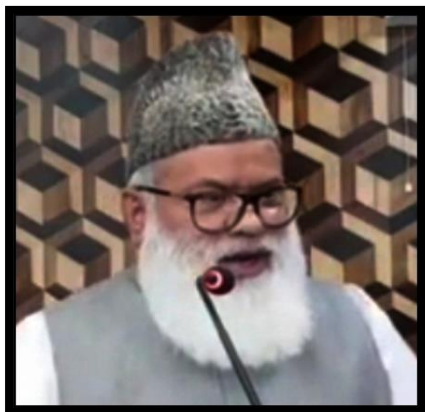




Message from Chief Patron, ICSTS-2022



Hon'ble Arshad Mukhtar
Chairman
Jamia Mohammediyah Education
Society, Mumbai's

The importance of technical education and promotion of the same to the rural landscape is significant for the growth of a nation. India is blessed with a growing population and herein lies the biggest opportunity for overall development. Through the rapid promotion of technical education, we can speed up the development of the nation. It is time now to approach holistic development for national growth and global reach. Further, since the inception of civilization, science & technology have been an integral part of development. The prime objective of the conference (ICSTS-2022) is to promote research and development in science & technology. ICSTS-2022 will promote and provide scientific information exchange between researchers, industrialists, engineers, and students, discussing the recent innovations, concerns, and trends in the region of Science & Technology and Intelligence working globally. Also, the objective of the conference is to bring various experts of research culture together and respond to the noble knowledge, new evolutions, and key issues in the fields related to new technology advancement and innovation in science, technology and sustainability.

I am glad that Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC), Malegaon, is organizing an international conference on Science, Technology, and Sustainability (ICSTS-2022) to discuss the recent trends in innovation and research in all areas of all branches of engineering and allied sciences. I am sure that the participation of international eminent scientists and technologists across the globe will provide a perfect platform for the budding researcher to learn about recent advances in the field of mechanical engineering.

I wish the conference a grand success.



Message from Patron, ICSTS-2022



Hon'ble Rashid Mukhtar
Secretary
Jamia Mohammediyah Education
Society, Mumbai's

The International Conference on Science, Technology and Sustainability (ICSTS-2022) is being organized by Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC), Malegaon. This conference aims to provide a platform for researchers and engineers to share their ideas, recent developments and successful practices in Science, Technology and Sustainability. Our conference, the ICSTS-2022 is not an exception. Due to uncertainty brought by the COVID-19, ICSTS-2022 is going to be held in the Hybrid mode (offline/online). Further, Science, Technology and Sustainability are the hallmarks of success to the nation. This International Conference on Science, Technology and Sustainability today is the need for almost everyone, which brings us to question the role of technical educators that are required to play. I am assured that the ICSTS-2022 conference will be the source of data and information among the researchers, scientists, professors, students, etc. and will drastically change in the approach of research fields and their promotion. The diversification in the wide scope of conference ICSTS-2022 will give rise to knowledge among the researchers and scientists. This conference will also help to identify potential researchers and will guide them systematically to strengthen their research areas.

I wish the conference a grand success.



Message from General Chair, ICSTS-2022

Professor Abdul Quaiyum Ansari

Department of Electrical Engineering,
Faculty of Engineering and Technology,
Jamia Millia Islamia University, New Delhi,
India



On behalf of the Organizing Committee, I welcome all the Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC) professionals to this International Conference on Science, Technology, and Sustainability (ICSTS-2022) on 05-06 November 2022. Building on the success of the conference, the theme for 2022 is a breakthrough for Science and Technology Innovations, and I look forward to learning the latest results from top industrial, government, and academic scientists on these topics and everything else that is presented. We are, indeed, in that space of time where there are a lot of great innovations taking place in various fields of engineering. This program promises to be an excellent and opportunistic event for networking and research. Set in the beautiful and historic city of Malegaon, I hope this conference instills lasting memories beyond science and technology. I add my best wishes for a successful and fruitful conference and extend my thanks to all the organizers.

I am looking forward to an excellent meeting with great scientists from different countries around the world.

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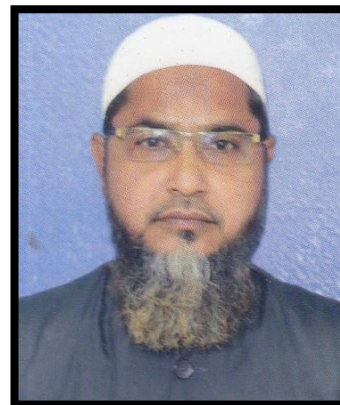


Message from Convener, ICSTS-2022

Professor Aqueel Ahmed Shah

Principal

Maulana Mukhtar Ahmad Nadvi Technical
Campus, Malegaon, Maharashtra, India



I warmly welcome you to the international conference on Science, Technology, and Sustainability (ICSTS-2022), being organized by Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC), Malegaon. This conference aims to provide a platform for researchers, scientists, and engineers to share their ideas, thoughts, recent developments, and successful practices in Engineering. The conference will also facilitate the participants to expose and share various novel ideas. Also, the main goal of organizing this conference is to share and enhance the knowledge of each and every individual in this digital world. We have given a good opportunity for those who have a thirst in knowing the present technological developments and also share their ideas.

In addition, the ICSTS-2022 aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses on current technological trends. It reflects the growing importance of intelligence in engineering and science as the field of research and practice. Participants will get ample opportunities to widen their knowledge and network connections. Outside of the conference, I hope that you would also enjoy some of the many scenic attractions found in and around our beautiful campus. Such a large event is the conscientious of many individuals. I thank the conference committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of ICSTS-2022.

I wish the conference a grand success.



Message from Coordinators, ICSTS-2022



Dr. Dilawar Husain

Dean IQAC

Maulana Mukhtar Ahmad Nadvi
Technical Campus



Dr. Md Tanwir Alam

Assistant Professor

Maulana Mukhtar Ahmad Nadvi
Technical Campus

Esteemed Colleagues, friends, fellow researchers, and dear participants on behalf of the organizing committee, it gives us immense pleasure to present this welcome message for the International Conference on Science, Technology, and Sustainability (ICSTS-2022) to be held on 05-06 November 2022, in Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC), Malegaon.

This conference will provide a platform for experts from relevant fields, academicians, industry representatives, and researchers around the globe to discuss their ideas, achievements, research issues, and challenges in the fields of Applied Science, Engineering, Technology, and Sustainability. We hope that the ICSTS-2022 will also make available an opportunity for potential researchers to learn about recent advances in the field of Science, Technology, and Sustainability. Collaboration of different areas of research is necessary and even essential in today's world, where every research is connected to one another somehow. I expect this conference will also facilitate a chance to make friends, enhance their research network, and will offer an opportunity to do collaborative research



Keynote Speaker

Professor Saidur Rahman

Distinguished Research Professor and Head
of the Research Centre for Nano-Materials
and Energy Technology, Sunway University,
Malaysia



Professor Saidur Rahman is a Distinguished Research Professor and Head of the Research Centre for Nano-Materials and Energy Technology at Sunway University. He was Chair Professor in the Center of Research Excellence in Renewable Energy at King Fahd University of Petroleum & Minerals (KFUPM). Prior to joining KFUPM, he worked for 18 years at the University of Malaya. Thomson Reuters awarded him as a highly-cited (53000 plus google citations) researcher for being among the top 1% of researchers with the most cited documents in his research field from 2014 to 2016. Professor Rahman also won the highest accumulation citation award from the University of Malaya for four consecutive years from 2011 to 2014. He is currently working on improving the performance of solar thermal systems with the application of nanofluids and phase change materials.



Keynote Speaker

Professor Abdus Samad

Department of Ocean Engineering
Indian Institute of Technology, Madras
India



Prof. Abdus Samad is a professor in the Department of Ocean Engineering Indian Institute of Technology, Madras India. He received a Ph.D. degree from Inha University, Korea, India. He has published more than 200 research articles in various International Journals and conference proceedings, 01 book, and written 21 book chapters. He has 11 patents (Indian Patent Office) to his credit He has supervised 04 Ph.D. students' theses. His area of research includes Marine Energy (Wave/Tidal energy), Fluid Machinery/Turbomachinery, Computational/Experimental Fluid Mechanics, Design Optimization/Automated Optimization, Control Engineering, Artificial Lift/Pump for Oil Industry Applications, etc. He is the recipient of the Pace Fellowship from the Department of Energy, USA, Brainpool Fellowship at Seoul National University, The Korean Federation of Science and Technology Societies (KOFST), and the Indian Distinguished Fellowship University of Nottingham.



Keynote Speaker

Professor Ravi Prakash

Department of Mechanical Engineering,
Motilal Nehru National Institute of
Technology, Allahabad (U.P.), India



Prof. Ravi Prakash is a senior professor in the department of mechanical engineering, at Motilal Nehru National Institute of Technology, Allahabad, India. He received a Ph.D. degree in Mechanical Engineering from the University of Allahabad, India. He has published around 63 research articles in various International Journals and conference proceedings, 02 books, and written 08 book chapters. He has supervised 06 Ph.D. theses and 45 M. Tech dissertations. He is the recipient of the British Government scholarship under the ODA (Overseas Development Administration) shared scholarship scheme (1987-1988). He worked as a Visiting Professor in the Department of Energy, Environment and Climate Change at the School of Environment, Resources and Development (SERD) at the Asian Institute of Technology (AIT), Bangkok, Thailand on deputation from the Ministry of Human Resources Development (MHRD), Government of India during September-December, 2017. His area of research includes Sustainability, Life Cycle Assessment, Energy Management & Ecological Footprint of Buildings, etc. He is also an expert/steering committee member in AICTE, NAAC, and many other professor organizations.



Keynote Speaker

Dr. Khizer Saeed

School of Architecture, Technology and
Engineering
Advanced Engineering Centre
University of Brighton, UK



Dr. Khizer Saeed is a Principal Lecturer at the School of Architecture Technology and Engineering Advanced Engineering Centre, University of Brighton, United Kingdom. He has published more than 45 research articles in various International Journals and conference proceedings with more than 1100 plus google citations. His ‘Supervisory Interests’ is in the field of control, automation, energy systems, and nanotechnology projects. He has a keen research interest in human-machine interactions, their control using sensors and visualization, kinematics and structures of automated mechanical systems. He has an interest in automatic nanoparticle production for industrial use and developing new automatic spectroscopic-based techniques for energy systems. He has supervised 4 PhDs as a lead supervisor who now work as a specialist in the industry and academia. He is leading the development of an interdisciplinary "Robotics, Control and AI Lab" Lab with Computing.

Organizing Committee, ICSTS-2022



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A New Approach of Face Mask Detection System Using ResNet50V2 Architecture- **Paper Id: ICSTS-2022002**

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Abstract: *The Validation through face acknowledgment frameworks is generally extremely popular in spite of not many huge difficulties, like fractional impediment of the face. Recently, due to Covid-19 pandemic, it has turned into our necessity to cover the face with a mask to remain protected from the impacts of the COVID-19 infection. Consequently, the updating in conventional facial mask detection system serves at least two purposes in recent scenarios. The first is to identify the individual is wearing a mask or not in the public places, and the second is to recognize the assailants with covered faces to guarantee public security through observation in brilliant urban areas. This paper is aimed to detect the face mask in a video in real-time with a time delay of 1 second approx. For this work, we utilized four variants of deep learning models like ResNet50V2, MobileNetV2, VGG-16 and VGG-19. To train these models, open-source images are downloaded from the Internet. These images are categorized into two class: face with mask and face without mask. Experimental results reveals that MobileNetV2 architecture gives accuracy of about 98% which is highest among its contemporaries. The work proposed in this paper can be merged with real time applications at workplaces, schools, airports, railway stations and other public places to ensure compliance with the guidelines for public safety. This work can also be integrated with any video based surveillance system.*

Keywords: Covid-19, Face Mask, Deep Learning, CNN, ResNet50



Carbide Coatings effect and Cutting Parameters on Cryogenic Turning of Ti-6Al-4V- **Paper Id: ICSTS-2022007**

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Abstract: *Titanium alloy (Ti-6Al-4V) is being increasingly sought in a wide variety of engineering and biomedical applications due to its high strength to weight ratio, dimensional stability, great corrosion resistant, etc. But the major difficulty is to-machine material because of its extremely short tool life, has been a major subject for cryogenic machining research. This paper focuses on the effects of cryogenic cooling on surface finish of Ti-6Al-4V alloy as compared to conventional wet machining environments. Cryogenic machining with liquid carbon dioxide coolant is being investigated by researchers to reduce the cutting zone temperatures and enhance the tool life. Rapid tool wear encountered in machining of titanium alloys is a challenge that needs to be overcome. Work also focused on the effect of cryogenic assistance during machining of Ti-6Al-4V alloy on the tool wear and cutting forces for different combinations of cutting speed, feed rate and depth of cut. This study highlights the use of Taguchi design to optimize the responses (i.e. surface roughness) in turning operation.*

Keywords: Titanium Alloy, Cryogenic Machining, Liquid Nitrogen, Tool Wear, Tool life, Taguchi, Surface roughness.



Ecological Footprint Assessment of Building Materials- Paper

Id: ICSTS-2022015

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Abstract: *Building materials are accountable for significant resource consumptions during the building lifespan; therefore, the environmental impact of building materials should be studied. The aim of this study is to evaluate the environmental impact of different building materials on the planet. The presented approach requires energy use and/or carbon dioxide emissions data from process the lifecycle analysis (LCA) studies as well as agricultural and forest land data for calculation of material's Ecological Footprint conversion value. The findings in this study can also support and facilitate the discussion of the meaningful targets required to achieve the United Nation Sustainable Development Goals.*

Keywords: Building Materials, Ecological Footprint, Sustainability, Environment Assessment, Carbon Emissions



Mechanical and Microstructural Analysis of A356/Si₃N₄ Stir Casting Composites- **Paper Id: ICSTS-2022109**

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Abstract: *Aluminium Metal Matrix Composites (AMMCs) are lightweight materials because of which they are extensively used in automotive and aerospace applications. In this paper, an attempt has been made to fabricate the A356/Si₃N₄ metal matrix composites through stir casting technique. Tensile strength, hardness and microstructural studies are performed. Results declared that tensile strength and hardness were significantly improved on adding Si₃N₄ particles. Scanning electron microscopy revealed the existing and proper distribution of the Si₃N₄ particles. The presence of hard reinforcement and better distribution of the reinforced particles are accountable for the improvement of the mechanical properties. Further, it is concluded that this study will guide to the AMMCs users for proper fabrication technique and specific applications of AMMCs.*

Keywords: Aluminium, Composites, Hardness, Strength, Stir Casting.



**Ecological Footprint of Municipal Solid Waste Management: A
Case Study of Malegaon City (Nashik) India- Paper Id: ICSTS-
2022019**

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Abstract: *Population growth and rapid urbanization are significant contributors to Municipal Solid Waste (MSW) generation. Globally, the annual MSW generation has been reached approximately 2.01 billion metric tonnes, which are projected to increase by two folds in the year 2050, thus this rapid growth will become problematic in near future. Therefore, sustainable MSW management will be required to reduce the environmental impact of waste assimilation. The Ecological Footprint (EF) of MSW management of the relatable urban region like Malegaon City (Nashik), India is calculated in this research work. The method of EF of MSW assimilation has been developed for the two different scenarios: (1) MSW dump as landfill without segregation; (2) MSW segregate and useless portion dump as landfill. The EF of MSW management of Malegaon city is about 77.796 gha per year for Scenario 1; while the EF of MSW management of Malegaon city is about 78.910 gha per year for Scenario 2. This study also presents the MSW recycling options and suggest mechanisms for ensuring that the system is financially sustainable.*

Keywords: Solid Waste Management; Ecological Footprint, Environmental Assessment; Sustainable Measures; Waste Recycling.



Analysis of Structure and Surface Morphology, Synthesis of SnO₂ Nanoparticles Using Hydrothermal Method- **Paper Id:**

ICSTS-2022026

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Abstract: Tin dioxide (SnO₂) nanoparticles were synthesized in the current study utilizing the hydrothermal synthesis technique and annealed at 300°C. Additionally, X-ray diffraction (XRD), scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), and UV-Vis spectroscopy were used to analyze the powder of synthesized SnO₂ nanoparticles. With a minimum crystallite size of 11.21 nm, structural characterization (XRD) confirmed its rutile tetragonal structure. The optical characteristics of SnO₂ nanoparticles were assessed using FTIR and UV-Vis spectroscopy. According to UV-Vis spectroscopy, the band gap was around 3.7 eV, and FTIR supports the necessary bond formation. SEM analysis was utilized to show the porous structure of SnO₂ nanoparticles in morphological investigations.

Keywords: Nanomaterials, Tin dioxide nanoparticles, Hydrothermal synthesis, Tetragonal structure, Morphological properties.



Bubble Deck Slab Technology- Paper Id: ICSTS-2022144

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Abstract: *Bubble deck slab is a method of virtually eliminating all concrete from the middle of a floor slab, which is not performing any structural function, thereby dramatically reducing structural dead weight. High density polyethylene hollow spheres replace the in-effective concrete in the center of the slab, thus decreasing the dead weight and increasing the efficiency of the floor. The advantages are less energy consumption – both in production, transport and carrying out, less emission – exhaust gases from production and transport, especially CO₂ and reduce the material, the load, lower the cost and it is also a green technology. In the bubble deck technology reduce the concrete volume by replacing the spherical bubbles, these are locally available which is called as PEPSI balls, these balls are made up of HDPE (High Density polyethylene). In this experimental program conventional slab and bubble deck slab are cast with various bubbles arrangement which is continuous arrangement of bubbles within whole slab and two types of alternative bubbles arrangement in the slab and trying to enhance the strength of that slab. This implies the realization of a monolithic slab element, which will be subjected to static gravitational loadings in order to determine the load carrying capacity of the slab, deformation (deflection), cracking and failing characteristics. The resultant conclusions will be used in defining the failing mechanisms and advantages of the bubble deck slab are highlighted.*



**A Comparative Assessment of Solar Photovoltaic Thermal
(PVT) System with Solar Photovoltaic (PV) System- Paper Id:
ICSTS-2022105**

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Abstract: *A photovoltaic thermal (PVT) collector combines with the functions of a solar thermal collector and a photovoltaic (PV) module. It is converting the solar radiation to both electrical energy and heat energy. The hybrid photovoltaic collector technology using water as the coolant has been seen as a solution for improving the energy performance. India as a tropical country is deemed to have a good potential for applying this technology. In this solar a hybrid system is fabricated by using a polycrystalline silicon PV module as a solar absorber and the comparative study was carried out with same capacity PV module. Water cooled PV module configured as PVT system with forced flow is studied. The performance of the PVT systems has been experimentally determined for various mass flow rates of fluids. The experimental results show that the performance (efficiency) of the PVT system is better than the simple solar PV system. PVT systems are simple and suitable for electricity generation as well as for low-temperature heating applications.*

Keywords: Hybrid photovoltaic collector, polycrystalline structure, low-temperature heating



**Insights From Field Investigations Into The Selection of
Agricultural Pumps And Its Energy Use- Paper Id: ICSTS-
2022012**

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Abstract: *Assured electricity use in rural areas is a key driver in agricultural growth. Electricity use in rural areas is primarily for pumping the water through agricultural pumps. Choice of type and make of pump will influence the electricity consumed and therefore an investigation into the practices in selection of agricultural pumps would be relevant in designing intervention policies in demand side management of rural electricity use. This paper reports the findings of a study conducted by the authors to investigate how farmers choose their pumps in North Maharashtra. Through structured interviews during field studies crucial data and insights were obtained. We found the use of both branded and unbranded pumps by farmers in the area we surveyed. Initial costs continue to be the key driver in selection of agricultural pumps. Absence of auditing the actual electricity use at the users end is other factor influencing the choice of pumps. Policy intervention through a well-designed finance scheme to promote efficient pumps and metering at the farmers end would go a long way in changing the practices of pump selection and reducing the demand of electricity in rural areas.*

Keywords: Demand side management, Inefficient pumps, Incentives, Field investigations

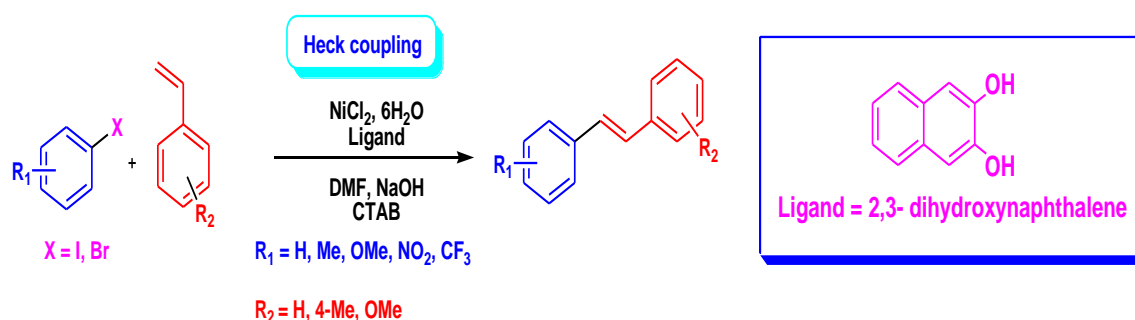
Nickel-Catalyzed Mizoroki–Heck Cross-Coupling Reaction of Aryl halides with Styrenes- **Paper Id: ICSTS- 2022010**

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Abstract: An efficient and simple protocol using $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ with bidentate ligand 2, 3-dihydroxynaphthalene, has been developed with NaOH and DMF as solvent in presence of cetyltrimethylammonium bromide (CTAB) as additive for C-C bond forming Mizoroki-Heck coupling of styrene and 4-methyl styrene with various aryl iodides and bromides having functionalities such as methyl, methoxy, nitro, fluoro, chloro, hydroxyl, trifluoromethyl. Aryl halide containing electron donating groups like methyl and methoxy underwent the conversion smoothly with excellent yields. While electron withdrawing groups like nitro at para position gave a lower yield. The reactivity of aryl iodides was found to be more than aryl bromides. Moderate to excellent yields observed in absence of inert atmosphere and use of cheap and easily available catalyst are the advantages of this protocol.



Keywords: Mizoroki-Heck Reaction, $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$, 2, 3-dihydroxynaphthalene, CTAB.



