gate dielectric (k_1), gate distance from the channel (h), number of channels(N), gate length(L_g) are varied, plotted and the corresponding capacitance responses are studied.

Keywords-multi-walled Carbon nano tube, dielectric strength, gate length, number of channels, drive capacitance.

Finite Element Analysis of Stainless Steel and Titanium Femur Implant for Total Femur Replacement

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Abstract— Finite element analysis (FEA) examines the mechanical behavior of human organs such as bones under static and dynamic stress conditions. Determination of the mechanical behavior of human body parts for injuries and fractures in the medical field. There are many useful applications in the field of science. It is a computer-aided numerical analysis that can be used for structural analysis of complex and heterogeneous geometrical properties of materials. The objective of this study is to reduce the cost of bone replacement along with reusable bone implants and also to increase the strength and rigidity, similar to natural bone. Permanently secures implants and bypasses the need for replacement. The use of metal in fracture immobilization demonstrates the great success of its high hardness, strength, biological resistance, and multi-year functionality. The most notable materials are stainless steel and commercial titanium with new titanium alloy formations. Despite many differences between stainless steel and titanium, the two materials provide relatively predictable clinical outcomes and also exhibit characteristic differences in implant characteristics and biological response. However, responses are similar in meeting the most important biological and biomechanical responses that are required. Whereas Ti-6Al-4V shows stresses and strains similar to bone material and SS316L's stresses and strains are much less than bone at the tested loads ranging from 490, 540, 590, 640, 687 N.

Index Terms— Boundary conditions, Finite element analysis, Implant, Stress, Strain.

SOP for identification of weak students and remedial action to be taken

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Abstract- The students who get admission for professional courses come from varied backgrounds and previous knowledge/ skillsets. There are ample of chances that they may struggle in the beginning of the course to understand the subjects. Prime concerns for any teacher in teaching learning process, while teaching a subject in a class are response from students, syllabus completion, maintain interest/ understanding level, timely submission of assignment from students. Irrespective of any situation, a teacher is supposed to cover slow, moderate and quick learners which is a big challenge in reality. To find a slow learner or a weak student in a class is really difficult not only for a teacher but to parents, also. This is because slow learners are similar in their response, appearance and reactions as the quick learners. The irony is that the behavior of slow learners can be exactly opposite outside the classroom from the one that is inside the class.

A slow learner basically has an urge to learn but can not cope up with the teaching learning process in the initial phase (first few semesters) because of some problem and then later on this gap between what is going on in class and what is understood slowly goes on widening. The piling up of the things then makes it real difficult for the student to catch up with the syllabus that is going on in class.

Compressive behavior & Microstructure properties of Sea Water Sea Sand Concrete

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Abstract—Concrete is one of the most often used building materials because it has a high compressive strength, which gives a structure durability and stability. One of the essential components that aids in filling the gaps in concrete is river sand. Today's fast urbanisation has increased the demand for construction materials, causing a shortage of these resources. Due to the ongoing increase in demand, the availability of fresh water and river sand has come under scrutiny. There is ongoing research and development being done to produce substitutes for these materials. On the other hand, coastal areas have a large presence of sea sand and sea water. According to recent studies, these materials can be utilised in place of fresh water and river sand. Additionally, it has been necessary in recent years to build structures that will likely be exposed to or placed immediately in seawater. In these situations, it is crucial to comprehend how concrete reacts to sea sand and water. The impact of sea sand on concrete cured with salt water as opposed to fresh water has been the subject of numerous investigations. Studies have also demonstrated good outcomes when concrete is mixed with sea water. In this invention, research has been done to determine the impact of various admixtures on concrete casted and cured with various admixtures.using Scanning Electron MicroscopicAnalysis.

Keywords —Fly-Ash, GGBS, Sea-Sand, SEM

The effect of Tb doping on the structural and magnetic properties of ZnO nanoparticles

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Abstract- Introducing rare earth ions in the host semiconductor oxide crystal at nanoscale affects the luminescence as well as the structural properties of semiconductor host crystal due to the interaction between these dopant ions and host crystal. A systematic structural studies on Tb³⁺ ion doped ZnO nanoparticles were carried out using X-ray diffraction, X-ray photoelectron spectroscopy and photoluminescence studies. These experiments were performed to study the defects induced in the ZnO host lattice when rare earth ion of ionic radii more than that of Zn ion is doped in the ZnO nanoparticles. The dislocation densities and the surface area calculation from the XRD profile show an increase up to a certain concentration of Tb, which reveals the increase in the surface defects when Tb is incorporated in ZnO host lattice. The strain calculated using Uniform deformation model UDM from the XRD data also show an increase in the stress with the increase in Tb doping concentration which reveals the deformation of the host lattice. Photoluminescence spectra reveal that the doping Tb in ZnO changes crystallographic structure generating oxygen vacancies and surface groups that enhances the non-radiative transition. Three emission peaks located around 423, 485 and 515 nm has also been observed that confirms the presence of Tb³⁺ ions in ZnO nanoparticles. Pure ZnO nanoparticles show diamagnetic character, however, Tb-doped ZnO nanoparticles exhibit room temperature ferromagnetism. The correlation between defects generated upon Tb-doping to the observed ferromagnetism, in the synthesized nanoparticles, has been reported.

Keyword: ZnO, dislocation density, UDM mode, Magnetism

Crop Yield Prediction using Remote Sensing Data

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Abstract- Crop yield prediction is the creative work of forecasting crop yield before harvesting. Crop yield prediction will be very helpful for the government in making timely market prices, food policies, import and export policies, and proper warehousing. Crop losses caused by natural disasters such as droughts and floods can be minimized, and food aid assistance could be planned. In order to predict crop yield, we compute the Normalized Difference Vegetation Index (NDVI), the Enhanced Vegetation Index (EVI) and the Soil Adjusted Vegetation Index (SAVI) from remote sensing data. This paper compares various techniques like LSTM, Random Forest and XGBoost Regression in an attempt to improve yield prediction, giving farmers the chance to advance their cultivation with better insights. Keywords: Random Forest, LSTM, XGBoost, NDVI, SAVI, EVI, Yield Prediction.



Selection of Facilities Layout Design under Utopian Environment

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Abstract- Modern-day manufacturing systems are subjected intense stress due to fierce global competition in the market and hence there is strong need to increase productivity while reducing cost of production. Keeping a tab on various manufacturing and operations costs more accurately has become a strategic objective now. One of the surest ways of accomplishing this task of bringing down production cost is by way of choosing a right kind of layout. For this a methodology is needed that can establish a method to evaluate a set Facilities Layout(FL)s with varying parameters with few of them being subjective and varying factors and one of them being an objective cost factor(influencing factors) to select the best and most suited FL for a particular type of production system. In this methodology here, Weighted Normalized Decision Variables are used to neutralize the effect of varying units of the influencing factors. Benefit to Cost ratio forms the basis of this study and Incremental Analysis of pairwise comparison gives a formidable strength to the algorithm. The robustness of the methodology is further enhanced by the Sensitivity Analysis. Finally, the benefit-cost ratio procedure and incremental analysis zero in on a very suitable FL in a given context of Production system.

Notations- Incremental Analysis, Normalization, Facilities Layout (FL) selection, Benefit to Cost Ratio

Analysis of Reported Electrical Accidents in India

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Abstract- Electricity plays a vital role in technological development. One of the major factor for industrial development is availability of electric power. As the use of electricity is increasing so also the accidents due to electrocution. Accidents can be fatal or nonfatal. Both human and animal accidents are reported but human accidents are more compared to animal accidents. The cause of electrical accidents are many. Some of the major cause of electrical accidents are snapping of conductor, use of iron rod and contact with live wire, industrial and non-industrial accidents, accidents in generating, transmission and distribution electricity sectors due to faulty equipment, mal operation, poor maintenance etc. The accidents result in production losses in industry due to loss in time of operation. Moreover huge amount has to be paid as compensation for electrical accidents. For the safety of men and material it is necessary to have a detailed analysis of electrical accidents to get a clear picture about the underlying factors influencing it. In certain places the accident is showing positive trend and in some other it is of negative trend. Based on the trend and cause necessary precautions has to be taken to reduce it. In this paper reported electrical accidents in various places, number of consumers, connected load, sector wise accidents, per-capita electricity utilization, human and animal accidents, and amount spend for giving compensation were analysed. ANN model was developed

Key words- Electrical accidents, Classification, grouping, analysis, ANN

A survey on security issues and threats in data transmission between IoT devices in a heterogeneous environment

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Abstract- The growth of internet connected devices with automation and upgradation gives us a huge number of automated applications which works with the artificial intelligence in heterogeneous environment. These devices can be categorized into various sub categories like constrained devices, Wi-Fi devices and so on. One of the best example of internet connected things are IoT devices. IoT is called something like a bunch of interconnected devices which works with each other that can transfer the data and receive the data. These devices are connected with the server and the network topology can be consist with or without wired connection. Due to the lack of processing power, capabilities and storage these devices are vulnerable for intruders and attackers. Therefore the security model and new security management is necessary for making the data transfer more secure and reliable.

Keywords- IoT Devices, security management, cyber-attack, heterogeneous environment, data transmission, constraint devices Class 1 constraint devices, security challenges.

Review of Building Regulation for Achieving Sustainable Development in Lucknow, India

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Abstract- The various development plans provided stereotype guidelines for the development of Lucknow and hence the outcome is immaterial in terms of achieving sustainability. The physical form and layout of a city's built environment is determined by current design standards and regulatory byelaws. The major area of concerns is that most of the building byelaws are borrowed from other cities adapted from one place to another across the country without taking consideration of regional context and climate. Building regulations are mostly categorized on the basis of building use and sizes of a plot in India, generally, irrespective of the shape and proportion of the plot. As a result, often while compliance with one regulation will lead to noncompliance of other Byelaws. This further aggravates the problems and often results in chaotic development and huge environmental impacts. The study aims to understand different issues associated with building regulations of Lucknow. Further, the byelaws of different cities are compared to get clarity on the effects of plot proportions on setback and open area guidelines.

A Review of Convolutional Neural Network based models for Bone Fracture detection

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Abstract- Bone fracture is a partial or complete break in continuity of a bone. It is the major bone injury these days due to increasing number of vehicles, traffic, improper road conditions and unhealthy lifestyles. Convolution Neural Network (CNN) is a deep learning technique which is widely gaining popularity and acceptance in the field of computer vision. Automated fracture detection can reduce missed reading on radiography. It can help physicians in timely diagnosis and treatment and also useful in areas where radiologists are not available at all times. This study summarises Convolutional Neural Network based models applied on various parts of bones and the respective results.

Keywords- X-ray, deep learning, CNN, bone, fracture

Dual Tone strategy for Load Frequency Control in Conglomerate Power Generating Station

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Abstract- Load frequency control (LFC) by a Novel Dual tuned strategy for a conglomerated power system (PS) comprising Renewable-Energy Sources (RES). The hybrid strategy is the joint execution of Recalling Enhanced Recurrent Neural-Network (RE-RNN) and Balancing Composite Motion Optimization (BCM-O); hence it is named as RE-RNN-BCM-O technique. This paper presents the analysis of the LFC signal, which is a significant part to reduce the frequency deviation (FD), Area control error (ACE), and tie line (TL) power flow. The proposed method consists of 3 area power systems like wind, thermal, and Hydro, whose system performance is improved by implementing a proportional integral derivative (PID) controller. The said PID tuning with the help of the RERNN-BCMO technique yields an excellent LFC. The benefits of such tuning are not limited, but some are high speed with high reliable output and less complexity at increased predicting capacity. Simulated the MATLAB/Simulink platform scenario and compared the result with existing methods. Results obtained are promising and effective compared to others in all major aspects.

Keywords- Load Frequency Control, Tie-line power deviation, Proportional Integral Derivative controller, Recalling Enhanced Recurrent Neural Network, Balancing Composite Motion Optimization..

Investigate the impact of Riser Tube Shape Variations on Flat Plate Solar Water Heater Performance Using CFD Analysis

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Abstract— A flat plate collector solar water heater is a simple device to gather solar energy. Therefore, an improvement in their geometrical and operating condition would definitely lead to cost and conventional fuel savings. Generally, flat plate collector consist of arrays of circular cross sectional riser tubes that are bonded to the absorber plate to transfer of heat from absorber tube to working fluid. Even though there hasn't been much research on it, the riser tube plays an important role in the performance of flat plate solar collectors. The purpose of this study is to investigate how different riser tube shape affects flat plate collector performance. Different heat fluxes were compared in terms of entrance and exit temperature. In comparison to circular riser tubes, CFD studies demonstrate that square and triangular riser tubes have the highest water exit temperature for the same heat flux and inlet temperature. This is due to the fact that square and triangular riser tubes have a larger surface area of contact between the tube and the plate, allowing for higher heat absorption and thus improved collector performance. The numerical results obtained using the experimentally measured temperatures are compared to the temperatures determined by the CFD analysis and found to have a good similarity between the measured and calculated results.