Analysis of CMOS, Memristor and CFOA Based Full Adder Based on Voltage Mode and Current Mode Input Techniques- **Paper Id: ICSTS-2022112**

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Abstract: *The continued development of microelectronics technology has spawned a myriad of new computationally intensive applications at the micro-edge such as: Artificial intelligence and signal and image processing. Multiplication is an important arithmetic process in such applications. In the arithmetic logic unit (ALU), the 1-bit full adder is one of the most commonly used digital circuit components and the most essential functional unit in all arithmetic circuits. These adders are manufactured using currently available voltage-mode input technology, which has several drawbacks. Existing available VM devices/circuits have bandwidth and size limitations. In such devices, the supply voltage level cannot go below a minimum (down to 1.2 volts), and size limitations also create power consumption issues. We cannot reduce the size any further as power consumption issues may damage the device. Compared to VM devices, current-mode (CM) devices generally operate at lower voltages, have higher bandwidths, and have higher slew rates. However, the shortcomings of the voltage-mode approach can be overcome by converting the circuit to a current-mode precursor. This research focuses on a comparative study of different adders made with different technologies. This research focuses on the comparative studies of different adders made on different technologies such as on 45nm and 180 nm TSMC Transistor model. Also, the current feedback operational amplifier (CFOA) based adder is made on the above mentioned technologies which is used as the basic building block for current mode adder. This paper does the comparison based in the Power Delay Product (PDP), Propagation Delay and most importantly power consumption of both the techniques i.e. VM and CM.*

Keywords: VLSI, current mode, voltage mode, adders, memristor, adder, CFOA



**Specific Absorption Ratio (SAR) for Human Hand of
4 G, 5G & 6G Mobile Communication- Paper Id: ICSTS-
2022108**

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Abstract: *Comparison the specific absorption rate of the human hand model between the Fourth Generation (4G) , the Fifth Generation (5G) and Sixth Generation (6G) of mobile phone communication. rectangular micro strip patch antenna was designed and operated at (2.3 , 5 & 100) GHz for long term evolution (LTE), 5G Communication & 6G Communication applications respectively. Placing the antenna close to the human hand model and all the simulation executed using the Ansys HFSS. The obtained results for the comparison in the fourth generation is less than the SAR level in the fifth generation and 6th generation, and the SAR level in (4G, 5G & 6G) well below the limitation value recommended by FCC and IEEE.*

Keywords: Microstrip patch antenna, Specific Absorption Rate (SAR), head tissues, 4G, 5G, 6G, HFSS.



**Human Behavior Analysis with Smartphones- Paper Id:
ICSTS-2022131**

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***Abstract:** The mobile phone is an essential part for human life all over the world. In every single minute we are using mobile phone for our various purposes. Mobile phone has become one of the necessities of human life. This scenario is almost same all over the world. The mobile phone has been affected the human behavior and changed the nature of behavior. Human behavior understanding has become one of the most promising research areas in healthcare. The recent technological advances have enabled the recognition of human behavior, unobtrusively. Mobile phones have been one of the most promising devices to track and detect human behavior, but it also provides the coaching strategies. In this research, we will collect user personal data from single user for 1 months which consist of 4 kinds of behavior. There is still no ideal platform that can collect user personal data continuously and without data loss. The purposes of our research is to discover human behavior based on their smartphone. So, we will try to develop a new approach for human behavior model which can deal with those situations. This research paper is based on to find out the human behavior towards the smartphone and analyze their human body activities and its reactions.*

Keywords: Human behavior, Smartphone, Human Body Analysis.



Sustainable Stormwater Management Practices in Advanced and Emerging Countries: A Review **Paper Id: ICSTS-2022011**

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Abstract: *Urban hydrology is essential to the system for managing stormwater in cities. Stormwater drainage in metropolitan regions has become an issue as a result of uncontrolled growth in urban areas, the eradication of vegetation, diminished efficacy of drainage infrastructure, and climate change. The natural hydrological cycle is impacted by urbanization by raising peak flows and reducing lag times. Urban areas experience more floods as a result, while the environment suffers as a result of accelerated erosion and increased pollutants. To regulate surface runoff is to manage stormwater. It can be used in rural regions (for example, to collect rainwater), but it is crucial in cities where runoff cannot permeate due of impermeable surfaces. The major goal of conventional stormwater management was to drain away high peak flows. Various methods for managing urban stormwater in some regions of the world include LID, BMP, SUDS and WSUD. This paper is intended to give an overview of the studies and initiatives about environmentally friendly stormwater management that have been carried out in both advanced and emerging countries. Additionally, it analyses the stormwater practices in Delhi India, highlighting the necessity of sustainable stormwater management.*

Keywords: Low Impact development (LID), Best Management Practice (BMP), Sustainable urban drainage system (SUDS) Water Sensitive Urban Design (WSUD)



**Experimental Investigation of Performance of Natural
Convection Based Mixed Kind Solar Dryer- Paper Id: ICSTS-
2022042**

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ABSTRACT: *This study deals with the removal of moisture content from the processing crop up to the safe shelf-life with the help of Mixed Kind Solar Dryer. For this, spinach leaves have been taken as the processing crop which contain 92% of initial moisture content and after the drying process in solar dryer, final safe shelf-life moisture content of 9-10.5% has been obtained. Reduction in moisture content from the spinach leaves up to the safe limit, it has taken 7-8 hours having 122gms initial weight in both the trays of solar dryer during experiment within the environment of natural convection heat flow. Eight mathematical models of drying in thin layer manner have been used to find the best fitting curve between the moisture content and drying period. For the spinach leaves dried in mixed kind solar dryer, Midilli et.al model provides the best fitting curve which is the indication of the best model.*

Keywords- Moisture content, mixed mode solar dryer, spinach leaves, safe self-life, drying period.



Design and Analysis of Carbon Fiber Composite Gears- **Paper**

Id: ICSTS-2022004

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Abstract: *In automobile vehicles, critical components are designed censoriously. The conventional transmission system drastically affects the performance and life of gearbox shaft due to use of high rotational inertia and lower damping properties of the materials. Thus there is need to find better alternative material having better mechanical and higher damping properties with low inertia. This paper describes the methodology of design and development of carbon fiber composite gear for all –terrain vehicles. The carbon fiber composite gear have been analysed for its forces by using finite element analysis (FEA). Further, influence of the rotational inertia of the system on a carbon fiber composite gear is also studied analytically. The results of the study reveals that the use of perpendicular winded carbon fiber reinforced polymer is suitable and safe.*

Keywords: Carbon Fiber, Composite, Gears



Production Process of Mexicana Oil biodiesel and Quality

Testing Paper Id: ICSTS-2022107

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Abstract— *The prerequisite to search for different alternative sources of energy and power development, it is mandatory to find it and utilized and most important is which are renewable, safe, non-polluting normal price hikes of fossil fuels in the national & international market undertake top significance given the uncertain supplies. Biodiesel (fatty acid methyl ester) developed from triglycerides by trans-esterification. This method of biodiesel preparation has attracted considerable attention as well as a highly deliberated topic throughout the past decade as a renewable source of energy development with the characteristics of biodegradable and non-toxic fuel. Numerous processes of alternative fuel production have been established, the present work deals with the property, performance & quality testing by IBDC (Indian Biodiesel corporation Baramati) biodiesel and their performance analysis by emission calculation of the Mexicana oil biodiesel. The results indicate that the Mexicana oil shows good performance and reduced smoke production as compare to another biodiesel & normal diesel.*

Keywords: trans-esterification, biodegradable



**Comparative Experimental Study on the Behavior of
Conventional Ferrocement and Modified Ferrocement with
Natural Fibre- Paper Id: ICSTS-2022129**

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Abstract: Ferrocement is a form of reinforced concrete in which the reinforcing elements are dispersed and arranged. It consists of closely spaced, multiple layers of mesh or fine rods completely embedded in cement mortar. This paper represent experimental study is carried out to investigate the durability of natural fiber mortar using co-co nut hair and jute as a long fiber. Both co-co nut hair and jute are replaced by 1% by total weight. Overall unit weight of the sandwich composite elements falls in the range of the light weight structural element. Ferro cement wall panel with different infill materials of size 55mm x 150mm x 40mm were cast and tested under uniaxial load. Experimental studies and research must determine the result in terms of ultimate load carrying capacity, compressive strength, load vs deflection graph analysis and stress vs strain graph. The experimental result emphasized that better cracking resistance, high serviceability and ultimate load carrying capacity.

Keywords: Ferrocement, Natural Fibre, Coco-Nut Fibre, Flexural Strength



**Experimental Study on Partial Replacement of Cement by
Stone Dust in Concrete to Reduce Ecological Footprint- Paper**

Id: ICSTS-2022169

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Abstract: *Stone has been widely used in structures since ancient times. With the increase in production of stone it increases the waste that obtained from it. As marble stone powder is the waste product, obtained during the process of sawing and shaping of stone by parent stone rock, contains heavy metals which makes the water unfit for use. In this study the effect of using stone powder as constituents' concrete by partially reducing quantities of cement has been studied in terms of the relative compressive as well as flexural strengths. Partial replacement of cement by varying percentage of marble powder reveals that increased waste stone powder result in increased workability and compressive strengths of concrete. It is found that marble stone powder can be used in 10 % in compressive elements, in tension elements and in flexural element. It saves cement and thus reduce global warming.*

Keywords: Marble Powder, waste sludge, Compressive Strength, Flexural Strength.



Analysis of Node Density Impact on Performance of Different Wireless Sensor Network MAC Protocols- **Paper Id: ICSTS- 2022008**

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Abstract: *Energy is a limited resource in wireless sensor nodes. Radio transceiver is the main component of the wireless sensor node that consumes the highest amount of energy. MAC protocols play a vital role to control the operation of radio and it significantly affects the energy consumption of the whole wireless sensor network. An important issue in the design of Wireless Sensor Network is the choice of an energy efficient MAC protocol. The performance of MAC protocols is influenced or impacted by different network parameters such as sensor density, network diameter, physical layer properties etc. Our goal is to conduct a comparative study of different MAC protocols taking into account these network parameters. This work mainly deals with the study of different wireless sensor network MAC protocol's performance with different network density (sparse, medium dense, dense and highly dense network). We considered energy consumption and packet delivery ratio as performance metrics in the work. We chose Constant Bit Rate (CBR) traffic as the application traffic to be investigated. The study was carried out using WSN simulator and the key QoS parameters considered in this study are packet delivery ratio and energy consumption in nodes. Finally, the comparative performance analysis and results of the MAC protocols under study was obtained based on the simulation experiments. The results show that IEEE802.15.4 868bpsk MAC protocol has the highest network lifetime and highest packet delivery ratio, in all the node densities. We also proved that B-MAC protocol has a higher packet delivery rate than X-MAC protocols in all the considered node densities.*

Keywords: MAC protocol, CBR traffic, WSN, PDR, Energy Consumption



**Fault Detection and Vibration Analysis of Flour Mill System-
Analysis of Node Density Impact on Performance of Different
Wireless Sensor Network MAC Protocols- Paper Id: ICSTS-
2022013**

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Abstract: *In industrial applications, the uptime of machines can be improved through equipment condition monitoring this minimizes the risks of unpredicted failures. Vibration analysis for predictive maintenance is an important ingredient in achieving this goal. The Vibration analysis of electrical motor bearing lies on the fact that all rotating machines in good condition have fairly stable vibration pattern. Under any abnormal condition these vibration pattern gets changed. The Present work offers a course of action for analyzing the vibration signals of electrical motor of flour mill and diagnoses the health of system for predictive maintenance requirements using FFT analyser this includes recording of the vibration signatures of the system at different conditions for different types of faults like Belt misalignment with pulleys, looseness in the foundation, worn out of belt and analysing these faults for reduction in severity of vibration. The results obtained from the analysis will be used as references and guidelines for predictions of faults in the electric motors more easily and quickly, as well as planning of repair and maintenance*

Keywords: Vibration Analysis; Predictive Maintenance; Fault detection; FFT Analyser



Analyzing Students Performance Using ML Techniques- **Paper**

Id: ICSTS-2022018

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Abstract: *Automatic prediction of Students' presentation is a basic occupation because of the enormous volume of information in instructive data sets. A few notable characterization calculations are applied in this space yet this work proposed a students' execution expectation model in light of regulated ML methods. Furthermore, an outfit strategy is applied to work on the exhibition of the classifier. Ensemble methods approach is designed to solve classification, prediction problems. The expectation results are based on accuracy, precision etc. These administered learning calculations NB, KNN, RM, DT and CATB are utilized for exploratory purposes. CATB calculation accomplished most elevated accuracy 94.15% among others.*

Keywords: Cat Boosting, classifier, prediction.



Retinal Disease Screening Through Local Binary Patterns-

Paper Id: ICSTS-2022020

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Abstract: *Diabetic retinopathy is an ongoing moderate eye infection related to a gathering of eye issues as an entanglement of diabetes. This infection causes serious vision misfortune or even visual impairment. Experts' studies pictures to analyze it and give explicit medicines. Fundus pictures are photos taken of the retina utilizing a retinal camera, it is harmless operation that gives a method for dissecting the retina in patients with diabetes. The right arrangement of these pictures relies on capacity, insight of subject matter experts, and furthermore the nature of pictures. In this paper we present a strategy for diabetic retinopathy identification using MATLAB. This strategy is partitioned into three phases: first stage is pre-handling which includes plate division and vessel division. In next stage extracting different features like difference, mean, skew, standard deviation of texture by LBP and watershed calculations. Lastly, classification is done by SVM and contrasting the highlights with dataset.*

Keywords: Diabetics, infection, SVM, retinal, fundus, dissecting



An Efficient Spam Detection Technique for IoT Devices Using Machine Learning- **Paper Id: ICSTS-2022023**

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Abstract: *The Internet of Things (IoT) has many devices like sensor and actuators which are interconnected to transmit data over wired and wireless channel. Utilizing IoT, the physical devices can generate, receive and interchange the information. IoT applications increase the comfort, efficiency and decrease the human intervention. As more number of devices are connected, the data generated is huge having varying data. Therefore, it requires high security, privacy and authentication. Various machine learning (ML) techniques provide security and authorization, enhance the reliability and safety of IoT things. Hackers learn such techniques to retrieve information from IoT devices. Therefore, in this paper we develop the application to detect the spam in IoT devices using various ML techniques. In this paper ML techniques are assessed using different measurements with huge input data. Each technique calculates spam score by considering filtered input data. This score evaluates reliability of IoT devices under many specifications.*

Keywords: Spam Detection, IoT, Machine Learning, Spamicity score



Design and Modification of A-Arm in Suspension System in ATV- **Paper Id: ICSTS-2022024**

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Abstract: *ATV means All-Terrain vehicle. It is also known as off-road bike. It is designed in such a way that it can handle wide variety of terrain. Independent motion of wheels, capable of navigating on uneven and bumpy road is important characteristic of suspension system for ATV vehicle. The system connects the wheels with chassis by means of an assembly, which provides stiffness necessary to withstand shocks from roads. Suspension system dictates resistance to roll moment, understeer or oversteer characteristics and many other factors. In this way, it is directly responsible for handling of vehicle and safety. The suspension design must be quite stiff in order to bear sudden shocks due to potholes, steep drops, etc. The suspension characteristics of vehicle aide in maneuverability and drive comfort. Therefore, correct design of system is not only a matter of driver safety, but also a key factor in result of racing. It is paramount to select proper combination of spring and linkages to achieve optimum performance. By making some changes in design of a-arm we can distribute stresses more successfully and can use many software's for iteration of geometry. The modification in a-arm will help a lot to distribute many stresses and will reduce the chances of failure. In this work the welding of one extra rod will be attached on centre of A-Arm and also whole new component will be modify by using software like Creo, CATIA and analysis of the result will be done in ANSYS software, where cross section area of rod (circular, elliptical, square) which is best for A-Arm will be checked in this work.*

Keywords: All-Terrain vehicle, ATV, suspension system, safety, ANSYS, A-Arm Modification



Contour Driven Segmentation and Genetic Deep Learning Model for COVID-19 CAD System- **Paper Id: ICSTS-2022025**

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Abstract: Chest radiographs (CXR) assume an imperative part in clinical imaging procedure for assessment of biomedical sicknesses like cellular breakdown in the lungs, tuberculosis. CXR pictures are complicated to get valuable volumetric data's in the absence of primary data and feeble limit data's make it less helpful for clinical estimations. Due to fast spread of sickness it leads to requests most suitable answer for recognizing pneumonia. Because of COVID19, pneumonia is making a high effect on the medical care system. The irregularities of lungs CXR pictures, CAD framework can be used to demonstrative estimations. To overcome complex CXR, Deep learning Convolution Neural Network (GDCNN) is proposed. Further, precision hereditary based assessment is done along with Chan-Vese dynamic shapes ROI division to segregate lung district. At last, computerized profound learning is performed for characterization. The Classification precision is done by open source seat mark datasets which contains in excess of 5000 CXR picture tests to detect the diseases.

Keywords: Grey Level Co-occurrence Matrix (GLCM), Local Binary Pattern (LBP), Histogram of Oriented Pattern (HOG), COVID-19, texture feature



Selection of Best 3D Scanner for Innovation Centre of Academic Institution Based MADM Methods- **Paper Id:** **ICSTS-2022027**

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Abstract - This paper describes a computer-based tool for the selection of 3D Scanner for educational propose by using Multi Attribute Decision Making (MADM) strategies particularly Analytic Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). In education, 3D scanning technologies facilitate improved learning, skills development, and increased student and teacher engagement with the subject matter. Furthermore, 3D scanning sparks greater creativity and collaboration in solving problems, to settle on a best option for teaching learning process tasks into account. MADM methods are interpretative processes which are well suited in choice of different 3D scanner. This work suggests AHP and TOPSIS to judge 3D scanner alternatives for choice of method, based on the AHP and TOPSIS methodology, ranks available techniques by a score resulting from the composition of priorities at different levels, each considering homogeneous and independent evaluation criteria. In this work proposes a comprehensive list of key factors that have a significant influence on 3D scanner selection. In this work size of object used for scanning and use fix distance from object to camera considered as common for all scanner. A total of 09 sub-criteria have been identified and grouped under three main criteria, namely, (i) General Specification (G) (ii) Cost (C), (iii) Output Specification (O). These entire criteria area unit extracted from on-line literature and skilled opinion. Result of study shows that 3D Scanner SN4 (Matter and Form 3D Scanner V2 model) was designated because the best suited for Innovation Centre Academic Institution.

Keywords -3D Scanner, MADM method, AHP method, TOPSIS method, Innovation Centre, Academic Institution



Communication Advancement Through Blockchain and Cryptography Combo Approach- **Paper Id: ICSTS-2022028**

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Abstract: *Blockchain is one of the new trending and buzz words of our times. It is more secure and trustworthy than any other technologies. Another development that has major implications for the future of how a thoroughly linked society will exchange money and personal information. Although there is just a small amount of empirical investigations on it it's so new, that this is developing substantially. Cryptography is the most advanced way of IT security. These sophisticated cryptographic techniques are intended to secure blockchain data and ensure data transfer while increasing awareness of it and demand for blockchain technology. At various phases, Blockchain utilized cryptography, and some of the techniques used in Blockchain are cutting-edge in the field of cryptography. The survey gives a general introduction to cryptography and Blockchain Technology and to examine how the two developments might work together to improve communication system security. Difficulties of blockchain security are additionally broken down and introduced momentarily in this paper. This Combination approach is going to be used for security purposes in future communication systems.*

Keywords: —: Blockchain, Cryptography, Encryption, Decryption



Network Intrusion Detection for IoT Security Based on Learning Techniques- **Paper Id: ICSTS-2022029**

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Abstract: *Intrusion detection is crucial security problems in today's cyber global. A range of techniques were developed. In this paper, we find out intrusion pick out the attacker's details. IDS are specifically sorts, Host based, and community based. A bunch based totally Intrusion Detection device (HIDS) monitors character host and sends signals to consumer if suspicious sports together with modifying or deleting a system report, undesirable sequence of gadget calls, unwanted configuration modifications are detected. A network based totally Intrusion Detection machine (NIDS) is placed at network points inclusive of a gateway and routers to check intrusions. In this paper, KDD cup IDS dataset changed into taken from dataset repository. Then, we have to enforce the pre-processing strategies. Later mastering algorithms along with Logistic regression (LR), okay-Nearest Neighbour (KNN) and Random woodland (RF) is used. The experimental outcome shows that the accuracy for above mentioned gadget learning algorithms is high.*

Keywords: Driver drowsiness, Eye detection, Eye Tracking, face detection, PERCLOS



A Smart Alert and Drowsiness Detection System for Drivers using Raspberry Pi- **Paper Id: ICSTS-2022030**

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Abstract: *One of the major contributing factors to traffic accidents is driver weariness and drowsiness. The number of fatalities and injuries worldwide rises each year. An Advanced Driver Assistance System module is included in this publication (ADAS). This technology uses artificial intelligence and visual data to automatically detect driver drowsiness. It is designed to decrease the frequency of accidents caused by driver weariness and, as a result, boost transportation safety. In order to evaluate PERCLOS, a measure of tiredness linked with slow eye closure that has been backed by science, we suggest an algorithm to find, track, and analyze both the driver's face and eyes. This system's primary function is to monitor the driver's eye and facial movements, as well as whether or not they appear tired.*

Keywords: Driver drowsiness, Eye detection, Eye Tracking, face detection, PERCLOS



**A Survey on Smart City Surveillance System- Paper Id: ICSTS-
2022032**

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Abstract: *The significance of smart cities is constantly growing as the world's population is moving towards urban areas in search of new opportunities for their development and the betterment of their future. This rapid influx of migrants has increased the pressure on the services deployment, traffic congestion within the city, prevention of criminal activities, energy usage and waste reduction. This can lead to the impending failure of the management system within the cities, looming with the burden of issues. These events have triggered the remediation of such issues through the development of smart cities projects. In order to obtain a realistic answer to this challenge, several pilot programs have been initiated around the world. Smart city surveillance systems are being designed to make the urban areas smart enough to monitor the changes and activities in their ambient environment. For the handling of such rapidly growing issues, the governments along with their supporting organizations, private organizations, other non-governmental agencies working non-profitable, academics and researchers and the general public of the nations must work collaboratively on innovative ideas with the use of different technological advancements. This paper provides a survey of the various smart city initiatives for the betterment of the living standards of the residents. Various open issues and challenges have been discussed. Solutions proposed in the field, for the remediation of the looming issues, have also been looked upon. Finally, the future perspective in the domain has also been reviewed and the impact of smart city surveillance system into the people's lives has also been looked upon.*

Keywords: smart city, surveillance, urbanisation, intelligent, technology, IoT, ICT.



Growth on the study of Tool wear using deep learning: A

Bibliometric analysis- Paper Id: ICSTS-2022034

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Abstract: *Industry 4.0 technologies, such as the Internet of Things (IoT) and deep learning (DL) methods, have made it possible to improve factory safety and cut down on repair bills. The cutting tools deteriorating can put the machine's users at risk financially and put them at risk of injury. When it comes to making sure machine-tools are made safely and increasing productivity, tool wear (TW) monitoring is crucial. The cutting tool life can be maximised with the use of precise wear prediction. Thus, the use of DL in condition monitoring of tools is crucial. The primary objective of this study was to apply lens based bibliometric analysis conducted on 120 of 227190 DL scholarly references related to TW to identify the growing body of scholarly literature on the topic of DL and TW. Therefore, the proposed research is examining TW in an effort to determine the impact of DL approaches and recommend areas for future investigation. The results suggest that DL has made a substantial contribution to this field. Furthermore, the outcomes demonstrate the huge application of Convolutional neural networks in this field.*

Keywords: Tool wear (TW), Deep learning (DL), Bibliometric analysis, lens server



Utilization of Plastic Waste in Brick Manufacturing- Paper Id:

ICSTS-2022035

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***Abstract:** As the use of plastic increases, so does the generation of plastic waste. Non-biodegradable plastics can remain on Mother Earth for years without degrading. That's why it's so important to find a solution to reuse them effectively. Plastic waste has recently been used as an alternative material in the construction industry. Building blocks made from plastic waste promote both sustainable development and protection from environmental hazards. In this paper, plastic waste such as HDPE and PP is added in varying proportions to sand during the production of plastic brick. These manufactured bricks are lightweight and have good compressive strength. It is also environmentally friendly and affordable.*

Keywords: Plastic waste, HDPE, PP, Compressive strength



A Review of Friction Stir Welded (FSW) Aluminum

Alloy Joint- Paper Id: ICSTS-2022036

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Abstract: Friction stir process (FSP) is a preferred solid state joining method for soft materials like aluminium alloys because it avoids many of the issues associated with fusion welding. For harder alloys such as steels and titanium alloys, the FSP technique is commercially viable, pending the development of cost-effective and reliable equipment that consistently result in structurally good welds. Material selection and design have a significant impact on equipment quality, weld quality, and cost. Many soft materials, such as aluminium, and hard materials, such as various steels, titanium, and other metals, are also relatively well welded using the FSP. The procedure involves using rotation and friction between tools to heat the work piece's material. The melted materials are mixed together, and then a joint is produced. FSP involves rotating and slowly plunging a cylindrical, shouldered tool with a profiled probe into the joint line between two butted sections. Frictional heat is produced between the wear-resistant welding tool and the work piece material. This heat is not enough to melt the metal, but it is enough to allow the tool to move along the weld line. The plasticized material is moved from the tool's front edge to the tool probe's rear edge, and it is forged by the tool shoulder and pin profile making intimate contact. Joining of metal using Welding process is a crucial manufacturing operation for constructing complicated structures. Fusion welding produces hazardous fumes as a result of the usage of consumables such as filler materials, electrode coatings, shielding gases, or fluxes, which have an adverse impact on both the human health and environment. Friction stir process (FSP), an energy efficient solid comparable or different metals, has huge potential in the Aluminium is a versatile metal that may be used in a variety of engineering and non-engineering applications ranging from household to space applications. The majority of research is concentrated on aluminium alloy series such as 1000, 6000, and 2000, with a few studies on 5000 and 7000 and very few studies on 3000 and 4000. As a result, the 3000 series aluminium alloy has the most research potential. Heat exchangers, air conditioning evaporators, aircraft and military components, motor vehicle radiators, freezer linings, tubing and piping, pressure vessels, corrugated roofing, cooking utensils and culinary equipment are all made of the aluminium alloy AA3103. When welding on an FSP unit, adequate maintenance and foundation are required. To optimize the quality and strength of welding, characteristics such as spindle speed (rpm), feed (mm/min), and tool shape must be carefully chosen. Experimental approaches were utilized to determine the least number of experiments to be performed within the acceptable limit of factors and levels in order to improve work efficiency and quality in research and development. To improve the quality and strength of the FSP joint, additional pre and post treatments will be used. It is essential to analyze the mechanical and metallurgical qualities of FSP joints in order to investigate the work that has been undertaken. As we know how much importance of joining of metal is important for rapid growth of industry. So continuous improvement and research are required towards betterment process. Here we focused only for aluminium material because of its variety of application. Hence study, experimentation and analysis focused on the joining of two flat plate of aluminium using friction stir process. By reviewing various research articles we found that many experimentation is towards metals like copper, magnesium, aluminium 1000, 2000, 5000, 6000, 7000 series. Hence study, experimentation & analysis required for aluminium 3103 due to its versatile range of application. Second part of research is why selection of friction stir process and post heat treatment on workpiece is that, friction stir is a energy efficient friction stir welding and non-adverse impact on both the human health and environment. Post heart treatment is to dilute or depolarize concentrated stresses raised during joining of metal.

Keywords: FSW, Friction Stir Welding, FSP, Aluminum, Spindle speed, Feed



Data Extraction and Analysis Based on Image Processing Techniques on Welded Surfaces- **Paper Id: ICSTS-2022043**

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Abstract: *Image processing techniques have been utilized as a surface quality measurement tool and provided superior results in detecting any irregularities (e.g. edges, cracks, defects, etc.) in weld metal surfaces to ensure its high-precision applications. In this study, on two weld rectangular work pieces samples (S1 and S2), the “black and white algorithm” and “canny edge detection analysis” were used to evaluate the pixel value using MATLAB code. The estimated percentage imperfection of S1 was 9.1096%, and that of S2 was 5.676% respectively. Further, the corresponding overall perimeter of surface imperfection was estimated as 22298 pixels for S1 and 80029 pixels for S2. Therefore, S2 has a superior surface finish as compared to S1. Hence, image processing techniques can be used as a surface measurement method for testing weld work pieces.*

Keywords: Image processing, MATLAB, Edge detection, Surface cleanliness.



Mathematical Modeling of Thin Layer Drying Characteristics and Dielectric Properties of *Daucus Sativa*- Paper Id: ICSTS- 2022045

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Abstract: *The investigations were carried out to study carrot's drying and dielectric characteristics and analyze the effect of shape and temperature on the hot air drying process. Validation of 4 statistical models was performed through regression analysis to select the best model. A critical analysis was performed with parameters- R^2 (0.957- 0.999), RMSE (0.0066- 0.093), AIC (-209 to -54.6 for Henderson and Pabis model, -74.8 to -11.8 for Wang and Singh model, -91.47 to -22.7 for Newton model and -140 to -46.6 for Page model), BIC (-206 to -54 for Henderson and Pabis model, -72.4 to -10.76 for Wang and Singh model, -90.3 to -20.28 for Newton model and -138 to -43.92 for Page model) and residual errors (-0.03 to 0.03). It was observed that the Henderson and Pabis model performed better than other models for this study. Further, effective moisture diffusivity was determined using Fick's second law of diffusion which was maximum for cylindrical slices and increases with increasing the temperature and varied from $3.02 \times 10^{-8} \text{ m}^2/\text{s}$ to $1.86 \times 10^{-6} \text{ m}^2/\text{s}$ whereas activation energy varied from 68.512 kJ/mol to 74.256 kJ/mol. The influence of moisture content and frequency on the dielectric characteristics and penetration depth was analyzed and compared with predicted values. A linear and cubic model was proposed to interpret the dielectric behavior. The dielectric properties increased whereas penetration depth decreased with an increase in moisture content. Dielectric properties and penetration depth showed a decreasing trend whereas conductivity increased with frequency. The outcomes express the drying traits of carrot to infer that cylindrical shapes have the capability to enhance drying.*

Keywords: Drying, Dielectric characteristics, Moisture content, Penetration depth, Regression, Modeling.



Cloud-Based Event and Agricultural 4.0 Data Management-

Paper Id: ICSTS-2022104

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Abstract: *The Internet of Things (IoT) is an innovative technology that offers practical and dependable explanations for the modernization of various areas. IoT based solutions are being developed to automatically maintain and monitor agricultural farms with minimal human involvement. A enormous amount of information must be gathered, stored, and processed quickly due to the production of the Agriculture 4.0, also known as Smart Agriculture or Smart Farming. Processing these massive amounts of data requires specialized infrastructure that makes use of IoT architectures that have been modified. Our review provides a comparative overview of Agriculture 4.0's use of the Central Cloud, Distributed Cloud Architectures, Collaborative Computing Strategies, and modern trends. We attempt to address few research queries in this review: Agricultural IoT: A Data-Centric Perspective, Cloud-Computing Platforms, From the Field to Cloud and Back: The Communication Setup, Transferring Data to Cloud using LoRaWAN, End Device Classes etc.*

Keywords: Internet of Things (IoT), Agriculture, Cloud Computing, LoRaWAN etc.



Strategic Solar Furnace Design with Reduced Carbon

Footprint- Paper Id: ICSTS-2022110

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Abstract: *Over the last two decades there has been tremendous growth in the area of renewable energy. Several models for tapping solar energy have been developed and also commercialized at various levels. However, the work related to application of direct solar radiation to melt metals has been limited. Hence in the current work an attempt has been made to build a solar furnace using a television dish antenna of 6 feet diameter. Such models have been explored for smokeless cooking but not for melting due to their small capacity. Despite the smaller size and low wattage, the melting of aluminum-based alloys was accomplished through a strategic design of a metallic crucible placed at the focal point. This strategy greatly helps in power savings and reduction of carbon foot print to melt or remelt nonferrous alloys like aluminum, gold or silver on a small scale.*

Keywords: Solar Furnace, Parabolic Dish Antenna, Melting, Aluminum alloys, Carbon foot print



Effect of Nanoparticles on Tribological Properties of Metal Matrix Composites- A Review- **Paper Id: ICSTS-2022113**

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Abstract: *Composites fabricated by introducing nano particles in metal matrix exhibit great ability to replace conventional Metal alloys and Metal Matrix Composite since Metal Matrix Nanocomposites (MMC) possess some extraordinary properties. In this research article, effect of Nano sized fillers on properties of metal matrix composites especially tribological properties are reviewed. Past researches clearly indicate that addition of nano particles into metal matrix or alloy improves tribological properties in terms of reduction in wear rate and decrease in Co-efficient of friction. Addition of graphene, nano graphite and carbon and tube formation of solid lubricant layer which cause improved wear resistance while other nano fillers (Al_2O_3 , SiC, TiC, WC) cause improvement in micro hardness and Orowan strengthening mechanism to reduce wear and friction of composite materials. Nano particle reinforced metal matrix composites hence proved to be ideal for various tribological applications.*

Keywords: Graphene, Tribological Properties, Nanocomposite, Wear resistance, Micro hardness



IOT Based Performance Analysis of Water Level Control

Using NS2- **Paper Id: ICSTS-2022114**

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Abstract: *In general, for showing tank filling status one pipe is inserted into the tank and when water begins to flow through this overflow pipe, it indicates that tank is full and the pump needs to be turned off. But it only shows tanks filling status. In this paper, by controlling the motor that pumps water into four tanks, the water levels in those tanks are monitored and managed. A float sensor is used to detect the level of the water. Total 16 float switches needed to detect four different water levels of four tanks. This paper also shows how to analyze routing protocols for the best possible internet connectivity. For the performance analysis, two routing protocols, AODV and DSR, are used. In order to gain a better understanding of mobile nodes for a given traffic and mobility model, we simulated both mobility routing protocols using NS2.*

Keywords: Float sensor, Internet of Things, AODV, DSR, NS2



Design and Fabrication of Solar Cooker using a Parabolic Dish

Antenna- Paper Id: ICSTS-2022115

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Abstract: *The global energy consumption has been rising drastically all over the world. This has put a great strain on many developing countries which are facing acute shortage of coal. Considerable research work has been done using photovoltaic panels that are used to light cities, generate power and run electric vehicles. However, the cost of such panels is high and it takes many years for the domestic users to get their return on investment. Hence in the current work a solar cooker that can be heated directly by suns radiation was fabricated using a small six feet diameter dish antenna. A light reflective material that can withstand all weather conditions was used to concentrate the solar energy replacing the heavier and more expensive stainless steel or mirrors as reflectors. A pressure cooker coated black on its lower half was used successfully to cook a variety of dishes.*

Keywords: Parabolic Dish Antenna, Solar Cooker. Reflective Material, Solar Energy



Static and Dynamic Analysis on The Laminated Composite Cylindrical Pressure Vessel- **Paper Id: ICSTS-2022118**

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Abstract: *Cylindrical pressure vessels are widely used for commercial, under water vehicles and in aerospace applications. At present the outer shells of the pressure vessels are made up of conventional metals like steels and aluminum alloys. The payload performance/ speed/ operating range depends upon the weight. The lower the weight the better the performance, one way of reducing the weight is by reducing the weight of the shell structure. The use of composite materials improves the performance of the vessel and offers a significant amount of material savings. In the present work the static and dynamic analysis of laminated cylindrical pressure vessels has been done in ANSYS 19.0. The performance of the cylindrical pressure vessel has studied for different lamination scheme, different fibre orientation, different radius to shell thickness ratio and is compared with the performance of Steel pressure vessel.*

Keywords: Cylindrical, Pressure vessel, Laminated Composite, Static, Dynamic.



Simulation and Optimization of Computed Torque Control 3 DOF RRR Manipulator Using MATLAB- **Paper Id: ICSTS- 2022119**

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Abstract: Robot manipulators have become a significant tool for production industries due to their advantages in high speed, accuracy, safety, and repeatability. This paper simulates and optimize the design of a 3-DOF articulated robotic manipulator (RRR Configuration). The forward and inverse dynamic models are utilized. The trajectory is planned using the end effector's required initial position. The trajectory, position, and velocity of the physical end effector are computed using a torque compute model. The MATLAB Simulink platform is used for all simulations of the RRR manipulator. We mainly concentrated on manipulator control of the robot utilizing a calculated torque control approach to reach the desired position with the help of MATLAB.

Keywords: Robotic; Manipulator; RRR Configuration Manipulator; MATLAB Simulink; Inverse and forward dynamic; Computed torque control; Simulation and control.



Planning of Sustainable City- Paper Id: ICSTS-2022123

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Abstract: *The sustainable city is a modern application of social, economic and environmental sustainability in the built environment. A sustainable city concept incorporates eco-friendly practices, green spaces and supporting technology into the urban environment to reduce air pollution and CO₂ emissions, enhance air quality, and protect natural resources. These practices lead to a healthier environment for city residents and a lower carbon footprint for the city. Sustainable cities are becoming essential in the quest to reverse global climate change. In this study, the low-carbon new towns differ from conventional ones in their social, environmental and economic characteristics is posed. Compared to conventional new town plans, the eco and low-carbon city plans incorporate more of a focus on sustainability principles. We examine such perceptions by comparing the master plans of eco, low-carbon and conventional new towns or net zero carbon city in various aspects ranging from general principles to specific design and also a conceptualization of the research and practice challenges facing those of us working towards sustainable cities.*

Keywords: Sustainability; City Planning; Emissions; Environment Assessment, Economics



A Meticulous Study of Encroachment Assessment on Major Areas of Malegaon- Paper Id: ICSTS-2022128

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Abstract: Looking at the last 20 to 30 years, the average population growth rate was 292%. The figure is 3,88,000. That is three hundred and eighty-eight thousand in the year of 1995. The post-current population growth ratio is 748,000, which is a percentage of 233% with increasing urbanization. The problems make an appearance, so-called encroachment, and the city is recognized by itself. There are various factors engendering the encroachment of people in Malegaon. As a result, the problem of encroachment is relatively new in Malegaon, despite the fact that the causes and the local public of Malegaon city are not well known because no research has been conducted to date, so the problem is getting enlarged extensively to get the better of or overcome this and to find significant complications. This study will definitely help to answer those questions through an exploratory and qualitative approach. A further analysis is needed through a detailed case study on the overrun in the city of Malegaon. A detailed study has been done on areas such as the old Agra road, Kusumba road, and the corresponding Loknete Vyankatrao Hire Marg to find the percentage rate of encroachment and take initiative to move. That's our prime focus as engineers, i.e., to take a comprehensive approach to the subject matter and give services to society, having very actual field circumstances. This fact is practically available on the road because of the heavy number of vehicles parked on the freeways in spite of the slots assigned for that special purpose. As a result, it causes very high traffic congestion, conspicuously during peak hours, and finally, it increases the road accident difficulty for the residents of those areas, mostly for ambulance vehicles. one of the key aspects of this study is to change the public paradigm towards encroachment. What are the different solemn parameters that are going to happen? The study concludes with the concept of reducing encroachment and its remedial measures, reformative and in the interest of traffic problems, with the help of government policies and the application of several techniques to sort out the problems of encroachment in Malegaon city.

Keywords: Encroachment of road, Urbanization, Traffic problems.



Comparative Assessment of Rigid Pavement and Flexible Pavement Design- **Paper Id: ICSTS-2022153**

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Abstract: *Pavement plays a very significant role in smooth transportation as well as helps to develop the society. Pavement constructions are responsible for materials consumption, labour and machinery requirements, also effect the ecosystem of the planet. The study focuses on environmental impact of rigid/flexible pavement construction. A novel methodology has been developed to compare two different pavements design (i.e., concrete (rigid) pavements and asphalt (flexible) pavement). The Ecological Footprint of asphalt pavement construction (for 10 m wide and 1 km length with 200 mm thickness) and concrete pavement are estimated as 23.16 gha and 44 gha; respectively. The results indicate that the asphalt pavement contribute 50% less environmental impact than concrete pavement.*

Keywords: Ecological footprint, mechanical properties, environmental impact



Properties of Carbon Nanostructures as Electron Field

Emitters: A Review- Paper Id: ICSTS-2022154

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Abstract: Carbon nanostructures are emerging as promising material as field emitters. Carbon nanotubes, carbon nanoflakes, carbon nanoparticles and other related structures are included in the category of carbon nanostructures. These structures have high current density and low threshold field which make them suitable for many technological applications. In this review article we discuss the recent progress on carbon nanostructure field emitter and their applications.

Key Words: Carbon Nanostructures, Field Emission



Importance Of Regional Flower Plants, Nashik Dist. (M.S)-

Paper Id: ICSTS-2022048

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***Abstract:** The present study focused on the regional flowering plant and its flower. This study used a qualitative type such as various parameter included observation, photography, documentation, and collecting the information giving by the people. This study also focused on interaction between the regional flowering plant and people as the basis the uses of flowering plant. This paper carried the flowering plant identification standard with literature, classification, and uses of human and animal.*

Keyword: Flower plants, Nashik Dist.



**Ocimum Tenuiflorum Leaf Extract for the Green Synthesis of
Iron, Zinc, and Copper Oxide Nanoparticles, Spectrochemical
Characterization, and Antibacterial Effectiveness Against
Several Common Pathogens- Paper Id: ICSTS-2022124**

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Abstract: *Iron, zinc, and copper oxide nanoparticles were synthesized using leaf extract of Ocimum tenuiflorum. We reported a quick, affordable and green synthesis of three metal oxides that shows good antibacterial properties against various common pathogens. Various methods such as (XRD), (FTIR), (SEM) with (EDX), (TEM), and UV-vis spectrophotometer were used for characterization. The shapes and sizes were discovered by the morphological investigation using SEM and TEM techniques. These metal oxide nanoparticles were found to have an average particle size of between 9 and 36 nm. FTIR and UV-vis spectroscopy techniques revealed their optical properties. Disk diffusion experiments were used to investigate the antibacterial properties using Escherichia coli, Salmonella enterica, and Staphylococcus aureus. It has been demonstrated that the antibacterial activity of metal oxide nanoparticles varies with the type of bacterium. With respect to Gram-positive and Gram-negative bacteria, ZnO NPs outperformed iron oxide nanoparticles among the three metal oxide nanoparticles that were studied.*

Keywords: Ocimum Tenuiflorum, Green Synthesis, Metal Oxide Nanoparticles, Antibacterial Efficacy, Root Extract.



Recycling of Demolished Concrete Coarse Aggregate – A Comparative Study Between Recycled Concrete Coarse Aggregate's Normal and Geopolymer Concrete

Paper Id: ICSTS-2022009

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Abstract: *The increasing waste as a result of demolition of constructed old structures are major concerned across the globe. In this study two types of concrete are considered geopolymer recycled aggregate concrete (GRC) and recycled aggregate normal concrete (RAC). The cement less GRC manifest to be a sustainable approach. Recycled concrete coarse aggregate (RCCA) is used partly in replacement of the coarse aggregate in various percentages without any special treatment to RCCA. The Indian standard mix design approach is considered for mix proportioning of RAC of M30 grade. The GRC using processed fly ash of M30 grade is prepared by previous researcher mix design approach with water to geopolymer binder ratio of 0.32 and solution to fly ash ratio of 0.4. The six mixes are taken for each system of concrete and tested at different age. The curing of GRC is done in hot air oven for 24 hours at 80°C and the testing is carried out at the age of 7 and 28 days. The moist curing of RAC cubes are done for a period of 7 and 28 days by fully immersed in water tank. The activated geopolymer concrete compressive strength with recycled concrete coarse aggregate gives distinct result than recycled aggregate normal concrete.*

Keywords: Fly Ash, Geopolymer Concrete; Normal Concrete; Recycled Concrete Coarse Aggregate



**A brief study on the significance of landscaping in improving
people's well-being- Paper Id: ICSTS-2022003**

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***Abstract:** Humans are considered to be impacted by the landscape including aesthetic admiration, health, and well-being. In India, about 7.5% of the population is above 60 years according to the Indian census. The urbanization and hectic modern mechanical lifestyle make the younger generation busy as they give more importance to physical achievements. Our population's older generation is an important aspect of our society. The major aspects that have been regarded as crucial by designers include safe paving, good seating, and strong indoor-outdoor linkages, which are all demonstrably related to elderly people's outdoor usage. There is an urgent need to establish supportive surroundings that improve senior citizens' quality of life. The aim of this research paper is to study different types of landscape elements that act as a health resource that promotes the overall well-being of the aged. An analysis of publications that linked landscapes to health implications is to be carried out to find out how landscape elements contribute to health improvement to provide new design solutions beneficial to human health.*

Keywords: Landscape Elements, Therapeutic Landscape, Senior Citizens, Restoration.