Index Terms— Solar energy, Flat plate solar water heater, Shapes of tubes, Absorber plate, CFD analysis.

Review: Friction stir welding of dissimilar aluminum alloys

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Abstract- Friction stir welding (FSW) is a new technique primarily considered to join aluminum and low strength alloys. Recently, it has been explored to join dissimilar aluminum alloys in large quantities. So there is need to study the various aspects of FSW to join dissimilar aluminum alloy successfully. The intention of this review paper is to provide an insight to join dissimilar aluminum alloys, which covers basic concept of FSW, microstructure development, FSW tools, influencing parameters and typical defects.

Keywords- Frictions stir welding, dissimilar aluminum alloys, process parameters, and microstructure

An analytical and numerical solution for narrow sandwiched beam with functionally graded material (FGM) core

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Abstract- The static analysis is presented in this paper for FGM sandwiched beams for simply supported and fixed boundary conditions subjected to uniform and sinusoidal loading. Plane stress condition has been used in the mathematical formulation of Higher order shear and normal deformation theory (HOSNT8) and Navier's solution is used. In-plane displacement field is expanded as cubic function and the transverse normal strain varying nonlinearly through the beam thickness. Governing differential equations of equilibrium are obtained by using the principle of minimum potential energy. Eight displacement terms are obtained by the solution of simultaneous equations. The displacements are used to obtain strain and stresses induced due to external loading. Numerical solution is presented by using ABAQUS [19] commercial finite element software, wherein FG material is modelled by layer wise approximation. Two types of sandwiched FGM beams are considered and results are obtained for transverse displacement and stresses. Both the analytical and numerical results show good agreement with other available literature results.

Key Words- Sandwiched Beams, Functionally Graded Material [FGM], Analytical Solution

Software Testing

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Abstract- Software development methodology is suggested by a system that has a planning, structure and control end. Information system should be made ward on this system and this system has its own characteristics. For different types of efforts, one system is not suitable. The fitting process involves people with affiliations and consideration boundaries to see the effort. The software thing is innovatively excellent with some models, contraptions and ways of thinking. Some kind of standard document must be fundamental to record systems. For growth to be supported and interested in material progress, development must be destined.

The course of software testing is a visualization of the execution of a program or system to find its bugs. The software under test is required to run the system backwards for testing to ascertain whether the client's requirements are met. Software testing has features like a more assured cycle. Receiving and yielding sources of data are closely related pieces of software. Generally different systems to disenchantment, likewise all experience, understanding each and every one of the various techniques to program frustration is overall purposeless, and software can bombard in more ways than one. To the degree or time of interruption, a software program is not the same as hardware related to mileage and notably will not change.

Keywords- Software, testing, engineering, algorithms

Prediction of Tensile Strength of Remixed Concrete

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Abstract- Ibearugbulem's regression model predicts the tensile strength of remixed concrete. By incorporating fresh concrete, this model is used to recycle old concrete that has partially hardened. The time lag and mix ratio are also taken into account in this along with the common constituent of concrete. When a portion of a relatively new mix is added to an existing portion of the preset mix, a certain amount of strength loss is reduced.

Concrete strength can be predicted using artificial neural networks (ANN), Abrams' rule, machine learning techniques, and other methods. Scheffe's and Osadebe's models, which are frequently employed and are extremely suitable for optimizing concrete mix, are severely constrained by the requirement for a set number of tests for their formulation. Ibearugbulem's regression model for predicting tensile strength was developed as a new model to address shortcomings in Scheffe's and Osadebe's. The model evaluated the split tensile strength of concrete for various mix ratios for compressive strengths lasting for 28 days. With an f-value of 3.44 at a 95 percent confidence level, the Fisher f-test shows that the tensile strength values predicted by the new regression model are quite similar to those from the experiment strength data. Consequently, this new regression model is helpful for designing concrete mix.

Keywords- Split tensile strength, Concrete mix design, Optimization, Regression, Polynomial Response Function, Scheffe's model, Osadebe's model, Ibearugbulem's model

Effect of Remixing of Concrete on Characteristics Strength Parameters

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Abstract- The investigation consists of concrete mixes with four types of blend ratios, considering initial setting time (t_i) and final setting time (t_f) of mix and five types of curing conditions. The tests on strengths viz., compressive strength, modulus of elasticity and tensile strength conducted on each range of samples. The analysis for characteristic strength parameters of remixed concrete was performed for the specimens data obtained from experimental work. The effect of intermittent curing on these strengths is analyzed and the results are compared with conventional curing method.

Keywords- Conventional Concrete, Remixed Concrete, Compressive Strength, Conventional curing, Intermittent curing, Characteristic Strength Parameters and Bairagi's selfing equation.

Development of Direct Contact Heat Exchanger for Removal of Tar in FBG

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Abstract- Direct-contact heat transfer involves the exchange of heat between two immiscible fluids by bringing them into contact at different temperatures. The burnable gas is produced from the gasification of biomass in circulating fluidized bed gasifier (CFB) developed in the laboratory. It consists of CO, H₂, CO₂, CH₄, H₂O, and NO_x, in addition to Tar. Tar is a heavy hydrocarbon constituent and is sticky in nature. It is obtained in vaporized form along with burnable gas in the gasification process. The burnable gas produced is used in internal combustion engines for the power generation. When it enters into the combustion chamber the motion between the piston and cylinder resists due to the sticky nature of tar in burnable gas. As tar is a heavy hydrocarbon it is also difficult to break down in the combustion process. Hence it is necessary to remove the tar before entering burnable gas into the combustion chamber. The tar is in vaporizing form and condensed at atmospheric temperature. The direct contact heat exchanger unit is developed to condense the tar. In this unit the water at atmospheric temperature is directly mixed with the high temperature burnable gas obtained from the circulating fluidized bed gasifier. As burnable gas comes in contact with the water at atmospheric temperature it gets condensed and then removed. The measurable quantity of tar is removed from the burnable gas by using this unit.

Index Terms - Heat Exchanger, Direct Contact Heat Exchange (DCHE), Cyclone Separator, Fluidized Bed Gasifier(FBG), Producer Syngas, TAR.

Development of Virus-Bacteria disinfection box using UV-c (Ultraviolet Rays)

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Abstract— In the context of the COVID-19 pandemic situation importance and need of disinfection of gadgets used in day to day life is highly increased. The attempts are made to develop the virus-bacteria disinfection box using UV-C (Ultraviolet C Rays). It is a device to kill virus-bacteria from a surface of the gadgets which cannot be disinfected by traditional cleaning or disinfection methods. There is a wide range of light rays in which ultraviolet rays are the form of non-ionizing radiation. It is emitted by the sun and artificial sources. UV radiation is widely used in industrial processes and in medical and dental practices for a variety of purposes, such as killing bacteria, creating fluorescent effects. Different UV wavelengths and intensities are used for different purposes. The UV-C is the most harmful wavelength among the UV-A, UV-B. UV-C light and has shortest wavelength i.e. higher intensity therefore UV-C used as germicidal light. So, in present device the UV-C light is used for disinfection purpose to kill virus and bacteria from different surfaces which cannot disinfect by normal sanitation processes.

Index Terms—Ultraviolet-C Ray (UV-c), Virus-Bacteria, Disinfection, Sanitization.

Wireless Smart Electrified Road for EV With Dynamic and Static Charging By Solar Energy

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Abstract- In this paper, a method of electric vehicles charging with the use of large truck/bus vehicles moving along national highways and provincial roads is proposed and described. The method relies on charging vehicles from trucks while moving either with plug in electric connection or by electromagnetic induction via loosely coupled coils. Open research challenges and several avenues or opportunities for future research on Electric Vehicles Charging are outlined. The proposed method overcomes the disadvantages of the so far known techniques. The advantages of this method compared to the so far proposed methods are a) economical, easy and safe procedure, b) increase of the energy transfer efficiency factor, c) minimization of the delay in vehicle movement during the charging procedure and d) reduction of the environmental contamination with CO₂ or electromagnetic radiation.



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Enhancement of Power System performance using Series FACTS Controller

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Abstract: Static Synchronous Series Compensator (SSSC) is a voltage sourced converter based series FACTS device that provides capacitive or inductive compensation independent of line current. This research paper presents the achievement of the required active and reactive power flow into the line for the purpose of compensation as well as validation of enhancement of the power system performance of a transmission line by connecting the SSSC on appropriate location. The effect of variation of the phase angle of the injected voltage on the power system parameters such as sending end voltage, transmission angle, active power, reactive power, and overall power factor with and without SSSC have also been incorporated. The Performance of power system have been tested on IEEE 14-Bus System.

Key words: flexible ac transmission (FACTS), static synchronous series compensator (SSSC), voltage sourced converter (VSC), static compensator (STATCOM).

Automatic Pipe Cutting Machine

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Abstract— Cutting the tools or the materials of finite length by manually will not yield a good result. So, we have designed and developed the system which will cut the material automatically of finite length according to our requirements. We mainly concentrate on PVC cutting Machine for which we have designed the system. The objective of this work is to automate the conventional Pipe cutting machine to achieve high productivity of workpieces than the Pipe cutting machine. The automated machine the number of pieces to be cut and the length of each piece that is required to be cut. The inputs are given by with the help of a battery. The operator need not measure the length of the workpiece that is to be cut and to load and unload the workpiece from the chuck each time after a piece has been cut. The machine automatically feeds the given length of workpiece into a chuck and starts to cut till the given number of workpieces has been cut. Which is driven by a DC motor ensures that the feeding stops when the specified length has been reached. Bring about the reciprocating motion required for cutting the workpieces. There is a electromagnetic self-weight attached with the reciprocating mechanism to provide the necessary downward force required for penetration of angle grinder in to the work-piece. The machine we designed, and fabrication is used for cutting any shape of object like circular. According to the type of material to be cut, the cutting tool can be changed. This project gives details of pipe. This machine can be widely applied in almost all type of industries. The pipe cutting process is a main part of all industries. Normally the cutting machine is manually hand operated one for medium and small-scale industries. Automation in the modern world is inevitable. Any automatic machine aimed at the economical use of man machine, and material worth the most. The pipe cutting machine works with the help of motor. In our project small and large size pipe cutting used adjustment in various type of pipe.

Index Terms—Pipe cutting , automatic machine

Review on Fuzzy Logic Based Power Quality Improvement by Using Dstatcom Based Cascaded Multilevel Inverter

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Abstract- Power quality is a set of electrical boundaries that allows a piece of equipment to function in its intended manner without significant loss of performance or life expectancy. All electrical devices are prone to failure when exposed to one or more power quality problems. It is necessary for engineers, technicians, and system operators to become familiar with power quality. In this paper the solution is given by Static Compensator (STATCOM) with the desired reference current for Multilevel inverter based STATCOM for distribution system is employed. An investigation of multilevel inverter based Distribution static compensator (D-STATCOM) with FLC in Power distribution System (PDS) for compensation of reactive power and harmonics mitigation. Cascaded H-bridge inverters having several advantages over conventional swathing devices are low harmonic distortion, reduced number of switches there by suppression of switching losses. The advantage of CHB Inverter is reducing the number of switches and thus switching losses. Hence in our paper we have proposed a DSTATCOM based Cascaded multilevel inverter by sing fuzzy logic controller to mitigate the switching losses, harmonics, and to compensate reactive power.

Key words- Cascaded multilevel inverter, power quality, fuzzy, FACTS devices.

An overview on anti-CoViD Coatings- Research Recommendations

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Abstract- Over the past two years, the worldwide extraordinary outbreak of coronavirus pandemic (i.e., CoViD-19) and other emerging viral expansions have resulted in significant interest in the design and development of novel antiviral, and viricidal, agents, with a broad-spectrum of antiviral activity. The success of surmounting the current indispensable challenge lies in the development of universal virus repudiation systems that are reusable, and capable of inactivating pathogens, thus bringing down the risk of infection and transmission. The constituent antiviral members are classified into a few broad groups, viz., polymeric materials, metal ions/metal oxides, and functional nanomaterials. This classification is based on the type of materials to be employed at the virus contamination sites. The action mode against enveloped viruses was depicted to vindicate the antiviral mechanism. In the surge of the current, alarming scenario of SARS-CoV-2 infections, there is a great necessity for developing highly-innovative antiviral agents to work against the viruses.

The current paper critically discusses some of the case studies on the antiviral coatings that could exert an inhibitive effect on CoViD-19. However, the coatings need to be tested and authenticated, to fabricate a wide range of coated antiviral products such as masks, gowns, surgical drapes, textiles, high-touch surfaces, and other personal protective equipment, aimed at extrication from the CoViD-19 pandemic. The reported results of the antiviral characteristics of these coatings clearly indicated the successful hindrance against other enveloped viruses. Basing on these outcomes, probable recommendations have been drawn.