A Comprehensive Review on Double Effect Series, Parallel and Reverse Flow Vapour Absorption Refrigeration System- **Paper**

Id: ICSTS-2022160

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Abstract: *Vapour absorption cooling technology is the most appropriate, efficient and eco-friendly because the system operates at low grade energy in the form of heat and also it uses natural substances as the working pair to run the system. The performance improvement of such systems has currently become a high research priority, to ensure conservation of electrical energy. Performance of these systems depends on two major factors: i) selection of suitable working fluid pair and ii) adopting appropriate configurations and multiple cascaded 'effects' of the absorption cycles. The double effect cycle has significantly large performance as compared to the single effect vapour absorption refrigeration system. In view of this the present communication is discussed the critical review on double effect vapour absorption refrigeration system. It is also noticed that the flow configuration affects the system performance. Therefore, the present work also reports the different flow configuration of the double effect cycle viz; series flow, parallel flow and reverse flow. Results show that the parallel flow configuration has better coefficient of performance as compared to the other configurations.*

Keywords: Vapour Absorption Refrigeration System; Double Effect; Series Flow; Parallel Flow; Reverse Flow



Statistical analysis of physico-chemical parameter of Darna

River water, Nasik (M.S.)- Paper Id: ICSTS-2022049

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Abstract: *In this research paper, statistical analysis carried out of 14 physical and chemical parameter of Darna River water. The sample size was considered as yearly basic at six sampling size. In this general statistical analysis, minimum, maximum, average, Standard Deviation, Pearson Correlation Coefficient were carried for six water sampling site of Darna River during January 2015 to December 2016. Also calculated interrelation between the physico-chemical parameter of water.*

Keywords: Statistical Analysis, Physio-Chemical Parameter, Correlation Coefficient, Darna River



Bridging the Gap between Machine Learning and Medicine: Understanding Recent Advances in Machine Learning-Based disease Diagnosis Systems- Paper Id: ICSTS-2022172

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Abstract: *In terms of both discovery and practical ramifications, there is a significant increase in electronic health records, which presents a chance to improve healthcare for physicians and patients in terms of both automation and precision medicine. Advanced computational methods that can manage huge and complicated datasets are needed to make the best use of these health records. Recent developments in deep learning and artificial intelligence have significantly improved our lives, and the beneficial effects are quite astounding. Due to its rapid adoption of the constantly expanding technology at a faster rate than other industries like finance, transportation, and entertainment, medicine has been particularly open to the advantages of machine learning. Machine learning is the study of model-training techniques that help models find meaningful patterns in data and get better at learning as they go. The probabilistic data is effectively used in health informatics for decision-making. The potential to improve the effectiveness and quality of healthcare is greater when machine learning and health informatics are combined. Recent studies have shown that machine learning can provide algorithms that are more effective than experts in healthcare industry. The patient's risk score is raised and hospital operations are made more efficient thanks to the actionable insights it offers. The use of machine learning in medical notes has completely changed the way that patients' health records are visualized. Applications of machine learning in healthcare are numerous and have outstanding capabilities: In the diagnosis of various types of cancers, such as lung cancer, breast cancer, skin cancer, etc., as well as in the prognosis of various diseases, such as neurological disorders and cardiovascular diseases, as well as in drug discovery, personalized medicine, medical image analysis, and drug discovery. This paper offers a thorough analysis of the use of machine learning algorithms in the development of effective decision support systems for healthcare analysis.*

Keywords: Machine Learning, Healthcare, Artificial Intelligence, Disease Diagnosis, Automated Systems.



**Home Security System Using RTD Sensors- Paper Id: ICSTS-
2022106**

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***Abstract:** Nowadays Home security is the most concerning problems as homes and even offices need to be secure from theft, leak in raw gas and fire. A wireless sensor network-based network coupled with GSM technology will be able to solve the problem to some extent. Recent advances in the field of Information Technology have made Information Security an inseparable aspect of the networks. Authentication plays an important role in security domain. With the advent of internet of things and efficient communication technologies, there has been an increasing trend for home automation. In this paper we have tried to explain various security issues in existing systems of security and implemented a new and trending technology based on network of RTD sensors to secure our homes and homely goods. Use of RTD sensors, which detect the body temperature of trespassers and alarm the inhabitant about the possible security threats. RTD based sensor model is more efficient and robust than the recent state of art models.*

Keywords: Sensor, GSM, Security, Intrusion, RTD Sensor, CCTV



A Bidirectional Long Short-Term Memory Framework for EEG-Based Diagnosis of Epileptic Seizures- **Paper Id: ICSTS- 2022116**

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Abstract: *Detection of brain disorders using deep learning methods has received much hype during last few years. Increased depth leads to more computational efficiency making it possible to build highly performing, optimized, computationally efficient deep neural network, with stacking more hidden layers while maintaining the performance at par with the state of art deep neural networks. We have developed a deep learning model Bidirectional Long Short Memory for Epileptic Seizure Detection (CNN-Bi-LSTM). Our approach can contribute to accurate and optimized detection of seizures while scaling the rules for design and increased performance without changing network's depth and with low latency. The significant feature of our model is that there less depth in the network and it has contributed to accurate and optimized detection of seizures in ideal and real-life situations with less computational cost and latency. The results on benchmark dataset and a data set collected by the authors show the relevance of the proposed approach over the baseline deep learning techniques by achieving an accuracy of 99.8%, 99.7% sensitivity and 99.8 % specificity.*

Keywords: LSTM, CNN, ANN, Epilepsy, Seizure, EEG



Numerical Investigation of Open Microchannel Heat Sinks with Different Pin Fin Heights- **Paper Id: ICSTS-2022063**

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Abstract: Numerical investigation has been carried out in this study to examine the influence of different pinfin heights on the overall performance of an open microchannel heat sink. The microchannel that was taken into consideration in the present work has measurements of $0.1 \text{ mm} \times 0.2 \text{ mm} \times 10 \text{ mm}$. The computational fluid dynamics (CFD) method has been used to simulate five distinct microchannel topologies. Deionized water is used as a coolant and a heat flux of 106 W/m^2 is provided for the Reynolds number ranging from 150 to 350. Nusselt number, Pressured drop and overall performance of all the cases are evaluated and compared with plain and closed microchannel heatsinks. The maximum Nusselt number is achieved by case 2 (reduced length pinfin) of an open microchannel heatsink whereas the maximum pressure drop is associated with the closed microchannel (case 1) followed by case 2. The overall performance of all the configurations of open microchannel heatsink is larger than the closed microchannel heatsink.

Keywords: computational fluid dynamics, microchannel, Heatsink



Random Forest based Robust Human Activity Detection System using Hybrid Feature- **Paper Id: ICSTS-2022064**

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Abstract: *Human Activity Recognition is the process of analyzing surveillance video's for a person's activity. Tracking and identifying activities many times is indeed important in various applications like fight detection, mob lynching etc. Human activity recognition could either be a direct goal or a subsidiary component of a major problem objective. Surveillance for fight detection, crowd violence, public attacks, mob lynching, public robbery etc. are few to list. The researchers are getting done in this direction and algorithm are being proposed for automatic activity recognition but these are limited to the videos recorded from static camera, in maximum cases. The earlier work proposed a new skeleton based feature, "Orientation Invariant Skeleton Feature (OISF)" for automatic Human Activity Recognition. This work uses a hybrid feature which is combination of "OISF" features (proposed by Neelam Dwivedi et al.) and "FVI" features (proposed by S. Kumar et al.) for human activity detection system. Experimental results reveal that the hybrid features used in this paper has minimal dependency on variations of camera orientation. Accuracy achieved is approximately 99.50% with ViHASi dataset and 98.15% with KTH dataset which is higher than those achieved by other researches with existing features. This proves the appropriateness of proposed research in being used commercially*

Keywords: Human Activity Recognition, Orientation Invariant Skeleton Feature



Utilization of Wastes Materials in Soil Stabilization- Paper Id:

ICSTS-2022062

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***Abstract:** Soil stabilization is one of the most longed and awaited fields due to the highly scoped areas it offers as well as due to limited and insufficient studies that have been done with reference to it. Its being as one of the most important concerns is because it is fundamentally related to any structure above or below the datum. The strengthened subgrade can prove to be providing an adequate and requisite base for all civil engineering works. Highway Engineering is the field that mainly deals with the strengthening and enhancement of subgrade material. Almost all additives have been tried and tested with conventional as well as all possible to be requisite tests from numerous scholars who have worked in this field worldwide. This paper produces a collective, aggregate, and conclusive result of the previously researched papers in this regard. It was observed that 10% of cement, .75-1.25% of Plastic Bottle Fiber (PBF), 7.5-15% of Rice Husk Ash (RHA), 5-15% of Fly Ash (FA) by weight were the most strengthening and optimal quantities to be suggested for processing of subgrade material.*

Keywords: Soil stabilization, Plastic Bottle Fiber



Comparative Analysis of Different Topologies of Multilevel Converter- **Paper Id: ICSTS-2022061**

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Abstract: *In this paper a comparative analysis of three level inverter, five level inverter and cascaded H-bridge inverter is presented. The comparison is made on the basis of cost, efficiency and harmonics distortion in these inverters. Now days multilevel inverter is widely used for medium voltage and high voltage power conversion. In three level inverter 3 switches are connected and diode clamped type of circuit is used. For controlling strategy space vector PWM technique and phase shift PWM technique is used in all three topologies. All three topologies are modelled and simulated in MATLAB. On the basis of simulation result gives the more suitable topology of converter at last.*

Keywords: H-bridge, PWM technique



Modified PVT System Design and Performance Study- **Paper**

Id: ICSTS-2022060

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Abstract: *Solar energy is a limitless, cost-free, and environmentally friendly source of energy. A hybrid photovoltaic-thermal system is a combined system that simultaneously generates heat energy and electricity by eliminating extra heat from the module, hybrid photovoltaic-thermal systems improve the electrical efficiency of PV cells. For the CFD study, adjustments are performed to the geometric model, mass flow rate, solar radiation, and water and PV cell temperatures. To obtain the combined findings, a system coupling agent is used to pair the PV module and thermal system. The study has been performed for three various mass flow rates at three various radiation intensities. At 1.47×10^{-4} kg/s mass flow rate and irradiance of 800 W/m², the highest electrical efficiency, thermal efficiency, and total efficiency are 14.6229%, 26.7%, and 65.61%, respectively. Under normal circumstances, the hot water temperature rises by another 10°C in the storage tank, increasing the PV/T system's overall efficiency by 5%. In this study, a conventional PV panel of 72 cells with a maximum electrical efficiency of 17.1% was used.*

Keywords: Solar, Hybrid Photovoltaic thermal system, ANSYS, Fluent, efficiency.



**Comparative Exergo–Economics Analysis of a Modified
Domestic Solar Water Heating Systems- Paper Id: ICSTS-
2022059**

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Abstract: *The current study has been done with an aim to analyze the annual exergo-economic performance of a selected Solar Water Heating System (SSWHS). The SSHWS is a solar water heating system modified by Kirti et. Al. [1]. A comparative study of exergo-economic analysis of system provides a view of benefits of exergy analysis, the exergy aspect of the device and application method of exergic analysis. The results obtained show a carbon emission reduction of 0.205 tonnes per year, maximum and minimum of 7.54% and 4.13% exergy efficiency during the year and a 7.1 year payback period based on exergy.*

Keywords: Solar Water Heating System, exergy, efficiency



Computer Aided Static & Dynamic Performance, Evaluation and Design of Mix Building Type Structure Using E-Tabs

Software- **Paper Id: ICSTS-2022058**

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Abstract: *In urban cities, modern steel buildings are constructed as high-rise constructions. These structures are built to withstand vertical gravity loads as well as lateral forces such as earthquakes and wind. Using traditional manual methods, high-rise structures take a long time to calculate since they are time consuming and complex. E-Tabs provides us a platform for analysing and developing structures that is quick, efficient, simple to use, and accurate. The main goal of this project is to use the E-Tabs software to analyse and design a multi-story structure using a G+10 (3-dimensional frame). Because horizontal building extension is not viable in cities where land is scarce, we must instead expand buildings vertically. And, in order to do so, we must replace traditional RCC constructions with steel structures, which can be expanded cheaply and quickly. Furthermore, the experiences of other countries that employ steel to construct structures reveal that it has a number of advantages, including strength, durability, biodegradability, and recycling. The purpose of this study, is the Analysis and design of high-rise mixed-type buildings using E-Tabs, is to determine the best method for creating geometry, cross sections for columns and beams, developing specifications and supporting conditions, and determining the types of loads and load combinations. In this study, E-Tabs are used to examine a ten-story high-rise structure for seismic and wind load combinations, and a comparison is made. After that, the findings are analysed and compared using manual computations. Lateral displacement, storey drift, axial force, and base shear are the primary factors considered in this research when comparing seismic analyses of structures. Using steel bracing systems to strengthen seismically deficient frames is also a potential option for improving earthquake protection. The bracing system improves the structure's lateral stiffness and strength capability, as well as its displacement capacity. For steel work, the design is based on IS: 800-2007. At the various intersections of the building, several structural parameters such as moments, reactions, bending moments, shear force, axial force, displacements, and so on are studied. This research will provide us with a clear picture of the structure's stability.*

Keywords: Urban cities, Buildings



Hand Gesture Detection in Marathi Sign Language Using Accelerometer and Arduino- **Paper ID: ICSTS-2022057**

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ABSTRACT: *Due to the communication abilities impairment, deaf & dumb peoples are more or less isolated from mainstream societal activities. NGOs, social workers & Governments in India are putting efforts with multiple initiatives to increase the involvement of these peoples in the mainstream activities happening in the rest of world. Educating these impaired peoples in analogous with mainstream education curriculum, training their trainers, training their parents & friends, training the persons who intend to interact them frequently, are the general practices being followed to make their communications more effective. However, these conventional methods are proving to be insufficient to establish concrete communication band among these stakeholders. This paper proposes an alternative method to streamline the communications among speechable & speech impaired persons by using smart hand glove system equipped with 3D accelerometer modules at the fingertips. The deaf person expresses his emotions by making hand gestures which involves instantaneous changes in fingers orientation & palm / hand positions. The study, measurement & evaluation of these changes becomes crucial for the development of entire system. The five numbers of 3D accelerometers, Arduino Mega microcontroller, 3-D printed parts & flexible wires made the proposed glove system compact, lightweight & efficient. Since 3-D accelerometer produces analog output, Arduino Mega microcontroller is more suitable to capture the sensors output. The 3-D printed compact components are used to house the microcontroller, sensors & route the flexible wires. This entire system integrated & validated using Arduino-IDE. Compared to other sensors present in market, 3-D accelerometer sensors are much compact in size, lightweight, precise, sensitive & suits to the sizes of fingertips, making the device more usable, comfortable, reliable & thus user-friendly. The proposed system is delivering the measurement results in very proficient way. The experiments were carried out over 15 persons using the sign gestures, providing good co-relation between the Posed gestures versus system mapped gestures.*

Keywords: Hand Gesture, 3-D printing



Modifications in Steam Distillation Process for Higher Yield of Rose Geranium Oil- Paper Id: ICSTS-2022001

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Abstract: *Geranium oil is an important ingredient in perfumery as middle note. Geranium oil production and farming is profitable now days. In the experimentation on two geranium steam distillation setups, which were used for commercial level extraction of geranium essential oil. this is comparative study between them on the basis distillation time, yield and quality of essential oil. The two setups are customized according to landscape. Both setups have same capacity but numbers of distillation columns are 2 and 4 respectively, also the shape of columns, reflux ratio, dimensions are different. Since, this plant is well adapted to our climate and soil. For oil extraction we required industrial equipment. Steam distillation is traditional method, but it required high amount of wood as fuel, also there are some amount of heat lost and it is a time consuming process. For this I made some changes, it results into saving energy also it increases yield and productivity. I observed the readings on both setups and did the comparative study about yield, distillation time and quality of the essential oil.*

Keywords: Steam Distillation, Yield, Quality, Distillation Time, Geranium oil



Analysis of Karanja and Palm Biodiesels Based on the Performance and Emissions of Variable Compression Ratio Diesel Engine- **Paper Id: ICSTS-2022005**

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Abstract: Biodiesel has been considered as an alternative to diesel fuel since Rudolph Diesel used peanut oil to run his first diesel engine. This was almost one hundred years ago. Today, with the rise of transportation fuel cost and extinction of fossil fuel deposits, world has realized the importance of biodiesels. Biodiesels are made from either edible oils or non-edible oils. This paper aims to compare the performance of a four stroke, single cylinder, direct injection, variable compression ratio diesel engine using two different biodiesels. Biodiesels used in this study are Karanja biodiesel which is non edible, and Palm biodiesel which is edible. The engine's torque, compression ratio and injection pressures were varied to record brake thermal efficiency, brake specific fuel consumption and exhaust gas temperature. Results showed not much deviation in performance characteristics of the engine when fuelled with either Karanja or palm. The results of biodiesels were compared with diesel which showed that biodiesel can be comfortably used in a conventional diesel engine without any modifications.

Keywords: Biodiesels, Variable compression ratio, Karanja biodiesel, Palm biodiesel, Brake specific fuel consumption, Exhaust gas temperature



Production and Treatment of Fuel from Waste Plastic- **Paper**

Id: ICSTS-2022006

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Abstract: *Plastic manufacturing is expected to rise by 3.8 percent by 2030. Plastics that are flexible and non-recyclable are utilized in a variety of applications, including packaging, 3D printing, and construction. A promising approach to keeping plastic waste out of landfills is "plastic to energy" which unlocks the chemical energy stored in it and extracts fuel. Plastics are produced in excess of 100 million tonnes per year around the world, and used items have become a frequent sight in overflowing bins and landfills. Despite efforts to develop futuristic biodegradable plastics, there have been few concrete initiatives taken to address the existing problem. As a result, two universal problems, such as waste plastic and fuel shortages, are being addressed at the same time. We have tried to produce fuel from waste plastic using the catalytic method after we have a better knowledge of the situation. Plastic trash was reduced into three categories using this method: producing gas, oil, and solid residue. Temperature, retention duration, feedstock composition, heating rate, the catalyst used, and condensation are all necessary for this process.*

Keywords: Pyrolysis; Polymer; Catalyst; Oil; Reactor; Condenser; Fuel



**Electro-Fenton Treatment of Reactive Orange 16 dye with
Cost-Effective Stainless-Steel Electrodes Application: Process
study, Statistical Optimization, and Decay Kinetics- Paper Id:
ICSTS-2022014**

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Abstract: *The electro-Fenton (EF) advanced oxidation process was adopted for the treatment of synthetic wastewater of reactive orange 16 (RO16) dye. Low-cost stainless-steel (SS) electrodes were used as working electrode plates in the presence of NaCl electrolyte. The process was studied for the decolourization rate (D_R) and COD removal (R_{COD}) and optimized by Response Surface Methodology (RSM) statistical optimization tool. The main governing operational parameters selected were initial RO16 concentration (q), operational pH value, current density (C_D), and time of electrolysis (t_e). At optimum conditions ($q=135$ mg/L, $pH=3.5$, $C_D=17.5$ mA/m², and $t_e=42.5$ min) the result showed D_R and R_{COD} as 72% and 61%, respectively. The Pareto graph and ANOVA results confirmed that the process was greatly affected by current density followed by pH value and total electrolysis time; whereas the higher initial RO16 concentrations imparted an adverse effect on the efficiency of the process. Perturbation plots drawn for the response variables support the finding of results at the optimized condition and diagnostic plots drawn for model adequacy showed good agreement with the experimental data. Additionally, the kinetic study of the process resulted that the degradation was best represented by the pseudo 2nd order kinetic model ($R^2 = 0.9878$).*

Keywords: Electro-Fenton Process, Reactive orange 16, Stainless-Steel, Response surface methodology, Optimization.



Investigations into the influence of Climatic conditions on the Performance of Cooling Tower- **Paper Id: ICSTS-2022016**

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***Abstract:** Cooling tower is a very important part of many process plants and HVAC systems and it's design affect initial and operating cost. The primary task of a cooling tower is to reject heat into the atmosphere. In this work, small capacity cooling tower used for HVAC or process is designed for efficient performance. Analysis of cooling tower for calculation of important parameters is carried out and performance is estimated by MATLAB program. Also effect of seasons on performance of cooling tower is estimated. Simulated results are compared with test results of cooling tower for rainy, winter and summer season. It is found that there is significant influence of season on performance of cooling tower. Also, various case studies are investigated to validate the design and influence of seasons. It is humidity which affects the performance of cooling tower in different seasons and in winter effectiveness is found 25% higher than rainy and summer season.*

Keywords: Cooling tower performance, Seasonal impact, costing.



Reduction of Rework in Centerless Grinding Machine

Using Lean Six Sigma Methodology- **Paper Id: ICSTS-**

2022017

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Abstract: *Centerless grinding machine is employed for mass production and to obtain high accuracy along with a very high class of surface finish for rotationally symmetrical work pieces like cylindrical tubes. Generally during the grinding process, the diameter of the tube being grinded has to be frequently checked by the worker on that line and accordingly the feed has to be provided to the grinding wheel. Sometimes due to incompetent labor, negligence of the worker on line and inspection error there might be an uncertainty of the feed being provided. This leads to deterioration of the grinding wheel, worker fatigue, and deflection of load on machine (power loss) as well as over sizing of tubes. In this paper focusing on minimizing these parameters by implementing Lean Six Sigma methodology using DMAIC phases in 3-stage centerless grinding machine. These phases will help in identifying the root causes of inefficiencies and help overcome them systematically. In this way higher productivity and better work piece quality with reduction in overall losses can be achieved.*

Keywords: Centerless grinding machine, lean six sigma, DMAIC, grinding wheel, worker fatigue.