Keywords- CoViD-19, pandemic, nanomaterials

Development of Direct Contact Heat Exchanger for Removal of Tar in FBG

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Abstract- Direct-contact heat transfer involves the exchange of heat between two immiscible fluids by bringing them into contact at different temperatures. The burnable gas is produced from the gasification of biomass in circulating fluidized bed gasifier (CFB) developed in the laboratory. It consists of CO, H₂, CO₂, CH₄, H₂O, and NO_x, in addition to Tar. Tar is a heavy hydrocarbon constituent and is sticky in nature. It is obtained in vaporized form along with burnable gas in the gasification process. The burnable gas produced is used in internal combustion engines for the power generation. When it enters into the combustion chamber the motion between the piston and cylinder resists due to the sticky nature of tar in burnable gas. As tar is a heavy hydrocarbon it is also difficult to break down in the combustion process. Hence it is necessary to remove the tar before entering burnable gas into the combustion chamber. The tar is in vaporizing form and condensed at atmospheric temperature. The direct contact heat exchanger unit is developed to condense the tar. In this unit the water at atmospheric temperature is directly mixed with the high temperature burnable gas obtained from the circulating fluidized bed gasifier. As burnable gas comes in contact with the water at atmospheric temperature it gets condensed and then removed. The measurable quantity of tar is removed from the burnable gas by using this unit.

Index Terms - Heat Exchanger, Direct Contact Heat Exchange (DCHE), Cyclone Separator, Fluidized Bed Gasifier(FBG), Producer Syngas, TAR.

Development of Virus-Bacteria disinfection box using UV-c (Ultraviolet Rays)

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Abstract— In the context of the COVID-19 pandemic situation importance and need of disinfection of gadgets used in day to day life is highly increased. The attempts are made to develop the virus-bacteria disinfection box using UV-C (Ultraviolet C Rays). It is a device to kill virus-bacteria from a surface of the gadgets which cannot be disinfected by traditional cleaning or disinfection methods. There is a wide range of light rays in which ultraviolet rays are the form of non-ionizing radiation. It is emitted by the sun and artificial sources. UV radiation is widely used in industrial processes and in medical and dental practices for a variety of purposes, such as killing bacteria, creating fluorescent effects. Different UV wavelengths and intensities are used for different purposes. The UV-C is the most harmful wavelength among the UV-A, UV-B. UV-C light and has shortest wavelength i.e. higher intensity therefore UV-C used as germicidal light. So, in present device the UV-C light is used for disinfection purpose to kill virus and bacteria from different surfaces which cannot disinfect by normal sanitation processes.

Index Terms—Ultraviolet-C Ray (UV-c), Virus-Bacteria, Disinfection, Sanitization.

Self-Adjusting Ground Clearance System

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Abstract- The handling of vehicle depends upon the various parameters centre of gravity of the vehicle is one of them. For better handling of the vehicle we need to keep centre of gravity as low as possible. Whereas a sedan car or hatchback has to run on smooth roads as well as on rough terrains sometime with its fixed lower ground clearance which tends to create dents on the bottom portion the car, whereas SUVs which has high ground clearance have to deal with rolling action during cornering and less stable ride as compared to the sedans, also due to higher ground clearance SUVs have to deal with higher drag which results in lower fuel economy. The main aim of this project is provide optimum ground clearance according to the varying road conditions to get the most balanced vehicle characteristics while driving the vehicle and also reducing the damage and accidental chances increasing the ride security.

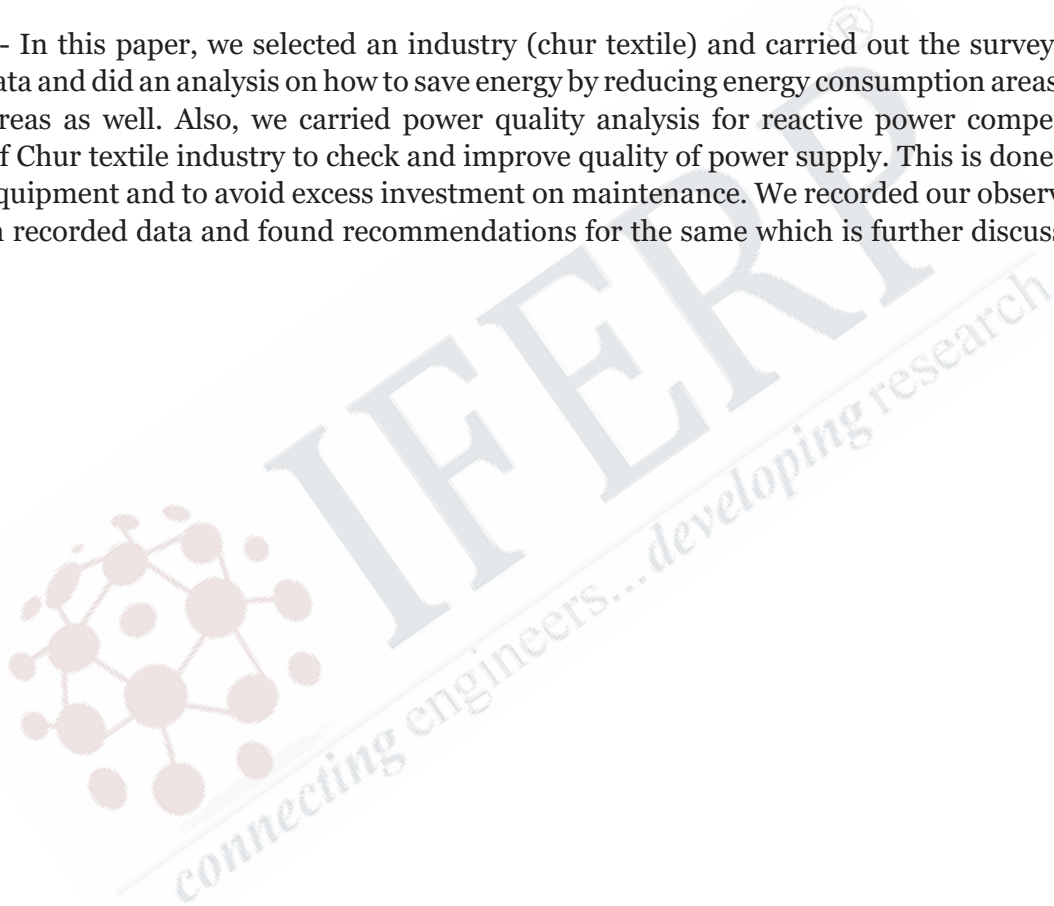
Keywords- Automatic Ground Clearance, Microcontroller, Motor, Linkage.

Power Quality Analysis for Reactive Power Management

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Abstract- In this paper, we selected an industry (chur textile) and carried out the survey, collected required data and did an analysis on how to save energy by reducing energy consumption areas including financial areas as well. Also, we carried power quality analysis for reactive power compensation at premises of Chur textile industry to check and improve quality of power supply. This is done to protect sensitive equipment and to avoid excess investment on maintenance. We recorded our observation, did analysis on recorded data and found recommendations for the same which is further discussed in this paper.



Design and control of Micro-Grid fed by PMSG of a microcontroller-based wind energy conversion system

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Abstract—In recent years wind energy has gained particular interest and focus because of its smaller size and less environmental effect, but this smaller generation of energy was dominated asynchronous generators directly connected to the grid while recently permanent magnet synchronous generators (PMSG) to control this power either partially or completely. This paper deals with wind turbine control system and DC boost converter to track this maximum power point which are designed and implemented. In practice, the energy generated by a permanent magnet synchronous wind turbine is applied to the load using a circuit that consists of a rectifier, boost converter, and protective load. The converter operates in the designed mode 35% more efficiently than in the normal operation mode. In addition, the wind turbine is protected from over voltages in strong windy weather using the protective circuit

Key words: Boost converter, wind energy, maximum power point tracking, dump load, dsPIC

Need of Fault Detection of Worm Gearbox

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Abstract- Gear transmission system are a fundamental factor in industrial application. If any failure occurs in the gearbox, it may interrupt normal machine operation and cause a production loss. To stay competitive in the market, a number of condition monitoring and analysis techniques are used by the industries. This paper study need of fault detection of combination of worm wheel and worm wheel bearing in a worm gearbox by using vibration signature.

Keywords- Worm gearbox; Fault detection; Condition monitoring; Vibration signature.



Vertical Axis Maglev Wind Turbine: A Review

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Abstract: Recently renewable energy generation is increasing to meet the demand for electricity. The vertical axis wind turbine is highly used for domestic applications where the volume of production is low and efficiency is optimal while the horizontal axis wind turbine is widely for larger volume of production requires huge investment and the efficiency is high. In vertical axis Maglev wind turbine, the generation of electricity is achieved by using vertical axis wind turbine in addition with magnetic repulsion power buster, using the force created by moving shaft. Magnetic levitation or maglev is a method by which an object is suspended with no support other than magnetic fields. The Magnetic force of magnet is eliminating the effects of the gravitational and other accelerations. The main advantage of maglev vertical axis wind turbine is to reduce mechanical friction. Maglev has more advantages from other conventional wind turbines. It can be work on low speed of air i.e.1.5 m/s.

The problem the traditional structure of VAWT of is the weight from the VAWT makes bearings bear larger axial force makes bearings frayed largely and shorten the life. At the same time, due to the increase in friction, the system loss mechanical energy and reduce the efficiency. Maglev wind turbine technology reduce the internal friction of the rotor which is reduces the effect of gravitational force, producing 30% more energy than a conventional ordinary turbine, at the same time decreasing operational costs by 45% over the ordinary wind turbine.

Key words: Wind energy, VAWT, magnet repulsion, power buster

Smart Ai Model Based Technologies Currently Being used at the International Space Station.

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Abstract— Space is an ever-expanding void that is made up of billions of galaxies, stars, solar systems, and planets, in addition to a great number of other unknown objects that have not yet been discovered. When the International Space Station was launched into the earth's lower orbit for scientific purposes and to gain a better understanding of the environment of space, humans took a great step forward in their quest to explore such a three-dimensional dark box as space. Previous articles have discussed the use of artificial intelligence to search space and planets, with the goal of locating planets that are habitable. This paper provides a description of several of the AI-based technologies that are now being utilised in the International Space Station, which serves as the primary building block for future space exploration. The research also focuses on artificial intelligence technologies that might be implemented in the International Space Station (ISS) to enhance its operational capabilities, increase its operational efficiency, and enhance crew safety. In the paper, the necessity for, the workings of, and the construction of the "Robonauts" designed by NASA for the ISS are covered with a full description of each. The Asteroid Tracking and Legacy Archive System, or ATLAS, is also discussed in the research. The manner in which medical care can be provided to the crew, the influence that debris has, how data from space research can be analysed and insights extracted using machine learning are all topics that will be covered in this discussion. The purpose of this paper is to present an overview of some of the existing AI-based technologies utilised in the International Space Station (ISS) and to investigate how technology used in space exploration could be applied to the ISS in order to improve its performance.

Keywords— Artificial intelligence, Machine learning, International Space Station, Robonauts, ATLAS, Debris, Asteroids

Uncertain data clustering using Weighted Clustering Ensemble Algorithm

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Abstract- Clustering Ensemble is a technique for improving the reliability and stability of data clustering. This is accomplished by aggregating the base clusterings achieved by various clustering algorithms that are included in the input ensemble. Clustering Ensemble is also known as Consensus Clustering. This research presents an innovative approach to the selection of ensembles as a means of achieving consensus grouping. In order to arrive at a quality consensus without having to look at the complete population of base clusterings in the ensemble, our technique selectively looks at only a few base clusterings at a time. This allows us to save time. The results of the experiments show that the consensus clustering provided by the recommended method is superior to the clustering accuracy provided by a number of other well-known clustering ensemble methods for a variety of different data sets.

Keywords— Ensemble Clustering; Consensus; Frequency; Diversity

Real Time Driver Sleepiness Data Classification Using Deep Learning Algorithm

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Abstract- In recent years, driver drowsiness has emerged as one of the primary contributors to the incidence of vehicular accidents. These mishaps can result in serious injuries, even fatalities, as well as huge financial losses. The face, which is an essential component of the body, is responsible for communicating a great deal of information. When a person is driving when fatigued, their facial expressions, such as the rate at which they blink their eyes, are different from those displayed when they are in a normal state. We are working on a research paper called real time driver sleepiness data classification using deep learning algorithm

, which is a system that can determine a driver's level of weariness based on video footage, such as the amount of time they spend with their eyes closed or blinking, without having to attach any sensors to their body. In light of the deficiencies that were present in earlier face-tracking algorithms, we have developed a new face-tracking algorithm in an effort to improve the tracking accuracy. In addition, we developed a whole new technique for the detection of facial regions that was based on 68 critical points. Following that, we evaluate the state of the drivers based on these face regions. The real time driver sleepiness data classification using deep learning algorithm system is able to provide a fatigue warning to the driver by integrating the features of the eyes and the lips.