Cost Comparison of Grades of Steel for Multistory Building Using ETABS Software- **Paper Id: ICSTS-2022021**

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***Abstract:** Plain concrete is made by mixing cement, fine aggregate (sand), coarse aggregate (gravel), and water. When reinforcing steel is placed in concrete, the solidified mass is called reinforced concrete. Strength, durability, surface texture and economy of concrete are all influenced by the choice of materials, by the manner they are proportioned in the concrete and by the precision with which the concrete can be produced. Rebar's, collectively known as reinforcement steel, is a steel bar used to sustain tension in reinforced concrete to strengthen and hold the concrete in tension. Rebar's surface is often patterned to form a better bond with the concrete. Rebar's are available in the following grades as per IS: 1786-2008 Fe415, Fe415D, Fe415S, Fe500, Fe500D, Fe500S, Fe 550, Fe550D, Fe600. In this research work, I am studying change in area of steel and area of concrete of beams, column, slabs and staircase under same loading conditions in same seismic zone but with different grades of steel of Fe415, Fe500 & Fe550 and optimized cost of steel reinforcement and volume of concrete in the project, but also regarding ductility characteristics of Fe415, Fe500 & Fe550 using CSI ETABS.*

Keywords: Plain concrete, Strength, Durability



Dynamics of Water Demand for Watershed Management in Upper Bhima Basin Using Geospatial Tool- **Paper Id:**

ICSTS-2022022

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Abstract: *The fast-growing population and the aspiration of masses to have better standard of living have resulted in increasing demands of water. Because of ever increasing population, economic development, rapid industrialization and urbanization, the pressure is increasing on natural water resources to meet the present demand of water. It is a need of the hour to tackle this issue and to cater the water demands from different users. As the water demands are dynamic it requires balancing planning and management for making water supply. This paper is focusing on analysing the dynamics of the different water sources, water demands from various end users and the probable water distribution in the study area located in the watershed under Upper Bhima Basin, in Pune district, Maharashtra, India; wherein the water demand is increasing day by day. The study area is fast developing urban sprawl due to various reasons such as rapid industrialisation; as the study area is in the vicinity of largest industrial areas developed by MIDC, a premier industrial infrastructure organisation of Government of Maharashtra, so the water demand from industries is also increasing day by day. It is necessary to have balanced distribution of the water resources to meet these dynamic water requirements, which may increase as the time passes due to growth in production capacities of the industrial units and also increase in water demand from other users is expected. This study is carried out by deploying the advanced Geospatial tool for planning and management of water resources, which will enable not only to save time and cost but also to perform better data analysis in the GIS environment with more precise results. So as to avoid the water crisis which may occur in future, there a dire need to have better plan and effective management to cater the dynamic water demand with balanced water supply using most advanced technological tool i.e. Geospatial tool.*

Keywords: Watershed, Geospatial tool, Population, Demand, Distribution.



Review of Dynamic, Inductive Power Wireless Charging in Electric Vehicle- **Paper Id: ICSTS-2022031**

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Abstract: *Electric vehicle become most successful in near future and to achieve this, they should be more reliable, safe and accurate. Battery charging in Electric vehicle is most trending Challenges. Now days in existing electric vehicle charging infrastructure system provide range approx. maximum three hundred Kilometer wither wired charger Chademo & CCS most commonly used. But dynamic inductive power wireless charging system is totally free from Electric vehicle range anxiety and battery size can also be reduced. Dynamic, inductive power wireless charging in electric vehicle is the solution of battery charging, while it charges the battery when electric vehicle is in motion or running on road. This paper present review of dynamic, inductive power wireless charging in electric vehicle. The wireless power transfer (WPT) arrangement for EV Charging application is given. The transmitter and receiver coil and ferrite shape also have been discussed. The most important concern which belongs to charging system such as safety, inductive coil coupling and fire hazards also on high priority.*

Keywords: wireless power transfer, inductive power transfer, capacitive power transfer, electric vehicle charging



Optimal Diagnosis of Heart Disease by Analyzing the Numerical Features Using Machine Learning Algorithm-

Paper Id: ICSTS-2022033

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***Abstract:** A critical health issue that might impact many individuals all around the world is heart disease (HD). As a result, early diagnosis of a cardiac disease will help with therapy. A technology that can more quickly diagnose heart disease must be developed since the number of people with this disease is rapidly rising. The heart disease system may describe the most crucial characteristics of heart patients and identify high-risk individuals, as well as develop a model that makes it simple and clear to identify between individuals. Based on factors including age, cholesterol, resting blood pressure, Stephenson, and the number of main blood arteries, machine learning algorithms are used and compared. The major goal of this study is to create a fundamental machine learning model to improve the accuracy of diagnosis of heart conditions. Gradient Boosting Classifier's accuracy is 89% and Roc-Auc is 97% which is the best results in this study as compared to other machine learning approaches including Decision Trees, AdaBoost Classifier, XGBoost Classifier, K-Nearest Neighbour, Gradient Boosting Classifier, and Random Forest.*

Keywords: Heart disease, Machine learning



**A Roadmap for Partial Discharge Detection and Fault
Diagnosis in Power Transmission Lines- Paper Id: ICSTS-
2022037**

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Abstract: *The paper reviews the available common methods/equipment's to detect the partial discharge off-line and on-line, specifically in power cables. The most common signal de-noising techniques and information extraction techniques are compared and discussed. PD (Partial Discharge) provides an opportunity to detect the power transmission line faults on real time basis. However, placing the equipment near the live transmission lines and detecting the useful signal related to the faults has always been a challenging task. Moreover, it is also important to realize that degree of effectiveness of the PD signals to detect the faults particularly in power transmission lines cases. This paper reveals such opportunities and challenges which can propose PD based technology for real-time fault detection in power transmission lines. Lastly, a comprehensive insight for the challenges/difficulties for detecting the PD, and diagnosing the power transmission lines faults are discussed.*

Keywords: Signal de-noising Techniques, Partial Discharge Detection, Power Transmission Lines, Real-Time fault Diagnosis



Class-Aware Transfer Representation Learning Approach for Classification of Breast Cancer Histopathology Images- **Paper**

Id: ICSTS-2022038

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Abstract: *The motivation behind this work is automatic classification of Breast Cancer (BC) histopathology images for early diagnosis of BC patients. This paper presents a framework for binary and multiclass classification breast histology images. From the stain normalized BC images, first augmented patches are extracted, and then class aware transfer representation learning is performed using VGG16, InceptionV3, ResNet50, and DenseNet121 networks with the pre-trained weights learned from ImageNet. A Class-aware weighting and an effective fine-tuning strategy is also proposed to extract relevant and task specific higher-order feature representations to finally predict class labels for test image patches. The majority voting is performed on these patch-based predictions to obtain the class label for whole test image. Experimental results on Bioimaging challenge dataset demonstrates the effectiveness of the proposed approach where classification accuracy of 100%, 87.5% is obtained on the test set, and the extended test set, respectively.*

Keywords: Breast Cancer, , InceptionV3, ResNet5



Agile Manufacturing – Approach to System Design- Paper Id:

ICSTS-2022039

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***Abstract:** Today engineering world is moving and with performing towards agile manufacturing as per customer requirements target that requires constant attention and effort. This process is never ending process. Agile manufacturing is an overall strategy focused on thriving in an unpredictable environment. It is focusing on the individual customer and requirements to be need in product design specification. Agile competition has evolved from the unilateral producer-centered customer-responsive companies inspired by the lean manufacturing of mass production to interactive manufacturer-customer relationships.*

Keywords: Agile manufacturing, customer requirements, product design specification



Strengthening Effect of Nano Filler Derivatives in Copper

Matrix Composites- Paper Id: ICSTS-2022040

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Abstract: *In this paper, we investigate the wear resistance of Cu/SiC and Gr hybrid multilayer composites Composite materials produced by layer compaction and pressure sintering. Tribological behavior and wear the resistance of the composites was evaluated at different sliding speeds (5, 10, 30 and 35 m/s) in a Lab scale inertia brake dynamometer for brake pad applications. Wear surface Morphology and mechanisms were studied by scanning electron microscopy (SEM) and XRD stereoscopy. The microstructure of the composites was also characterized by SEM and optically Microscopy and mechanical response in compression and in flexion were evaluated. The results of these tests show that the density, wear resistance, braking performance and mechanical response can be significantly improved by the presence of a copper layer away from the sliding surface. The presence the layer also significantly improves friction and wear resistance. The training of mechanics Tribo-mixed layer and oxides (Fe_3O_4) reduced the wear rate and stabilized the coefficient of friction at 30 and 35m/s. Finally, the deflection and branching of cracks at the interface between the composite and Cu layers improved the flexural strength of laminated composites. Fractographic analysis shows quasi-intergranular cleavage in the composite layer and purely ductile fracture in the Cu layer.*

Keywords: Composite materials, Wear surface



Augmentation of VIVACE by Means of Thermal Buoyancy Subjected to Pulsatile Flow- **Paper Id: ICSTS-2022041**

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Abstract: Numerical investigation has been carried out to understand the effect of Richardson number on the displacement of cylinder subjected to pulsatile flow. An in-house code based on arbitrary Lagrangian Euler scheme is used to tackle fluid structure interaction. The following fluid parameters is used in a present study Reynolds Number (Re) = 100, Prandtl Number (Pr) = 7.1, Richardson number (Ri) = [-1.0- 0] and Keulegan-Carpenter number (KC) = 10. Structural parameters are as follows Reduced velocities (U_{red}) = 3 and 8, Reduced mass (M_{red}) = 2, damping coefficient (ζ') is set to be zero. With the aid of thermal buoyancy there is significant increase in power is obtained.

Keywords: VIVACE, vortex shedding, thermal buoyancy.



Blended Learning (B-Learning) in Architecture Education: A Novel Approach- **Paper Id: ICSTS-2022044**

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Abstract: *One of the most widely pedagogical strategies and important developments of the twenty-first century is blended learning, also referred to as b-learning. Blended is a verb that means to mix, to combine with something appealingly or appropriately, or to be comparable to or fit in with ones surroundings. Researchers define b-learning as the blending of a variety of instructional models and methodologies, teaching approaches, and teaching tools & techniques (e.g., e-learning, online learning, virtual learning) to produce a fresh and innovative learning model appropriate for the teaching-learning process at various levels of education. With an emphasis on teaching-learning of architecture, the goal of this paper is to evaluate and critically analyse the traits, problems, and difficulties faced by academicians with b-learning research. The majority of the publications in this study were chosen using Scopus and web of science, two major databases, besides google scholar and IEEE Xplore, two supporting databases. In addition to giving the researcher an introduction to the b-current learnings state and potential developments in the teaching-learning process, this paper will also consider the opportunities for b-learning research in the field of architectural education.*

Keywords: Blended Learning, b-learning



Examining Students Response to Online Teaching & Learning in Higher Education: The Case of the Architecture Design

Studio- Paper Id: ICSTS-2022046

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Abstract: *The world has imposed a total lockdown in response to the start of the COVID-19 pandemic in order to stop the virus from spreading. The entire education sector has changed from using physical teaching and learning platforms to using online teaching and learning platforms. Online teaching and learning platforms are the only way to prevent academic loss for students in this pandemic circumstance. The online teaching and learning approach has several benefits and drawbacks. Given that the only remaining choice for carrying out academic assignments in these circumstances is an online learning platform, both the instructors and the student body interfaces must be compatible. Numerous studies have recently been published that highlight the challenges and low satisfaction experienced. This article high lightened how students from around the globe are responding to the online teaching and learning approach.*

Keywords: Online teaching & learning, students, higher education, alternate methodology teaching & learning.



A Machine Learning Method for Analyzing EEG Signals for Diagnosing Alzheimer Disease- **Paper Id: ICSTS-2022050**

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Abstract: *In this era, mental disorders are increasing day by day and they are much impacting on human life and health. It is very essential to have much accurate methods to diagnose such diseases. Unfortunately, there is not specific method is developed for Alzheimer's disease prediction. The diagnosis is generally done with help of clinical data and laboratory tests. Other techniques such as genetic biomarkers are also useful but are highly costly and time consuming. Thus, EEG is one of the useful techniques for diagnosis of Alzheimer disease. In this paper, the prediction of Alzheimer disease performance is evaluated on Physio Net datasets. By using machine learning algorithm like SVM and Decision Tree, it is possible to get results from 60% to 90%. For Decision tree algorithm, the accuracy is 60% and for SVM algorithm, the accuracy is 90%.*

Keywords: Alzheimer Disease, EEG Signals, Machine Learning, Physio Net Dataset.



**Development of a system for Automatic remote monitoring of
Energy grid with Theft detection using IoT- Paper Id: ICSTS-
2022051**

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Abstract: *With the vast experimental changes that is catching the world, energy is the utmost basic utility required and so monitoring and controlling of energy consumption is a major important concern and doing this starting from the domestic level is a better solution. The domestic energy meters systems which are being used currently have many problems associated with them, similar as low real time, complex construction, absence of quick two-way communications etc. The Developed system is based on a RISC architecture based AT mega controller which has control over the various activities that needs to be performed by the system. The developed system works with Wi-Fi technology to communicate over internet. The system has functionalities for establishing lost connection of Power line to active grid. If an Energy Grid stops working by any reason, availability of another energy grid is made possible, the system switches the power Lines towards this Grid and thus allowing non-interrupted electricity supply to that particular place or region whose electric Energy Grid went OFF. This information stating which electric grid is active and which is not is updated over IOT Gecko webpage instantly where the authorities and consumer can login and can view the updates. With monitoring the electric grid, this system also can detect electric theft associated with the grid. IOT Gecko webpage receives all the information related to the electricity usage by consumer and also the theft situations. This information is displayed on the website instantly.*

Keywords: Energy Grid, IoT Gecko webpage, Power line, AT mega controller.



Mini Smart Solar Microgrid- Paper Id: ICSTS-2022052

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Abstract: A 18W Mini Smart Micro grid has a battery and Solar PV. The current and voltage sensors used to monitor power generation from Solar PV. Renewable Energy is the source to reduce the carbon footprint, which currently we are facing global warming & climate changes, and in a place like India Sunlight is available abundantly for at least 8th month except few states. To capture the maximum sunlight, the proposed Automatic Single Axis Solar tracking system which has 4 No's LDR (Light dependent resistor) sensor is used to sense and capture the maximum solar power which is connected to ESP32 Microcontroller. ESP 32 makes the decision according to the logic and gives signals to rotate the panel towards the direction of Sun path. The solar panel is orienting toward the Sun's path by the Solar Tracking System to collect solar energy. The tracker is automatic and always the panel is in front of Sunlight by this way the efficiency of solar system will increase. A Battery & Charge Controller is used for the energy management. In this system the power supply to end user is based on prioritized on High, Medium, and Low. If the battery is 100 % Charged all application will get the power supply, if the battery is 50% only High & medium priority application will get the power supply and if the battery is remained 30% then only power is supplied to High Priority as a safe state operating mode i.e., Emergency like Hospital, Nuclear power plant etc. in large scale.

Keywords: Smart grid, Smart Meter, IoT.



Mathematical Modeling of Four Finger Robotic Grippers-

Paper Id: ICSTS-2022053

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Abstract: *Robotic grippers are the end effector in the robot system of handling any task which used for performing various operations for the purpose of industrial application and hazardous tasks. In this paper, we developed the mathematical model for multi fingers robotics grippers. we are concerned with Jamia's hand which is developed in Robotics Lab, Mechanical Engineering Dept. Faculty of Engg. & Technology, Jamia Millia Islamia, India. This is a tendon-driven gripper each finger having three DOF having a total of 11 DOF. The term tendon is widely used to imply belts, cables, or similar types of applications. It is made up of three fingers and a thumb. Every finger and thumb have one degree of freedom. The power transmission mechanism is a rope and pulley system. Both hands have similar structures. Aluminum from the 5083 families was used to make this product. The gripping force can be adjusted we have done the kinematics, force, and dynamic analysis by developing a Mathematical model for the four-finger robotics grippers and their thumb. we focused it control motions in X and X and Y Displacements with the angular positions movements and we make the force analysis of the four fingers and thumb calculate the maximum weight, force, and torque required to move it with mass. Draw the force - displacements graph which shows the linear behavior up to 250 N and shows nonlinear behavior beyond this. and required D_{min} of wire is 0.86 mm for grasping the maximum 1 kg load also developed the dynamic model (using energy) approach lagrangian method to find it torque required to move the fingers.*

Keywords: Multi-finger robotics grippers; Mathematical Model; lagrangian; kinematics; dynamics modeling.



A Comprehensive Review on Switching Mechanism Involved in Multiferroic Based Non-Volatile Memory Devices- **Paper Id:**

ICSTS-2022054

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Abstract: *Semiconductor based memory devices play an integral role in our daily lives. These memory devices are vital for storing data in computer systems, laptops, digital cameras, and mobile phones. The semiconductor-based random access memory (RAM) has volatile and non-volatile characteristics. Flash memory is one of the examples of non-volatile RAM widely used in the existing storage technology. However, flash memory has limitations such as low operation speed, high operating voltage, and limited program/erase (P/E) cycles. An alternate next-generation NVM technology includes magneto resistive random access memory (MRAM), phase-change random access memory (PCRAM), resistive random access memory (ReRAM), and ferroelectric random access memory (Fe RAM). The present research focuses on the multiferroic based- nonvolatile memory devices and their different working mechanism. The ferroelectric based non-volatile memory devices is a well-known semiconductor device, which is the most promising devices by replacing the conventional flash memories, and also offers a number of advantages such as fast writing speed, maximum read/write endurance cycles, simple device structure, and low power consumption, as well as the ability to store more number of data in the form of ferroelectric polarization when no applied electric field is present. The unique properties of Fe RAM-based NVM devices enable separation of read and write current margin, high store capacity and low power consumptions in memory devices that will enable for utilization for data storage applications.*

Keywords: Random access memory (RAM); Fe RAM; flash memory



Early Detection of Brain Tumor using CNN & VGG16- Paper

Id: ICSTS-2022055

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Abstract: According to the 2019 cancer statistics by WHO, brain tumors are considered the main cause of mortality related to cancer throughout the world and are known as one of the most common forms of cancer both in children as well as adults. Among the most common brain tumors, we have those that begin and tend to remain in the brain, which is meningioma with 34% of presence, another type of tumor is called glioma, arising from the surrounding tissue in the brain, it is part of 30% of all tumors in the brain, however, this glioma represents 80% of malignant tumors, making it the most common tumor common that causes death. However, this scheme depicts how convolutional neural networks using transfer learning can provide an effective mechanism to detect brain tumors at an early stage using MRI images and can save the lives of mankind. Consequently, using CNN with the inculcation transfer learning using VGG-16 can achieve 95.0% of training accuracy and 87.90% validation accuracy thereafter, able to predict whether the brain MRI image comprises a tumor or not.

Keywords: Brain Tumor, Deep Learning, Neural Network, Transfer Learning, Convolutional Neural Network.



**Effect of Filling the Different Types of Rubbers in the Handle
of the Stone Cutter on Vibration Transmissibility- Paper Id:
ICSTS-2022056**

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Abstract: *One of the major problems the laborers, technicians, mechanics, and industry workers is exposure to vibrations produced by the tools. There are so many tools that produce a high level of vibrations; their magnitudes of vibration are very harmful to human beings. There are various neurological problems like tingling, numbness, and pin and needle sensation in the body parts which are exposed to the high level of vibrations. The vibration-induced signs and symptoms are called hand-arm vibration syndrome (HAVS) or called Reynaud's phenomenon of the occupational origin or vibration white finger. Hand-arm vibrations induced by tools may cause nerve damage, neuromuscular dysfunction, and vasospastic problems in the hands, which reduce hand sensitivity. The level of damage depends upon the magnitudes of vibrations and duration of exposure to the tools. Carpal Tunnel Syndrome (CTS) may also be due to vibration exposures. Vibrations-producing tools are causing disabilities in thousands of people worldwide. This study has been done to measure the Root Mean Square (RMS) value of vibration levels (accelerations) produced by the stone cutter at different locations of the tool, hand, and arm. To reduce the transmission of vibration levels from the stone cutter to the operator's hand, two different types of rubbers; neoprene rubber & butyl rubber have been sandwiched between the handle joint. It has been observed that butyl rubber significantly reduces the transmission of vibration to the operator's hand.*

Keywords: Carpal Tunnel Syndrome, vibration



Probe Feed Compact Microstrip Patch Antenna for C and X Frequency Band Application- **Paper Id: ICSTS-2022047**

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Abstract. *In this article a new design of probe feed compact microstrip patch antenna is presented. The proposed antenna is designed in glass epoxy FR4 ($\epsilon_r=4.4$) substrate. In this paper, author has been done the parametric study of different radiating structures to obtain multiple resonating frequency bands. The antenna offers tripple frequency bands at resonating frequencies 6.84 GHz, 7.93 GHz, and 8.97 GHz respectively. These obtained resonating frequency bands are well suited for C and X band frequency applications such as satellite uplink and downlink. Several performance affecting parameters like gain, directivity, real and imaginary S11, antenna efficiency, radiation efficiency, and radiation pattern are observed with the variation of various notches inserted over the patch in IE3D simulation software. All the performance affecting parameters are found in good agreement.*

Keywords: Microstrip patch antenna, IE3D simulation, multiband, probe feed

A comparative study of high-performance metal oxide-hydroxide electrodes for Electrostatic Double-Layer Capacitors (EDLC's), Electrochemical Pseudo-capacitors and Hybrid Supercapacitors- **Paper Id: ICSTS-2022101**

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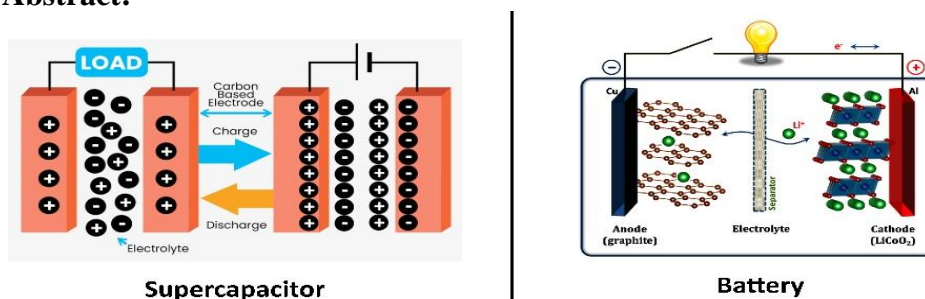
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Abstract: The different forms of energies are stored into the energy storage devices for electrical, chemical, thermal, electromagnetic, potential, pressure, power, etc. These types of physical quantities of energies are stored in various devices such as batteries, capacitors, supercapacitors, fuel cells, super magnets, compressor, hydro pumps etc. Presently, the biggest challenges are to store the electrical energy into the advanced storage devices like Electrostatic Double-Layer Capacitors (EDLC's), Electrochemical Pseudo-capacitors, Hybrid Supercapacitors and the electrochemical devices are under the research. Electrodes are essential components of batteries, capacitors and supercapacitors that is prepare by different metals. It is used to make contact with electrolyte in storage devices. The physical and chemical properties of electrodes are materials such as metal oxides, metal hydroxides, semiconductors, polymers, graphite and conductive materials. Our primary research is on electrodes which are used for electrical energy storage devices. We are studied various metal oxide and hydroxide electrode performance, efficiency, capacitance, conductivity, reliability and other important characteristics. We have developed cobalt metal hydroxide onto stainless steel substate and observed its performance in supercapacitor applications by using electrodeposition technique. The thin film electrodes are prepared by using thin film deposition techniques such as Physical Vapour deposition (CPV), Chemical Vapour Deposition (CVD) and Solution Based Chemistry (SBC).