Keywords- Drivers fatigue detection, Dricare, Alarm, Drowsiness detection.

Advanced model for Mobile-based Smart Parking Reservation System Using QR Code

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Abstract- We develop a specific approach toward developing a system for the reservation of intelligent parking spots and the ongoing maintenance of parking lot security in a commercial automobile parking area in an urban setting. This system's primary purpose is to save users the trouble and inconvenience of wasting time when searching a parking lot for an available space. In the same scenario, we can save more than 80 percent of the fuel that would have been used searching for an available parking spot in a car parking lot. Only the user is responsible for carrying out the reservation process. Therefore, the user locates the vacant parking spot and, with the driver's knowledge, makes a reservation for it using internet connectivity provided by an embedded process control unit (EPCU). In this section, we provide the primary answer to the user's reservation action, and as a result, the driver is able to reserve his anticipated parking place based on the pricing function. In order to eliminate the multi-user approach problem (MUAP) during the reservation process in our smart car parking system, we have suggested a system with a multi-processing queuing mechanism (MPQM). This mechanism is abbreviated as "MPQM."

Keywords- Security, Reduction of Time and Fuel, MPQM.

Sentimental Analysis Using Natural Language Processing (NLP) Algorithms

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Abstract— Within the confines of this study, we analyse a wide range of natural language processing (NLP) techniques that can be used to do sentiment analysis. We look at two separate datasets, one of which has binary labels and the other of which has many different categories of labels. After applying The bag of words and skip-gram word2vec models for the binary classification, we next utilised a variety of other classifiers, such as random forest, SVM, and logistic regression. This was done in order to improve the accuracy of our results. We offer the low rank RNTN as a solution to the problem of the high computational cost associated with training the regular RNTN for a case involving several classes. A replacement is provided by means of symmetric low-rank matrices in this approach. Monitoring social media platforms with the help of sentiment analysis is quite useful since it provides us with a comprehensive picture of how the general public feels about certain subjects. This process is now considerably more time efficient and uncomplicated than it ever was in the past because to the real-time monitoring capabilities of social media monitoring solutions like Brand watch Analytics. It is feasible to employ sentiment analysis in a wide variety of contexts, each of which offers a unique set of advantages. The strategy of being able to get insights from social data is one that is quickly gaining traction among companies all around the world.

Keywords - Sentimental Analysis , Natural Language Processing , SVM

Face Matching deep learning model for Gate Pass Automation System

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Abstract : Recent advances in computing technology have made it possible to create real-time vision modules that are able to converse with people. Processing the information that is included in faces is necessary for computer systems to behave in an acceptable manner. There are numerous examples, most notably in the fields of biometrics and human-computer interaction. It is important to locate faces in a scene before any recognition algorithm can be used in biometric systems that use faces as nonintrusive input modules. This is because faces can only be used in such systems. An intelligent vision-based user interface should be able to recognise where the user's attention is focused in order to respond in an appropriate manner (i.e., where the user is looking). In order to accurately recognise facial features for applications such as digital cosmetics, faces need to be detected and registered before any further processing can take place. It should come as no surprise that face detection is one of the most important components of any face processing system that aspires to be effective. The Gate Pass Management system was digitised to make it as easy as possible for on-campus residents to get a Gate Pass. The Gate Pass system was designed so that a record of everyone who entered and exited the campus could be maintained. Up until very recently, every aspect of this was completed by hand. The application procedure, the mechanism for approval, and so on were all constrained as a result of this. A computerised face matching Gate Pass Management System (GPMS) has taken the role of the older, manual Gate Pass Management System (GPMS). Additionally, the technology offers a database of information that can be accessed by other departments on campus. This helps to guarantee that the available resources are utilised in the most effective manner possible. Now, in order to receive a gate pass, you must first fill out a form that is located online. Your name, residence, and the particular reason you are obtaining the gate pass are some of the pieces of information that are required from you. For the purpose of keeping track of these particulars, handwriting is used. There is a possibility of making a mistake when manually creating a gate pass. The existing system has a number of fundamental flaws, one of which is that there is no log report. The administrators have a difficult time keeping track of the arrival and departure times of the students. Because of this, in the society that we live in today, which is so evolved technologically, every job is done by a computer. With this project, it is feasible to automate all of the processes that were previously performed manually. Because of this project, students and staff members at the hostel will be able to connect with one another via computers in a more efficient manner than in the past. Setting up and operating a security system in this manner is a simple and speedy process. Through the use of facial recognition, it is possible to access the information pertaining to students that is stored in a database. On the pass, your image, name, and room number will all be printed. Additionally, the time will be displayed. After a face has been identified, this information will be promptly updated. The Gate Pass Management system was digitised to make it as easy as possible

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for on-campus residents to get a Gate Pass. The Gate Pass system was designed so that a record of everyone who entered and exited the campus could be maintained. Up until very recently, every aspect of this was completed by hand. The application procedure, the mechanism for approval, and so on were all constrained as a result of this. The shortcomings of the manual approach were remedied by the implementation of a computerised Gate Pass Management System (GPMS) that makes use of facial matching. Additionally, the technology offers a database of information that can be accessed by other departments on campus. This helps to guarantee that the available resources are utilised in the most effective manner possible.

Keywords: Face matching, feature extraction, gate pass generation, Rule matching.



Design and implementation of Smart Ambulance System using IOT

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Abstract- Complex and delicate problems can be found in people's everyday lives. The Smart Ambulance System will allow us to provide a new perspective to the field of medicine. Each patient's condition can be remotely checked while they are in the ambulance using this method. People in authority will have access to important information about a patient using derived data and will be able to take immediate action. Those who have been harmed in accidents will get immediate medical attention as a result of this initiative. As a result of these data, doctors and other members of the staff will be able to make the required preparations for the patient now being carried in an ambulance. Sensors will be used in the first phase of this research to monitor patients and collect information. The gateway is next in line, and its job will be to connect the sensors to the cloud system. Finally, the recorded data will be displayed on the medical equipment. Patients in the intensive care unit will also benefit greatly from this new technology. Those who live in rural locations will find this method to be extremely useful. There are a number of issues that arise from this sudden increase in deaths. A recent poll found that nearly half of those who suffer a heart attack can be saved if they are rushed to the hospital immediately. There are 55.3 million individuals who die at a young age every year, or 1,511,600 people who die every day, or 6316 people who die every hour. This is a problem that affects the entire world. We've devised a cutting-edge ambulance system to deal with this problem. The hospital administration must be informed of the patient's current condition and medical history so that they can be prepared for the patient's arrival at the hospital. The receiving hospital receives notification of the user's medical emergency thanks to this technology. Patients' vital signs and other important data must be accurately conveyed by the system in order for it to be considered vital or critical. Reducing time and waste while increasing the effectiveness of the treatment process for sick patients are two goals being pursued through the implementation of the Internet of Things (IoT).