Graphical Abstract:



Keywords: Supercapacitor, Battery, Energy Storage Device, Cobalt Hydroxide, Metal Electrode, Electrochemical Deposition, Electrochemistry, Material Science.

Preparation and Characterization of Cobalt Hydroxide Using an Electrochemical Deposition Technique- **Paper Id: ICSTS-2022102**

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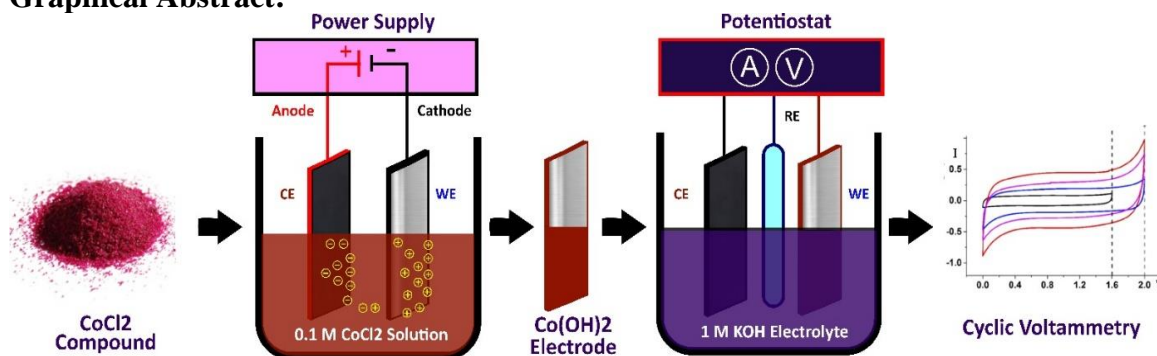
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Abstract: The evolution of energy storage devices from batteries and capacitors to supercapacitors is based on their applications. Nowadays supercapacitors become a market need due to their specific features such as high capacitance, high density, long life cyclic rate, cost-effectiveness, and environment-friendly in nature. In this perspective, the research on supercapacitor electrodes and materials is defining the new approaches for further development. The transition metal hydroxides have been studied for preparing the electrodes and their applications in supercapacitors. In the present work, the cobalt hydroxide thin films have been deposited on stainless steel (SS) substrate at room temperature by using the electrochemical deposition technique. The 0.1M Cobalt Chloride (CoCl₂) solution was used in double-distilled water. The SS was used as a working electrode concerning graphite as a counter electrode in the experimental setup by applying fixed potential. Further, the characterizations will be done by X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), and Energy Dispersive X-Ray Analysis (EDXA) of Co(OH)₂ thin films. The electrical parameters measurement, crystal structure, surface morphology, and compositional analysis will be studied. The electrochemical performance of the films will be evaluated by Cyclic Voltammetry (CV) and charge/discharge test in 1 M KOH electrolyte.

Graphical Abstract:



Keywords: Thin Film, Co (OH)₂, CoCl₂, Electrochemical Deposition, Supercapacitor, Energy Storage.



Effect of Atmospheric Environment on the Properties of Al/SiC Composites- Paper Id: ICSTS-2022103

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Abstract: *In this report, an overview is given on the composite materials and current state of art on aluminium matrix composites with regard to processing, properties, and applications of AMCs. Challenges and opportunities for the intense use of AMCs are also outlined. Methodology used in this study is stir casting process for the production of aluminium composite materials. The main purpose of this study was to see the effect of atmospheric environment on the properties of fabricated Al/SiC composites after 10 years so that it can be utilized for various purposes in automotive. Further, the comparative study of Al/SiC composites after fabrication and after 10 years of fabrication were made for Mechanical properties (Hardness, Tensile and Compressive Strength) and Metallurgical property microstructure (SEM). It is concluded that there is deterioration in the properties of Al/SiC composites after 10 years of fabrication as compared to the properties tested after fabrication which is due to atmospheric environment.*

Keywords: Aluminium, Stir Casting, Environment, Mechanical Properties, Microstructure.



**Investigation on Structural, Morphological and Optical
Properties of Molybdenum trioxide (MoO₃)- Paper Id: ICSTS-
2022111**

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Abstract: *The present study reports on the effect of substrate temperature on structural, morphological and optical properties of MoO₃ thin films. MoO₃ thin films were deposited on pre-heated glass substrate using spray pyrolysis technique. The substrate temperature was varied from 300 °C to 400°C with a step interval of 50 °C. Structural studies were studied using X-ray diffraction technique. It is observed that all the diffraction peaks exactly match with JCPDS card No. 05-0508. The as –deposited MoO₃ thin films exhibits orthorhombic crystal structure. It is found that the crystalline nature increases with the increases of substrate temperature. FESEM micrographs show that the grains are distributed uniformly over the surface without any void. An optical property reveals that the transmission of MoO₃ thin film in the visible region increases with increases of deposition temperature.*

Keywords: Spray pyrolysis: MoO₃ thin films, substrate temperature.



Performance analysis of EASCO-OFDM in Optical IM/DD

Systems- **Paper Id: ICSTS-2022117**

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Abstract: *This article presents the performance analysis of an enhanced Asymmetrically and Symmetrically Clipped Optical OFDM (EASCO-OFDM) system. The enhanced ASCO-OFDM system reduces a two frame ASCO-OFDM to a single frame without losing any information. The data generated from even subcarriers is split into two frames across the symmetry, where negative clipping is performed on frame1, and an absolute of positive clipping is performed on frame 2. This resultant signal is named as enhanced symmetrically clipped optical OFDM (ESCO-OFDM). In addition, the clipping distortion of ESCO-OFDM that falls on the even subcarriers is estimated and eliminated at the transmitter to improve its bit error performance (BER) performance. The performance of EASCO-OFDM in terms of PAPR and spectral efficiency has been successfully evaluated. EASCO-OFDM has a lower PAPR than 2-LACO-OFDM and ASCO-OFDM. Beyond the spectral efficiency of 3 bits/sec/Hz, EASCO-OFDM-OFDM has the lowest OSNR in comparison to 2-LACO-OFDM, 3-LACO-OFDM and ASCO-OFDM.*

Keywords: ESCO-OFDM, EASCO-OFDM, ASCO-OFDM, LACO-OFDM



Cool Pavements as Sustainable Approaches for Highway-

Paper Id: ICSTS-2022120

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Abstract: *This chapter deals with Urban Heat Island (UHI) mitigation and cool pavements. It starts with a brief introduction on UHI and various mitigation approaches including cool pavements. The urban cityscape is covered with manmade materials that absorb the sun's energy. Dark colored roads and roofs have replaced surface area which was once predominantly vegetated lands. Impervious pavements cover a large amount of urban surface area, typically 30–45%. For these reasons summertime ambient temperatures in cities are typically warmer than those of rural areas. Heat islands lead to increased air conditioning use which puts a strain on a city's energy grid. To supply this extra wattage, power plants must work harder and as a result emit more carbon. Therefore, the heat island effect contributes to environmental problems including air quality and climate change. One solution to this problem is the implementation of cool pavement technologies in areas of where less stringent structural requirements exist, such as parking lots and low volume roads. Cool pavements are a class of materials that exhibit enhanced cooling by means of increased reflectivity or increased convection. This chapter correlates heat island effect to climate change as well as outlining the different cool pavement technologies which may help to mitigate climate change effects.*

Keywords: Sustainable, Urban Heat Island, reflectivity, convection, mitigate



Experimental Study on use of Waste Material in Construction to Reduce its Ecological Footprint- **Paper Id: ICSTS-2022121**

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Abstract: *In this research will be done on nylon fibre reinforced concrete by partial replacement of cement with metakaolin. The nylon fibre is very useful as it has variety of applications like its high strength, durability, tensile strength but its disposal poses a serious threat in environment. In present study, various proportions of nylon fibre are added in concrete and its effect on workability, compressive strength and tensile strength is reported. The paper states that nylon fibre material of diameter 0.35mm and length of 50mm with aspect ratio of 143 will be used in different percentage from 0.5 to 1.5% by weight in cement. After adding certain properties like compressive strength, split tensile strength, flexural strength will be studied. In the field of FRC, steel fiber is, by far, the front runner as a suitable reinforcing material; since performance of steel fiber in concrete to improve mechanical properties such as tensile strength, ductility, toughness, fatigue life, impact resistance etc. has been established in a number of researches. But additional cost for steel fibers has always been an issue to ponder. In this concern, fibers from GI (Galvanized Iron) wire can provide a viable low cost substitute for steel fibers, especially for Bangladesh since steel fiber for use in FRC is not available in local market and importing from the cheapest of sources proves quite expensive. Moreover, GI wire is locally produced and is available at a relatively low price. Consequently, the circumstances paved the way for GI wire fiber to usher into the scenario. As a very recent development, research with GI wire as a suitable fiber reinforcing material in concrete is just in the budding phase. Hence, from the perspectives of fiber reinforced concrete technologies, a field of prospective research has just emerged on the horizon. Utilisation of industrial waste materials in concrete compensates the lack of natural resources, solving the disposal problem of waste and to find alternative technique to safeguard the nature. There are a number of industrial wastes used as fully or partial replacement of coarse aggregate or fine aggregate. An improvement in compressive strength can be achieved by the utilization of a small dosage of heald wire in concrete. Finally, the cost and environmental benefits for eco-efficient building also evaluated.*

Keywords: Ecological Footprint, Waste Materials



**Case Study of Variable Refrigeration Flow System with
MMANTC Building Energy Consumption- Paper Id: ICSTS-
2022122**

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Abstract— *Space cooling energy consumption is a significant component of building energy consumption, and in recent years it has attracted much attention worldwide owing to its significantly increasing usage. The variable refrigerant flow (VRF) system is one common type of cooling equipment for buildings in China and is applied extensively to residential and office buildings. The performance of VRF system significantly influences the cooling energy consumption of buildings. The system energy efficiency and electricity consumption are the main indicators employed to evaluate the performance of VRF system. It is hard to obtain the actual energy efficiency and electricity consumption of VRF system in buildings because of the high cost of the required complicated measurements. This study proposes a virtual sensor modelling method to determine the actual energy efficiency and electricity consumption of VRF system in residential buildings. As you know we are student of MMANTC, So as an Engineer we want to do something for our collage. That's why we selected this project to design VRF system in our collage building. We learnt designing procedures, software, heat load calculations in a modified way, component selection, piping and cassette placement.*

Keywords: Space Cooling, Refrigeration



Characteristics and Applications of EBG-Structure-A Review-

Paper Id: ICSTS-2022125

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Abstract: *electromagnetic band-gap (EBG) structure is a metamaterial structure that creates a stopband to block electromagnetic waves of certain frequency bands by forming a fine, periodic pattern of small metal patches on dielectric substrates EBG has a unique structure, which suppresses the propagation of EM waves, the EBG structure reflects little electromagnetic waves of the frequency bands it can detect, and receives them at high sensitivity. Thus, in the review papers listed below researchers have proposed various multiband EBG structures to minimize electromagnetic interference (EMI), gain enhancement, and a certain degree of reduction in layout area, which will improve the antenna performance.*

Keywords: EBG, EM, EMI, *Electromagnetic*



A Review on Use of Animal Bone Powder with Partial Replacement of Cement along with the Addition of Fiber for Concrete Manufacturing- **Paper Id: ICSTS-2022126**

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Abstract: *The demand for cement is increasing, but the manufacturing process emits Co₂. On the other hand, animal bone is a waste material that is dumped on the land, causing soil and water pollution. In this paper, Ordinary Portland Cement (OPC) of grade 43 was used to produce M25 concrete, and animal bone powder was used as a partial replacement for cement. Various tests were carried out to evaluate the properties of concrete. EDAX was used to test the chemical properties of ABP. Concrete cubes were formed with ABP partially replacing cement in the proportions of 0%, 5%, 10%, and 15%, respectively. Curing periods were 7, 14, and 28 days, respectively. Even before compressive strength is compared to the mean target and normal M25 concrete, the optimum replacement value is 5%. Following that, polypropylene fibre (PPF) and polyester fibre (PF) were mixed into standard M25 concrete. 1%, 1.5%, and 2% for polypropylene fibre and 0.2%, 0.25%, and 0.3%, which is between. When their compression test results are compared, the addition of PPF improves concrete strength much more than PF, with the optimum value being 1.5%. The concrete cubes were then cast by replacing cement with ABP in a similar ratio and adding 1.5% PPF. The compressive strength of the cube increased, and the optimum value of cement replacement was 10%.*

Keywords: Animal Bone Powder, Ordinary Portland Cement, M25 concrete.



**Modeling and Finite Element Structural Analysis of Solar
Collector Stand for Community Cooking- Paper Id: ICSTS-
2022127**

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***Abstract**— Solar collector play a vital role in community cooking towards the sun throughout the day. The different paper of different types of tracking systems are reviewed, in this paper we are going to model the Solar collector stand by using the 3D modelling software Creo. In this case we have consider that the solar collector is of parabolic shape. The material used for the stand is of mild steel and will do the finite element structural analysis by using the Creo simulation software. In Finite element structural analysis of stand first of all we will apply material to the model next we will apply the boundary condition, loads then we will go for the meshing and run the structural analysis. After Finite element structural analysis, we will go for the results discussion (Von mises stress, principal stress, strain and deflection).*

Keywords: Solar collector, Creo simulation software



**A Review on Multilevel Inverter Topologies with Reduced
Number of Power Semiconductor Switches- Paper Id: ICSTS-
2022130**

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Abstract: *Multilevel inverters remain an area of research for medium and high-power applications due to various advantages such as superior power quality, modality, and reliability. In this paper, an improved 29-level, asymmetrical multilevel inverter topology is proposed. An important feature of the proposed topology is the reduction in the number of devices such as power semiconductor switches, DC sources, self-balanced capacitors, and low total standing voltage (TSV). The proposed topology circuit utilizes ten unidirectional switches, three bidirectional switches, four capacitors, and four dc voltage sources to produce a 29-levels high-quality pseudo-sinusoidal staircase output voltage waveform with 3.357 per unit total standing voltage and 2.81% total harmonic distortion (THD). The nearest level control (NLC) modulation technique is employed for generating gating signals for various switches. A detailed analysis of the topology has been done by using MATLAB Simulation to validate the performance under different loads and dynamic load conditions. While power loss analysis and thermal modeling has been done using PLECS software.*

Keywords: Multilevel inverters, TSV, Topology



Deep Learning Based Approaches for Automatic Detection of Seizures Using Electroencephalograms - A Review on Recent Findings- **Paper Id: ICSTS-2022132**

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Abstract: *More than 45 million people experience epilepsy on a global scale. Anti-epileptic medications are not properly tolerated by one-third of individuals (AEDs). The likelihood of seizure independence in eligible patients after the appropriate neurosurgery increases from 10% to 67%. Although surgery is rarely performed, this results in lower life expectancy, higher mortality, worse cognitive outcomes, and higher healthcare expenses. A perceived lack of resources and the absence of defined referral procedures can cause delays in surgical referrals. To replace these conventional methodologies, a number of automated seizure detection frameworks utilising machine learning and Deep Learning techniques have recently been proposed. Feature extraction and classification are the two fundamental actions in machine learning. By preserving informative features, feature extraction condenses the input pattern space, and the classifier assigns the proper class label. Various statistical feature extraction techniques, ML/DL models, as well as their performances, restrictions, and key obstacles when used in EEG-based epileptic seizure diagnosis were rigorously evaluated and compared in this review paper on seizure diagnosis. Furthermore, relevant standards for picking suitable and effective feature extraction methods as well as ML/DL models for epileptic seizure diagnosis were also covered. Researchers can use the study's findings to select the most effective ML/DL models and feature extraction techniques to enhance the effectiveness of EEG-based epileptic seizure detection.*

Keywords: Epilepsy, Seizure, EEG, Feature Selection, Deep Learning, Brain disorder.



Decoding Reviews: Sentiment Analysis on Amazon Product

Reviews Using Deep Learning- **Paper Id: ICSTS-2022133**

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Abstract: *Customer reviews are an important aspect of any product or service provided over the Internet. They play an essential role in decision making of an individual, pertaining to the purchase of a product. A product with more positive reviews tends to sell more quickly than the product with no reviews. The product reviews are generally expressed as texts on ecommerce platforms, such as Amazon. To categorize the reviews into different categories can help users to eliminate the doubts pertaining to the different aspects of the product. In this paper, we perform sentiment analysis of reviews of products posted on Amazon. We use a benchmark dataset for training and testing our model. For classification of reviews, we construct several models based on deep learning architectures for classification of reviews. We report and compare the performance of different models in predicting the sentiments contained in the dataset. The results are indicative of deep learning models performing well than machine learning algorithms as reported in the literature.*

Keywords: Deep Learning, Amazon Product



How is the Temper? Gauging Twitter Sentiments through Unsupervised Techniques- **Paper Id: ICSTS-2022134**

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***Abstract:** Sentiment can be defined as an individual's or a group's view or opinion that is held or expressed regarding a matter. As we grow up, we gradually learn about how people show their intentions and expressions. The process of computationally identifying, and categorizing opinions from a piece of text to determine a writer's attitude towards a particular topic is termed as sentiment analysis. In the current era, there is a great opportunity to understand the sentiment of public by analyzing the social media's large-scale and opinion-rich data. In social media, it is easy to amass vast quantities of unlabeled data, but very costly to obtain sentiment labels, which makes supervised learning impossible for many applications. In addition, as the expressions and affections on social media are unstructured and fast evolving, we use unsupervised methods to gauge the sentiment. In this study, we use Valence Aware Dictionary for sentiment Reasoning (VADER) and Pattern library in python to carry out the sentiment analysis in the tweet data. The tweet data is acquired from an already published and freely available data source. We compare the sentiment scores obtained by these two methods and provide an analysis of the user sentiments in the dataset with respect to time.*

Keywords: Sentiment, VADER, Twitter



High Performance Eco-Friendly Cobalt Hydroxide Based Supercapacitors for IOT and AI Applications- **Paper Id:** **ICSTS-2022135**

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Abstract: *The Internet of Things (IoT) and Artificial Intelligence (AI) is the emerging field of technologies in today's era. Now, every field of engineering, technology and real time management has IoT applications such as transportation, agriculture, healthcare, manufacturing, wearable, smart grid and energy saving, smart home, smart management system etc. Also, AI has capture wide area applications in automobile industry, surveillance, security, education, entertainment, Gaming, E-commerce and portable devices, robotics, biomedical instruments, etc. The electrical and electronics devices which are used in IoT and AI based application. They are required efficient energy to operate long time effectively. These types of devices required offline and online energy storage devices which charge on time or require less time to recharge. The supercapcitor has high capacitor, rapid charging/discharging cyclic rate, cost-effective and eco-friendly. We are preparing and developing cobalt hydroxide electrodes for supercapacitors and it is used in IoT and AI devices as an energy storage devices act as power supply. Our main objectives are to provide supercapacitor to give energy and backup to IoT devices. The electronics devices are mainly operating on dc signal and electrical instruments works on ac signal. The supercapcitor play important role to supply the energy which stores extremely large amount of electrical charge. It is the future of batteries and replaces the old bulk batteries with tiny high performance flexible supercapacitor. We are developing supercapacitor based on cobalt based metal hydroxide by using electrochemical deposition technique.*

Keywords: Advanced Energy Storage Devices, Environment, Energy Sustainability, Internet of Things, Artificial Intelligence, Supercapacitors, Cobalt Hydroxide



Survey Report of Robotics Process Automation- Paper Id:

ICSTS-2022136

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Abstract: *Robotics Process Automation is an advanced technology that builds an intelligent software robot that can emulate human interactions with a business process. Robotics Process Automation is an efficient automated method where software agents interact through a graphical user interface in a human-like manner. Robotics Process Automation has various applications in most industries like banking and finance, human resources, healthcare, etc. The importance of automation in the Information Technology (IT) has increased dramatically in recent years. It ensures data-driven event automation resulting in continuous operations with zero downtime and allows forecasting based on data collected or probable scenarios. It enables better management of resources, increasing productivity and alignment of IT with business goals. Robotic Process Automation (RPA) offers numerous benefits over typical software for test automation. It allows saving money and freeing up human resources without any modifications in the processes and implemented solutions. Despite many advantages, Robotics Process Automation solution has limited functionality and it is not able to automatically adapt to changes in the system without human interaction. With recent trends of digitization, many corporations are focusing on automation to digitize their non digital information.*

Keywords: Robotics Process Automation, RPA, Robotic Process, Graphical User graphical Interface.



Blockchain Based E-Voting System- Paper Id: ICSTS-2022137

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Abstract: *From last few decades, the data privacy and security has become the primary concern to everyone. People were not concerned about their data than before. Due to the rise in technological advancements and internet, it has been a challenging task to provide the data security and data privacy, when data is distributed over large distributed networks. The Blockchain Technology and Secure multiparty computation are gaining their Fame in practical world. E- voting is one of the primary concern where it requires the security, privacy, trust and immutability to preserve democracy. In order to implement the E voting, multiparty computation and blockchain Technology can be used to provide great effect in security trust and immutability. The existing E-voting systems have not made tally public. We have many protocol for E-voting in multiparty system, but there are other protocols for accountability and fairness which are more important than verifiability where we can audit the protocol. we will use blockchain technology and Secure multiparty computation protocol to enhance the E voting system and will provide the features like votes will be made publicly available in encrypted form. We identified the feature receipt freeness to be added to the system. The E- voting could have more voter turnout as it makes the voters voting accessible from anywhere. The risk of trusted third party is satisfied using secure multiparty computation and blockchain Technology.*

Keywords: E-Voting, Blockchain, Secure Multiparty Computation,



Implementation of an Isolated DC-DC Converter Topology for DC Power Supply Application- **Paper Id: ICSTS-2022138**

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Abstract: *Multiphase dc-dc converters are widely used in power electronics, as they enable the processing of high power through splitting the overall load-current into multiple phases. Distributing the processed power symmetrically between the phases and performing ripple minimization through interleaving is well understood. This paper presents an analysis of multiphase interleaved DC/DC converter by using state-space averaging technique. Consequently, steady-state and small-signal models of an multiphase interleaved converter are derived. Analysis of a two-phase interleaved flyback and three-phase buck-boost dc-dc converter are demonstrated. The mathematical derivations are outlined and simulations on MATLAB/Simulink are used to evaluate the performance of the proposed multiphase (up to four phase) flyback dc-dc converter.*

Keywords: MATLAB/Simulink, Multiphase dc-dc converters



**Design of E-Mirror for Home Automation- Paper Id: ICSTS-
2022139**

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Abstract: *This article proposes a design for smart mirror which provides different extraordinary features like showing daily news, e-mails, sticky notes, weather, temperature, schedules, etc. This can't only be used for these mentioned functions but also for security as well as home automation. This can help us in developing smart houses and also can provide us unique environment around us. Using this project, we can make our surrounding much more automated as well as time efficient. As we all know, the life of every person is fast and world is also running on high speed where time has become the crucial entity. Hence this project could be beneficial for the busy individuals, who believe in multitasking. There are also a type of person who need to get the daily news and daily updates on the hustle. This will prove that this proposal can fulfill their need. Here some additional things which we are going to add are motion sensors, geyser switches, light and music controls over voice command. Our proposed system is designed using RaspberryPi4. There is a monitor used for screen in mirror. Monitor and mirror are covered by external wooden frame. Raspberry Pi is programmed by Java and powered by 5V battery. In future we can add camera for face recognition and making the mirror smarter using AI and ML.*

Keywords: Smart mirror, Monitor and mirror



Soil Stabilization by Different Types of Waste- A State of the Art Review- **Paper Id: ICSTS-2022140**

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Abstract. *The process of stabilization geotechnical properties of soil has been widespread for a long time and will never end because there is so much area for study and improvement in this area. Because the subgrade must be strengthened for a pavement to perform well, soil stabilization is mostly used in highway engineering. To improve the inherited geotechnical qualities of the soil, many materials have been added to the soil composite. This study contributes to identifying the kind of substances applied to stabilize the soil up to this point, the tests performed on the samples, and the conclusions obtained. This study provides an overview of the research done on soil stabilization and develops a framework for inserting waste products to strengthening the soil's qualities, hence mitigating the environmental effect of waste. This review paper is aimed at providing two solutions, the first one is towards a comparative study of modern wastes like glass powder, plastic, rubber tyre, stone dust, fiber waste, and e-waste in soil stabilization and the other one is with the disposal problem of these wastes. For this various laboratory test results on soil like Unconfined Compressive Strength (UCS), CBR, Proctor Test (PT), etc. were studied and compared by analyzing the known test results of the previous research studies. Overall, this review paper will be helpful for geotechnical engineers in improving and stabilizing the expansive soils with the help of industrial wastes and researchers in conducting future research.*

Keywords: Waste, stabilization geotechnical



Study of Heat Transfer Across Tool Steel-Mild Steel Contact with Heat Treatment- Paper Id: ICSTS-2022141

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Abstract: *The determination of the thermal properties of materials like H13 tool steel and mild steel has received great attention due to their wide applications in industrial as well as in manufacturing sectors. Due to the excellent resistance to softening, AISI H13 tool steel is widely used for higher temperature applications like cutting, forming and shaping the materials. The parameters that relate the interfacial heat transfer and interface temperature are thermal conductivity and thermal contact conductance (TCC) of the materials in contact. Thermal properties are affected by the heat treatment processes which are mainly employed for the formation of tools and dies. Hence in his work, different heat treatment processes have been performed on the selected materials, viz. Tool steel (H13) and Mild steel. These materials have been chosen for their extensive use in making tools, dies and other instruments. Microhardness of the materials has been compared with and without heat treatments. Further, heat transfer studies have been performed in order to evaluate the thermal properties mainly thermal conductivity and thermal contact conductance. Standard ASTM test methods have been employed for the estimation of thermal conductivity and TCC of the specimens. Experiments have been conducted for varying degree of loading and heat flux in order to observe the effect of contact pressure and mean interface temperatures. Moreover, the results have been presented in normalized form and suitably compared with the existing literatures.*

Keywords: Thermal contacts; Thermal conductivity; Thermal contact Conductance; Tool steel; Heat treatment



Secure Multiparty Computation Applications: A Review- Paper Id:

ICSTS-2022142

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Abstract: *From last decade, Secure multiparty computation has been an interesting area of research in applied cryptography. Secure multiparty computation started in early 1970's is gaining fame in practical world. Due to growth of internet, the data breach whether personal data or organizational data may get compromised or can be abused by hackers, also many of the companies share the user's data, which would have negative effects cooperative computations triggered tremendous opportunities where computations on private inputs can be conducted jointly by multiparty. These competitors and untrusted parties can use secure multiparty computation on each other's private inputs without revealing the inputs. To perform computations, one should know the inputs of other parties, if the computing party is not trusted, the privacy becomes a concern such type of problem is called secure multiparty problem. There has been lot of research how to provide privacy then computation take place between competitor or mutually untrusted parties. For such problems, secure multiparty computation can be used. The paper aims to review the application, some techniques used, and limitations of secure multiparty computation.*

Keywords: Secure Multiparty Computation, Privacy, Data



Analysis of Plastic Cell-Filled Concrete Block Pavement- Paper

Id: ICSTS-2022143

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Abstract: *The use of plastic waste as an alternative material for road construction is an innovative way by which the government of India is addressing the challenges of rural road development. While under the Pradhan Mantri Gram Sadak Yojana (PMGSY), or the Prime Minister's Rural Road Program, several implementing state-level agencies have utilised the plastic waste as an alternative in road construction materials in various ways, though it is still on a pilot basis. It is expected that India will not only reduce the amount of plastic waste that goes to its landfills or incinerators but also benefit from more efficient rural road development. The aim is to carry out a review of plastic cell-filled concrete block pavement by the study of previous experimental studies, which were carried out to satisfy the need of sustainable, accessible riding quality in rural areas with a satisfactory life span and overall cost. As a result, it is essential to investigate the effectiveness, functional, and long-term material evaluation of plastic cell-filled concrete block pavements (PCCBP). The main role of the present work is to study the environmental and economic evaluation of plastic cell-filled concrete block pavement. An economic analysis of PCCBP as well as conventional rigid pavement is carried out in this paper. In the absence of PCCBP design guidelines, we designed the PCCBP pavement as a conventional rigid pavement using literature reviews. The construction cost was estimated as per the government of Maharashtra's schedule rate of 2021–22. The economic evaluation (considering construction costs) shows that the cost of rigid pavements is higher as compared to that of PCCBP. As a result, PCCBP with waste building materials as a replacement for course aggregates in concrete can be a cost-effective option for rural roads.*

Keywords: Pradhan Mantri Gram Sadak Yojana, PCCBP pavement



**Buckling Analysis of Composite Beams- Paper Id: ICSTS-
2022145**

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Abstract: *Due to excellent material properties and high stiffness to weight ratios, composite materials are commonly used in many engineering applications. Laminated composite and sandwich beams are common structural component which could be used in variety of applications such as turbine blades, aero-plane components, aeronautical applications, civil industry etc. Due to strong variations in the mechanical properties across the thickness in laminated composites, theoretical development having high level of accuracy while maintaining the computational and mathematical simplicity is a difficult task. In the present analysis, an higher order shear deformation theory having accuracy comparable with classical plate theory but with excellent computational efficiency has been presented. Governing equations are derived using the principle of virtual work. Analytical solution has been developed for the buckling of laminated beams with different boundary conditions. The results in terms of critical buckling strains of simply supported composite and sandwich beams are validated by comparing with the exact 2D elasticity results available in the literature. It is has been demonstrated that the critical bucking strains computed using third order shear deformation theory are very close with the 2D elasticity results while the critical buckling strains based on Third order theory are deviating from the 2D elasticity results. For other boundary conditions, the results are presented for both theories and compared with those existing in the literature. The effects of span to thickness ratios, lamination scheme, modulus of elasticity ratios has been discussed.*

Keywords: Governing equations, Buckling Analysis



Antennas used for Vehicle to Vehicle (V2V) Communication -

A Review- **Paper Id: ICSTS-2022146**

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Abstract: *In this proposed review paper a comparative analysis of the patch antenna which are used for Vehicle to Vehicle (v2v) communication is studied. These antenna are used to obtain high gain and desired directivity for the communication. The antenna have the frequency band 5.8 GHz to 6 GHz .These microstrip patch antenna is easy to design and also have low cost. The Software such as ANYSIS HFSS is used for the simulation and analysis of different antenna parameter. Different shapes of antenna for v2v communication is reviewed in this paper.*

Keywords: Hexagonal Patch Antenna, ANYSIS HFSS



Optimal Configurational Analysis for an Institutional Microgrid – A Case Study- **Paper Id: ICSTS-2022147**

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Abstract: *Considering recent population expansion and increased industrialization, there is a substantial increase in the demand for electrical energy. Due to greenhouse gas emissions, depleting fossil fuels, and high lifecycle costs, traditional energy recourses have proved to be a hurdle in the path of development. Sustainable microgrids based on renewable energy sources stand out as one of the most workable solutions for future energy demand when taking into account the independence from fossil fuels, improved reliability, and zero carbon emissions. In order to achieve the seventh Sustainable Development Goal by 2030, academic and research institutions must be at the forefront of research and development efforts on the transition to sustainable energy. In this paper, we have explored the optimization and implementation of institutional-based sustainable microgrids based on aspects like cost analysis, carbon emission, and the availability of energy resources. The optimal size of Hybrid Renewable Energy Systems (HREs) equipment should be determined in order to access minimum investment and operation costs and also meet the technical and emission constraints. Hybrid Optimization Model for Electric Renewables (HOMER) software is one of the most effective tools for modeling and optimization. NASA's (National Aero Space Agency) solar satellite data is used to obtain metrological information, such as solar irradiance and wind speed.*

Keywords: HOMER, Hybrid Renewable Energy Systems



Techno-Economic Analysis of a Standalone Hybrid Power

System- **Paper Id: ICSTS-2022148**

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Abstract: *The foremost issues of the 21st century are ever increasing challenging demand of electrical energy and to control the emission of Green House Gases (GHG). Along with these issues and with limited energy resources, it is imperative to look for non-conventional methods of power generation like from renewable energy resources. Microgrid has emerged as a new field which can meet the energy demand with a special emphasis on good power quality, reliability and security. A major concern with the use of renewable energy resources is their intermittent nature which makes their integration and operation challengeable task. Energy storage devices like batteries can be used to overcome the problem of intermittent nature of renewable energy resources. This chapter focusses on different aspects of renewable energy resources in detail. It analyzes the effectiveness of the proposed topology of the microgrid for health clinic load profile with the help of PVSYST software.*

Keywords: Renewable Energy Systems, PVSYST software



A Review of the Economical and Environmentally Friendly Approaches to the Cost-Effective Hybrid Street Lighting Systems- **Paper Id: ICSTS-2022149**

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Abstract: Traditional methods of power generation are still dominating in nature. These traditional methods of power generation like thermal/steam power plants, nuclear power plants, etc. depend on fossil fuels. Fossil fuels are depleting day by day rapidly and various environmental and health hazardous issues are also associated with these traditional methods of power generation like CO₂ footprints, acid rain, ozone layer depletion, greenhouse gas (GHG) emissions, etc. So, we have to promote and adapt those techniques which help in reducing the above-mentioned harmful effects and emissions. Lots of research and developments are still in progress to solve these serious problems and to utilize those technologies that are sustainable and environmentally friendly. One of the ways to achieve this goal is to utilize renewable energy resources (RERs). RERs are available in plenty, clean, sustainable, and naturally replenished forms of energy. Taking this into the consideration, this paper review and analyze all the possible techno-economic and environmental benefits that can be obtained from a hybrid street lighting system that is mainly fueled by RERS through various proposed configurations available in the literature. This paper also investigates various other techniques also which further help in the reduction of energy consumption and pollution from the conventional grid.

Keywords: greenhouse gas, renewable energy resources



**Survey Report on Quantum Computing- Paper Id: ICSTS-
2022150**

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Abstract: *Quantum computing is a modern way of computing that is based on the science of quantum mechanics and its unbelievable phenomena. It is a beautiful combination of physics, mathematics, computer science and information theory. It provides high computational power, less energy consumption and exponential speed over classical computers by controlling the behavior of small physical objects i.e. microscopic particles like atoms, electrons, photons, etc. This development is heading towards a great future due to their high potential capabilities and advancements in ongoing research. Quantum computing (QC) has already begun entering the modern landscape and many of the multinational corporations have commenced their own research efforts. Till now, they have been focusing on superconducting qubits, whose industrial progress is currently way ahead of all other qubit implementations. This paper briefly covers the architecture, hardware, software, design, types and algorithms that are specifically required by the quantum computers. It uncovers the capability of quantum computers that can impact our lives in various viewpoints like cyber security, traffic optimization, medicines, artificial intelligence and many more. At last, we concluded all the importance, advantages and disadvantages of quantum computers.*

Keywords: Quantum computing, qubits, cyber security, Medicine, Artificial Intelligence.



A Comprehensive Review on the Detection Mechanism in ZnO based Ultraviolet (UV) Photodetectors- **Paper Id: ICSTS- 2022151**

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Abstract: *Currently, the development of Ultraviolet (UV) Photodetectors (PDs) has drawn potential impact in the research community because of a great deal of interest in recent years and due to a wide range of civil and military applications in the contemporary society. Due to its wide band gap, low cost, strong radiation, hardness and good chemical stability, zinc oxide ZnO are regarded as one of the most promising candidates for UV photodetectors. Variety of band gap nanomaterials have been devoted for UV detection to achieve higher photosensitivity and specifically, zinc oxide nanomaterials have drawn potential impact because of additional properties primarily piezo-phototronic and pyro-phototronic effects, which allows in fabricating high-performance and low power consumption-based UV PDs. This article primarily focuses on the recent development of ZnO nanostructures-based UV PDs range from nanomaterials to architectural device designing. A brief overview of the photoresponse characteristics of UV PDs and potential ZnO nanostructures are covered. Recent development of self-powered PDs and implementation of piezo-phototronic effect, plasmonic effect as well as pyro-phototronic effect for performance assistance are mainly highlighted. The detection mechanism involved in ZnO-based photoconductors, Schottky photodiodes, metal–semiconductor metal-photodiodes and p–n junction photodetectors towards the detection of UV light were investigated. Moreover, the performance of ZnO-based photodetectors, highlighting recent achievements, and comparing the characteristics of the various photodetector structures developed to date were also examined.*

Keywords: Primarily Piezo-Phototronic, Pyro-Phototronic Effects



Effective WPT Methodology for EV using Typhoon HIL

Software- **Paper Id: ICSTS-2022152**

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Abstract: *Wireless Power Transfer (WPT) technology can transfer electrical energy from a transmitter to a receiver wirelessly. Nowadays, WPT technology is receiving more attention in the automotive sector, introducing a safe, flexible and promising alternative to the standard battery chargers. Considering these advantages, WPT technology is a more adequate and suitable solution for many industrial applications compared to the power transfer by wires. Using WPT technology will reduce the annoyance of wires, improve the power transfer mechanisms. In this paper, A classical series L-C compensation methodology is proposed. The proposed method is verified by using Typhoon HIL based simulations for pure resistive load. Finally, the results of proposed system is obtained by using Typhoon HIL based simulations rated for 18 kHz Resonance (switching) frequency.*

Keywords: Wireless Power Transfer (WPT) technology, Typhoon HIL



Recent advances and challenges of GaN/AlGaN based Ultraviolet Light Emitting Diodes- **Paper Id: ICSTS-2022155**

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Abstract: *Solid state light sources emitting ultra violet light are being popular in the field of UV light application over the whole ultra violet range the GaN/AlGaN based light emitting diodes operating in ultra violet range have shown fast evolution over the last two and a half decades. As the GaN/AlGaN based LEDs are smaller, faster, cost affective and ecofriendly in nature, they are seen as a better alternative to traditional UV lamps. However, solid state UV light sources have some limitations due to which the efficiency of these light sources is quite low. Some of these limitations are related to the crystal quality of material grown through CVD, while others are related to the quantum structure of the devices. As immense research efforts are being dedicated to this field, in near future it is expected that the performance of these devices will be enhanced and long operation lifetime with no or low maintenance will be achieved. This paper provides a critical review of the state of the art UV-LEDs, achievements of these LEDs, problems associated with and proposed solutions to the issues reported till date.*

Keywords: UV-LEDs, achievements of these LEDs



**Evolution and Future Challenges of Blue Light Emitting
Diodes based on GaN/AlGaN Material- Paper Id: ICSTS-
2022156**

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Abstract: GaN based high brightness white LEDs have been developed as the future of lightening system. Due to their efficiency and exceptionally long lifetime they are seen as a permanent or semi-permanent lightening solution. LEDs available up to date still have many problems with their long time operation and under moderately stressed conditions. The continuous, high performing and maintenance free long operation lifetime is there to be achieved in the future. The efficiency of these devices decrease with higher forward current. This phenomenon is so common in all the GaN based LEDs that researchers come up with a new term for it i.e. "Efficiency Droop". A lot of research is going on to achieve high efficiency and long operational lifetime. This paper provides a critical review of the state of the art LED technologies, their achievements, limitations and proposed solutions to the issues reported till date.

Keywords: GaN based LEDs, Efficiency Droop



**User Behavior Analysis using Shared Homogeneous Content
Across Different Heterogeneous Social Media Sites- Paper Id:
ICSTS-2022157**

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Abstract: *In the past two decades many social networking sites came into existence by different organizations. These sites help users to interact with each other through sharing variety of contents like text, image, audio, video, etc. As we know that each sites provide dissimilar but complementary services. Therefore, the analysis of users shared content across the sites may be helpful in understanding users' behavior, interest and current needs etc. In this paper, we plan to develop a method to understand user behavior by combining language and topic modeling approaches.*

Keywords: Complementary Services, Organizations



Review on Techniques to counter Cyber Attacks- Paper Id:

ICSTS-2022158

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Abstract: *This article reviews and presents various techniques to counter Cyber-attacks. Cyber-attacks are unwanted attempts that steal, expose, alter, disable or destroy information through unauthorized access to systems. Their targets include personal computers, computer networks, IT infrastructure and systems. Some of the common types of cyber-attacks are: Backdoor Trojan, Cross-site scripting (XSS) attack, Denial-of-service (DoS), DNS tunneling, Malware, Phishing, Ransom-ware, SQL injection. Successful cyber-attacks can cause valuable downtime, data loss or manipulation, and money loss through ransoms. DoS, DDoS and malware attacks can cause system or server crashes. DNS tunneling and SQL injection attacks can alter, delete, insert or steal data into a system. Phishing and zero-day exploit attacks allow attackers entry into a system to cause damage or steal valuable information. Ransom-ware attacks can disable a system until the company pays the attacker a ransom.*

Keywords: DoS, DDoS, malware attacks



A Critical Review on Different Source of Energy Used to Drive Vapour Absorption Refrigeration System- **Paper Id: ICSTS- 2022159**

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Abstract: Absorption system become quite popular despite of more capital cost and lower performance. The attractive features that associate with this technology is energy efficient and eco-friendly. Therefore, the present communication deals a critical literature review on single effect vapour absorption refrigeration system using different heat sources. A variety of heat sources are used to drive the system. The absorption system will be quite cheaper if it is operated through waste energy or solar energy, but it is a challenge to available these sources where refrigeration/air conditioning required. Results show that heat sources will not affect the first law performance of the system, while the second law performance is much affected.

Keywords: Single Effect; Hot Air; Steam; Hot Water; Direct Fired; Indirect Fired



Comparative assessment of the cobalt hydroxide supercapacitor and lit-ion battery- **Paper Id: ICSTS-2022161**

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Abstract: *The past decade lithium-ion batteries have become the dominant rechargeable battery chemistry in nearly all industries, but upcoming storm of technology advancement can't be handled by the old technology, we want new technology to resolve the problem of energy storage devices. The future of advanced energy storage devices is supercapacitor. Supercapacitors store extremely large amount of electrical charge, low self-discharge, which perform more than 1 million cycles and provides longer and sustainability life span, basically the supercapacitors specially cobalt hydroxide supercapacitors provides better tech for future. Where supercapacitors may completely replace batteries*

Keywords: Advanced Energy Storage Devices, Supercapacitors, Cobalt Hydroxide, etc.