Keywords— Health monitoring, body temperature, oxygen saturation, LCD, pulse rate.

Study and analysis machine learning technique for Tourism Management System

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Abstract— Travel And Tourism Managementtakes care of everything in the travel and tourism industry. This includes making, booking, and confirming reservations, as well as gathering information about users. You can book a tour from anywhere in the world by going to a single, dynamic website that gives the user all the information they need about the locations and tour details. HTML and PHP were used to write the code. By making a tour page, you can add hotels and travel agents to your site. From their manage booking page, admins will then be able to say yes or no to a user's request to book a project. The confirmation can be found in the user's account under "My Bookings." On this site, you can quickly book and find out everything you need to know. The Tour Management System (TMS) is a website that is constantly changing and is used by businesses in the travel industry. It's a website that changes and adapts. It is often called a travel technology solution for tour operators and travel agents. Almost everyone likes going on vacation, and a "tourism management system" is an essential tool for making the most of every trip. There is a complete system for managing tourism that gives users access to all the information they need. Tourism companies can use it, among other things, to better manage customers and hotels. The system can help both professional and business trips. The goal of this project is to get rid of the current system, which keeps track of the customer's name, destination, and how much money they paid. The proposed system is highly automated and makes travelling much easier and more flexible. Users can get the exact information they need at the exact time they need it.

Keywords- Travel and tourism management, travel packages, tourism, package booking

Brain Tumor Image Data Classification Fusing Deep Neural Network

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Abstract— The identification of brain tumours is frequently cited as one of the most difficult and time-consuming endeavours that can be undertaken in the world of medicine. If a brain tumour is not detected and treated when it is in its early stages, a fatal outcome is a distinct possibility. The operation of biopsy, which is both labor-intensive and time-consuming, is the only method currently available for diagnosing and classifying brain tumours. This is the only method currently available. By examining an MRI or CT scan of the patient's brain, the specialists are able to identify not only whether or not a tumour is present in the patient's brain, but also the location of the tumour. Using this method, however, it is difficult for them to recognise the subtle changes that exist in the structure of the tumour and to categorise it into the various varieties that exist. As a direct consequence of this, the verification of the kind of tumour, which is the next step in the manual process, has not moved forward. We have embarked on this investigation into the identification of multi-class brain tumours using deep learning with the express intention of overcoming the enormous challenges that have been outlined above. Because the disease was detected in its earliest stages, treatment can be initiated at precisely the right time, which ultimately leads to a more expedient recovery for the patient. Because of our research, medical practitioners will be better able to make timely judgments regarding the detection of tumours as well as the types of tumours that are present. Our company provides a model for deep learning that is based on the architecture of the convolutional neural network. It is something that we have accomplished with the assistance of the Keras and Tensorflow programming libraries. In terms of its overall performance, this model is head and shoulders above the more traditional ones. The results of our analysis indicate that CNN has an accuracy rate of 94.95 percent. [CNN] In addition to this, we have included our model into a web app that was created by us with the assistance of Streamlit. Therefore, customers can submit us with their MRI scans by utilising our web app, and we can offer them with their medical results in a timely and efficient manner.

Keywords—Brain tumour detection, MRI, Convolutional Neural Network, Biopsy, Keras, Tensorflow, Streamlit, Computer Vision

Design smart Chat-Bot using Artificial Intelligence for online Healthcare system

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Abstract—Despite the fact that maintaining one's health in a decent shape might be difficult at times, the capacity to do so is crucial to one's quality of life and must be maintained at all costs. The goal of this research is to provide a suggestion for incorporating artificial intelligence-based chatbots into the practise of conventional medicine in order to increase the efficiency of the entire existing system while preserving the patient's right to confidentiality at the same time. The Chat-Bot prototype conducts analysis, processes data, and draws conclusions with the help of Numpy, matplotlib, and Pandas. In addition to that, it has a sizable illness-to-symptom dataset that examines the numerous symptoms, analyses them in accordance with the condition, and draws conclusions based on those examinations. The following stage is for the Bot to intelligently offer the link for the medical practitioner who is capable of treating the determined condition or ailment in the most effective manner possible. It is able to accomplish this with the help of the methodically compiled Doctors Dataset, which the computer is able to get at any time. For the purpose of catering to users of varying ages and experience levels, the user interface has been stripped down to its most fundamental components.

Keywords—ArtificialIntelligence(AI), Chat-Bot,Health Care, Medicinal Science, Data Analysis, Security, Natural Language Processing (NLP).

Green Supply Chain Practices and Initiatives in the Indian SMEs

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Abstract- Green Supply Chain Management (GSCM) is one of the recent buzz world in the industrial enterprises in India for the enhancing the capabilities of their supply chain management through sustainability. Industries are more interested in profit making due to sustainable supply chain activities rather than to save environment. Thus in this research, we aim to study the various activities involved in the supply chain processes of the various Indian manufacturing industries & finds how much eco-friendly they are in their logistics as well as supply chain activities by taking into account from the procurement of the raw material to the transportation of the end product. This study will serve the purpose of metering the performance of the Indian industry which includes both small scale as well large scale industrial houses. The major six activities of the supply chain; namely green procurement, green manufacturing, green warehousing, green distribution, green packaging, green transportation are being covered throughout the research from these above process activities we measured the performance of the various Indian manufacturing industries with the help of various crucial performance indicators & their sub-indicator's. The research outcome based on the survey in this research paper identifies the important results that are causes impact on the environment caused by the manufacturing sectors based upon the appropriate methodology we applied for research purpose. In this study, we discussed the various environment factors affecting in the manufacturing sectors while greening the supply chain as identified from the literature review. A survey questionnaire designed with four main factors affecting the sustainable supply chain further having various indicators & sub-indicators. This survey questionnaire was being filled by the various multiple manufacturing sectors in order to find out the sustainability performance of various manufacturing sectors towards green future.

Keywords- Green Supply Chain management (GSCM); Green Procurement, Green Manufacturing, Green Packaging, Green Transportation.

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