Cycloaddition Chemistry of Carbonyl Ylides and their Applications in Synthesis of Complex Heterocyclic Scaffolds-

Paper Id: ICSTS-2022162

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Abstract: *This review's goal is to present an overview of current methodologies for the carbonyl cycloaddition-based organic synthesis of heterocyclic compounds. One of the most effective processes for the synthesis of mono- and polycyclic heterocycles is the 1,3-dipolar cycloaddition of carbonyl ylides generated from diazocarbonyl molecules. Because of the rise in molecular complexity and the high isolated yields, cascade reactions involving intramolecular 1,3-dipolar cycloaddition of carbonyl ylides are of great interest to the synthetic organic community.*

Keywords: Cycloaddition, carbonyl ylide, heterocycles, molecular complexity and cascade reactions



Self-Cleaning and Maintaining of Roads- Paper Id:
ICSTS-2022163

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***Abstract:** There are lots of reasons for death of human being. The major cause is due to accidents. Accidents can be of many types like earthquake, tsunami etc. The accidents cause by natural calamities is not in our control. The amount of road accidents is more comparative to other ones. India is country where the death rate due to road accidents is more. In future, lots of highways will be constructing in India. In India temperature changes rapidly which causes cracks to roads leading to failure of road. These problems are solved out by following remedy. By watering the road every day and by spraying air on it, the road can be reuse within few hours. This is easy and quick method of watering of road. The cleaning and maintenance of the street pavements is the necessity of the town and cities now a days. If the peoples stand with the current maintenance process, It will only widen and deepen the crisis. There any many harmful substances which affect human as well as environment and makes street nasty. It gives bad impact on the lower part of vehicles such as vehicles engines and plastic wastage can be causes of slip the vehicles, Which takes place of minor and major accidents. The durability of the pavement is broadly depend on the temperature variation. The change in temperature develops unwanted stresses in the pavement, which leads to the crack formation. Removing and controlling of these type of problems is the challenging task. The process is to make clean the pavement by water and air pressure and prevention of road surface by temperature variation.*

Keywords: harmful substances, spraying air



To Study Factors Affecting Cost Overrun In Construction Project- **Paper Id: ICSTS-2022164**

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Abstract: *Construction cost is the most important criteria of project success and hence the construction project performance is generally expressed in terms of cost and its variance from the budget. In spite of having extent literature, cost estimation methods, cost indices etc. Construction projects rarely meet budgeted cost. This research study focuses on construction cost overrun and to identify various factors affecting construction cost performance. Based on extensive literature review and input from industry experts, twenty factors that causes cost overrun were identified for investigation. Further structured questionnaire survey was conducted among the industry expert and collected data has been analysed statistically. It is concluded that factors namely scope creep, construction delays, rework and practice of awarding the contract to lowest bidder are most significant factor for construction cost overrun in non- infrastructural Indian projects. The relative importance of listed factors used to guide project team in addressing the cost related risks involved in the projects. The findings are expected to bridge the gap in current construction cost management practice.*

Keywords: Analysed, Statistically



Current Mode Techniques for Communication System and its Modules: A Review- **Paper Id: ICSTS-2022165**

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Abstract: *As the microelectronics technology continued to develop it has led to a myriad of new intensive computational applications at the micro-edge, as there is a limitation in further reduction in the size of transistors in voltage mode on the contrary there is scope to reduce the size of transistors in current mode, The current mode is a modification of voltage mode control, where the inductor current in the circuit is detected and used instead of the triangular waveforms used in the voltage mode, In Current-mode operation the inner current loop turns the inductor into a voltage- controlled current source, effectively removing the inductor from the outer voltage control loop at dc and low frequency. Control which adds the advantage of making the system compact, embedding more number of components on the board which will increase the efficiency of the overall system, thus in the mentioned review papers researchers have proposed various, techniques for implementing the current mode for various applications and they have verified their results by using various simulators such as cadence virtuoso, PSICE, etc, which indicates that the current mode systems were operating at low voltage, higher bandwidth, and slew rate.*

Keywords: PSICE, Current-mode operation the inner current loop turns



Supercapcitor: An Advanced Energy Storage Device Manufacturing and Applications- Paper Id: ICSTS-2022166

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Abstract: Supercapacitor is a device different from the original capacitors. It also known as ultracapacitors. The brief review focuses on principle, types, material and the applications of supercapacitor. There are different materials that are used to make the supercapacitor like grapheme, carbon black, charcoal. But the material should be conductive. Supercapacitor become the important device to solve the problem regarding power suppression in renewable energies and storage of electrical energy. It also used in hybrid power supplies, energy recovery, short charging time. In electrochemical double layer capacitor, the capacitance gets reduced with the timescale of months and resistance. Introduction: Supercapacitors are centred on the physical principle as same as in conventional capacitors, but the supercapacitors have lesser area of electrode. This is the main fact that gives the large capacitance. Supercapacitors store charge in an analogous method to conventional capacitors, but the charge does not gather in two conductors, but it collects in the interface between the surface of a conductor and an electrolytic solution. Supercapacitors, also called ultracapacitors or electrochemical capacitors, store electrical charge on high-surface-area conducting materials. Their widespread use is limited by their low energy storage density and relatively high effective series resistance. Supercapacitors store energy by forming a double layer of electrolyte ions on the surface of conductive electrodes. Supercapacitors are not limited by the electrochemical charge transfer kinetics of batteries and thus can operate at very high charge and discharge rates and can have lifetimes of over a million cycle. Research has thus been focused on increasing energy density without sacrificing cycle life or high power density. The supercapacitor has developed and appeared to solve energy storage problems.

Keywords: Renewable energy source, Supercapacitor, Electrochemical Deposition, Material Science, Advanced Energy Storage Device, etc



An insight on Multimedia-based Chemistry Teaching & Learning- **Paper Id: ICSTS-2022167**

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***Abstract:** Nowadays the use of multimedia-based learning and teaching is widely used. It improves the student's understanding and their learning outcomes. Covid -19 pandemic changed face-to-face learning into online learning for those teachers who need to understand and developed competency in technology, pedagogical and subject knowledge. This article summarizes a thorough analysis of developing technologies used in the teaching of chemistry in this era of digitalization and artificial intelligence. The use of multimedia-based teaching resources in scientific instruction was found to significantly improve student's cognitive abilities.*

Keywords: Multimedia, online teaching and learning, chemistry.



Blended Learning Opportunities in Mathematics

Education- Paper Id: ICSTS-2022168

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Abstract: *Blended Learning (BL) is one of the learning models that combine traditional learning with online learning. This is an opportunity to integrate innovative advancements and technologies which is offered by online learning. Blended Learning (BL) model goes hand in hand with Advanced Education System. Along with the development of the internet rather than shifting learning strategies based on e-learning models such as smart classes and virtual classes can be made by Blended. In this research, we used some applications for simplifying the complex problem in mathematics. Application such as MATLAB, PhotoMath can be used to teach the complex topics such as Derivative and Integration to convert Newton Raphson Method and to solve linear equation. Based on the identification of the problems described above, the formulation of the problem in this study is how the role of Blended Learning (BL) to improve mathematical understanding and the purpose of this study is to determine the role of Blended Learning (BL) to improve mathematical understanding.*

Keywords: Blended learning, Advanced Education System, complex problem, traditional learning.



Comparative Review on Academic Timetable Algorithms-

Paper Id: ICSTS-2022170

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Abstract: *Generating an optimized academic Timetable is a complex task. Various constraints and parameters have to be considered in order to generate an optimized timetable. In literature, time table is being generated using different techniques and algorithms. This article presents a comparative review on the existing techniques and algorithms used for timetable generation. A comparative analysis was being done on the Evolutionary Algorithm, Stochastic Algorithm, Heuristic Algorithm, Greedy-based Algorithm, and Genetic Algorithm. Further, this article also presents a comparative analysis on the different techniques used in the Genetic Algorithm. This article addresses the problems that arise in generating a timetable and the solutions mentioned in the literature that address these problems.*

Keywords: Timetable generation, Stochastic Algorithm, Heuristic Algorithm, Greed-based Algorithm, Genetic algorithm.



**A Comparative Assessment of Solar Photovoltaic Thermal
(PV/T) System with Solar Photovoltaic (PV) System- Paper Id:
ICSTS-2022171**

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Abstract: *A photovoltaic thermal (PV/T) collect or combines with the functions of a solar thermal collector and a photovoltaic (PV) module. It is converting the solar radiation to both electrical energy and heat energy. The hybrid photovoltaic collector technology using water as the coolant has been seen as a solution for improving the energy performance. India as a tropical country is seemed to have a good potential for applying this technology. In this solar a hybrid system is fabricated by using a polycrystalline silicon PV module as a solar absorber and the comparative study was carried out with same capacity PV module. Water cooled PV module configured as PV/T system with forced flow is studied. The performance of the PVT systems has been experimentally determined for various mass flow rates of fluids. The experimental results show that the performance (efficiency) of the PV/T system is better than the simple solar PV system. PV/T systems are simple and suitable for electricity generation as well as for low-temperature heating applications.*

Keywords: Hybrid photovoltaic collector, polycrystalline structure, low-temperature heating



Rain Water Harvesting of Residential Building at Dhule City-

Paper Id: ICSTS-2022173

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Abstract: Rainwater harvesting is method of collecting water from rain. This method is very useful to people for many uses. There are so many objectives of rainwater harvesting. It is very simplest and oldest method of collecting rainwater. Rainwater harvesting reduces erosion and flooding. From this method more water saves and reduces loss of water. It is very suitable in dry season. The main objective of rain water harvesting to increase the level of ground water. It is suitable during water shortage situation. Rainwater harvesting is the oldest method of collecting rainwater in India. It is impossible to say which civilization used this method first. Rainwater harvesting is used in India in 2000 BC. In India Tamil Nadu was the first state to use rainwater harvesting system. Rainwater harvesting needs in agriculture improve groundwater decrease water demand and influence. The importance of rainwater harvesting is to save money and time. It maintains the ecological balance and promotes the optical usage of water. The advantages of rainwater harvesting are to reduce water bills, reduce flooding, and erosion, demand on groundwater, and use for nondrinking purposes. The main advantage of this method is to improve plant growth. With advantages, there are so many disadvantages of rainwater harvesting like storage limit, regular maintenance, initial high cost, and others. There are many components delivery pipeline, and first flush filter. Rainwater harvesting is also required to maintain like the removal of leaves. Rainwater harvesting system has various types like water butt, direct pumped, indirect pumped, indirect gravity, gravity only, retention ponds, and in-ground storage. The surface run of harvesting and rooftop rainwater harvesting is the method of rainwater harvesting systems. parts of a rainwater harvesting system like catchment, gutter, down take the pipe, storage tank.

Keywords: Rainwater harvesting,



Isolation And Identification of Rhizosphere Mycoflora of Glycine Max (L.) Merril from Nashik District- **Paper Id:**

ICSTS-2022069

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Abstract: *A total 16 species belonging to 7 genera of fungi were recorded from rhizosphere region of Glycine max from Nashik. One composite soil sample from the rhizosphere region was collected from each locality. Soil fungi were isolated using the soil dilution plate count method on Rose Bengal Agar and Potato Dextrose Agar medium supplemented with antibiotics. Fungi were identified and characterised using authentic literature and standard protocols. Aspergillus candida, Aspergillus flavus, Aspergillus neoniger, Aspergillus ustus, Aspergillus digitatum, Curvularia pallescens, Fusarium monilliformae, Fusarium solani, Trichoderma viridae, Trichoderma harzianum, Humicola fuscoatra, and Cunninghamellae chinulata were isolated and characterised. The percentage frequency of mycoflora was determined.*

Keywords: Mycoflora, Nashik, Rhizosphere, Soybean,



Numerical Simulation of Laser Beam Machining of Polymethyl Methacrylate- **Paper Id: ICSTS-2022068**

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Abstract: *Laser beam machining is a thermal based ablation process used for micro milling to create microchannel profiles. In the present work, the simulation of single-pass laser cutting process has been investigated in FEM software, considering laser beam as a moving heat source. The main objective of the present investigation is to study the effect of laser parameters on the surface temperature distribution and the nature of gaussian heat source. This paper uses a 2-Dimensional model to analyze the effect of laser beam machining parameters on Polymethyl Methacrylate using COMSOL Multiphysics 5.6. It is also observed that simulated temperature distribution profile follows the same trend as it was analytically developed by previous work for moving heat source.*

Keywords: Polymethyl Methacrylate, COMSOL, Multiphysics



Effect of Milling Hours on Structural and Optical Properties of ZnFe₂O₄ Nanoparticles Synthesized by High Energy Ballmill-

Paper Id: ICSTS-2022067

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Abstract. A fine powder of zinc ferrite (ZnFe₂O₄) was prepared by high-energy ball milling milled for 3, 6, and 10 hours with the balls to powder ratio of 8:1 and molar percentage ratio between ZnO and Fe₂O₃ as 1:1. X-ray diffraction (XRD) patterns were used to demonstrate the structural properties of ZnFe₂O₄, which suggest the single phase formation of the powder material with spinel structure and cubic symmetry. XRD results were further used to estimate average crystallite size using Sherrer's formula. The crystallite size for ZnFe₂O₄ powder milled for 3, 6, and 10 hours was found to be 21nm, 20nm, and 17nm, respectively. FT-IR spectra show two strong absorption peaks in the characteristic region. The higher frequency band (ν_1) emerges because of tetrahedral complexes, and a lower frequency band (ν_2) is assigned to vibrations at the octahedral site. The surface morphology of the milled powder was analyzed with the help of SEM, and the composition of synthesized material by energy dispersive X-ray spectroscopy (EDS). SEM micrographs depict the agglomerated particles of the ZnFe₂O₄. The optical properties of the ZnFe₂O₄ nanoparticles were studied by analyzing UV-Vis spectroscopic data. The bandgap was found to be in the region of 2.50-2.57 eV. The aim of this work is to analyze the effect of milling hours on the structural, morphological, and optical properties of the synthesized sample.

Keywords: X-ray diffraction, zinc ferrite, SEM



A Review on Internet of Things Based Healthcare System for Securing the Patients Real Time Data- **Paper Id: ICSTS-2022066**

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Abstract: *With an ongoing increase in income and employment, the healthcare sector has been one of the biggest in the developing world. The “Internet of Things (IoT)” increases people' ability to interact, create, and cooperate on things. IoT has evolved over time into a diverse set of technologies with sophisticated protocols and applications. Different aims and needs could lead to the development of more sensible protection systems. The increasing adoption of IoT devices ensures that people's health is better protected. After its introduction, the “Medical Internet of Things”, also known as “MIoT”, has become increasingly significant in enhancing the health, protection, and welfare of people around the world. “Patients' health-related metrics” can be actively monitored, constantly, and in real time, then analysed and uploaded to medical data centres, such as “cloud storage”, rather than just going to a hospital for aid, considerably improve the effectiveness, convenience, and cost-effectiveness of healthcare. This research paper has considered secondary data collection methods to collect relevant and theory based information from different sources such as journals and articles.*

Keywords: Cost-effectiveness, healthcare, Medical Internet of Things



Transcriptome and Protein Docking Analysis Confirms Presence of Full-Length BADH2 Gene in *P. amaryllifolius*-

Paper Id: ICSTS-2022065

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Abstract: *Pandanus amaryllifolius* Roxb. contains the highest amount of the principal basmati aroma volatile 2-acetyl-1-pyrroline (2AP) in the plant kingdom. Previous studies confirm the correlation between the expression of 2AP with the presence of a nonfunctional betaine aldehyde dehydrogenase 2 (BADH2) in aromatic rice and other plant species. In this study, the validity of this mechanism was investigated in *P. amaryllifolius*. BADH2 enzyme activity was found out to be 40 nM/min/g with aminobutyraldehyde (GABald) and 73.6 nM/min/g with BAD as substrate. Moreover qPCR analysis also validated the expression of BADH2 gene. This suggested the presence of full length BADH2 gene in *P. amaryllifolius*. In order to reveal the same the transcriptome analysis of *P. amaryllifolius* was carried out and a full-length BADH2 sequence was reconstructed from the transcriptome data. A full length 54 kD PaBADH2 protein was encoded by the sequence. A comparative protein docking analysis of PaBADH2 and OsBADH2 was done. Homology modeling showed 0.115 RMSD value that claims both the protein structure were closely similar. The binding energy of OsBADH2- GABald was -3.2 kcal/mol and PaBADH2- GABald was -3.3 kcal/mol. Whereas with BAD as a substrate binding energies were 5.2 kcal/mol and 5.3 kcal/mol for OsBADH2 and PaBADH2 respectively. The binding energies and involved molecular interaction were almost similar which concluded that both the proteins show almost similar binding to the substrates. Overall, the analysis confirmed the presence of a functional BADH2, along with substantial 2AP synthesis (4.38 ppm). Therefore, we conclude that unlike all other plants studied to date, 2AP biosynthesis in *P. amaryllifolius* is not due to the inactivation of BADH2.

Keywords: betaine aldehyde dehydrogenase 2; *P. amaryllifolius*; 2-acetyl-1-pyrroline; γ -aminobutyraldehyde



Numerical Investigation of RCC Beam strengthening by SMA

Bars- Paper Id: ICSTS-2022070

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Abstract: Shape memory alloys (SMAs), one of the options for restoring such components, have special qualities including recovering inelastic strain when unloaded (super elasticity) or heated (shape memory effect, SME). This article investigates the effectiveness of SMA material on upgrading the static performance of nonductile exterior reinforced concrete (RC) beam by non-linear finite element simulations. Conventional RC beam without seismic detailing confined internally with SMA material and compared these specimens with control RC beam joint specimens with and without seismic detailing. A detailed 3D non-linear finite element (FE) analyses of the RC beam internally confined with SMA in ANSYS are carried out. All the beam specimens are subjected to static loading under controlled amplitudes to explore the static performance on the parameters such as failure patterns; load–displacement envelope curve; ductility factor. The load–displacement behaviour and damage predicted from finite element analysis almost show the similar behaviour with the experimental result. Hence SMA with conventional steel bar can be used as a hybrid reinforcement which having excellent ductile behaviour for increasing the seismic performance of RC beam.

Keywords: RCC Beam, Flexural Strengthening, SMA, Ductility, Microstructure



**Impact Assessment of Replacement of Waste Bituminous
Concrete with Virgin Bituminous Mixes- Paper Id: ICSTS-
2022071**

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Abstract: *It is well known that highway construction involves considerably high amount of investment and major considerations to be kept in mind in case of flexible pavements for design of pavement and its mix design. Recently the considerable enhancement in the high volume pavements construction in the previous years in India has increased. But this has initiated a demand for focus in the supply of scarce and important natural resource aggregates. A portion of the present pavements has undergone repairs which included scraping of top layer of asphalt layer to suit new layers underneath. The removal of the old asphalt layer, solid surfacing layer in the open spaces has prompted natural degeneration. Absence of adequate assets has prompted low volume streets being left in a terrible state. The primary goal of the many of the investigation was to assess the reasonableness of a blend of recovered asphalt concrete, fresh aggregates and a cationic emulsion as a surfacing material for the development of low volume pavements. The use of recycled asphalt in pavements in India assessing the impacts of partial or total substitutions of bituminous concrete by RAP. This paper described variation from 10% to 40% on the mechanical properties of HMA mixtures when reclaimed asphalt pavement (waste bc) and virgin HMA mix are used.*

Keywords: RAP, Flow value, Bituminous concrete, Marshall Stability, Density, virgin HMA mix



A Study on the Effect of Weld in Health Monitoring of Indian Rail Section using AE Technique- **Paper Id: ICSTS-2022072**

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Abstract: *Indian Railways is one of the primary modes of transportation for passengers as well as goods. In terms of length, the rail sections of Indian Railways is significantly large and connected with the help of welded joints. These welded joints can play a crucial role in health monitoring using Acoustic Emission (AE) technique. Plenty of research articles can be traced in health monitoring on the use of AE technique but the research on the effect of weld in health monitoring in rail section is almost absent. However, the presence of weld can create some obstacles in the propagation of AE waves, which is very important in the case of health monitoring studies. In this paper, an effort is made to find the effect of the weld in the Indian rail section. The AE wave is artificially simulated using the Pencil Lead Break (PLB) on different parts of the rail section. The simulated AE waves are captured by AE sensors. The effect of the weld on the propagation of AE wave and its corresponding effect in health monitoring is studied with the help of signal processing and statistical approach. The results are found to be promising and effective for future research.*

Keywords: Acoustic Emission, Weld, Indian Railways, PLB, Structural Health Monitoring, Rail Section, Damage.



**Comprehensive behavior of concrete on different properties
with Sugarcane Bagasse Ash and Steel Fiber- Paper Id: ICSTS-
2022073**

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Abstract: *The results of sugar cane bagasse ash in different percentages by weight of cement and the effects of steel fibres in different percentages by concrete weight in standard concrete are evaluated in this report. The testing was done for the M25 and M30 grade of concrete. The slump test was used to measure concrete workability for the different combination of SCBA and SF. The samples were tested for the compressive, split tensile and flexural strength, static and dynamic modulus of elasticity. Experimental results were studied in detail. It has been found that the maximum compression strength obtains for the combination of 15% SCBA with normal cement for M25 grade concrete. The maximum flexural strength was obtained for the composition of 1.5% steel fiber with normal cement for M25 grade concrete. The split tensile testing of all compositions was carried out and maximum strength was obtained for the composition of 10% SCBA and 1.5% steel fiber with normal concrete for M25 grade concrete.*

Keywords: SCBA, steel fibers, slump, flexural strength, split tensile test



Finite Element Modeling of Flexible Pavement using C&D Waste- **Paper Id: ICSTS-2022074**

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Abstract. *The aim of this research is to compare the effect of base and subgrade layer with different materials properties on the rutting damage of flexible pavement due to increasing traffic loading. Rutting affects pavement performance significantly and effectiveness of a pavement structure depends on the performance of the pavement materials. An attempt has been made to use three-layer systems of flexible pavement with different conventional road materials combination in sub-base and subgrade layers, to find the best combination for minimum rut depth keeping wearing course fixed with asphalt concrete. Seven types of subgrade layers and five types of sub-base layers of soil are selected in this three-layer system study. The roads are generally severe rutting damage due to absence of quality control in the construction of granular unbounded pavement layer and many trucks with overweight. Flexible pavement analyses are performed using finite element method; a 3-D dimensional finite element model using ABAQUS (ver. 6.14-1) computer program are developed. It is estimated the combination i.e. asphalt, crushed stone, and gravel soil give minimum rut depth value (19 mm). Further, an attempt has been made to replace the crushed stone with construction and demolition (C& D) wastes materials as middle layers in the best combination. It is well established that the middle layer, crushed stone can be well replaced by C&D wastes that too for all combinations of bottom layers gives rut depth well within the permissible value of 13 mm.*

Keywords: Rutting; Low volume roads; ABAQUS Model; Demolition wastes; Layer combination.



Characteristics Evaluation of High Volume Pulverized Fuel Ash (PFA) based Geo-polymer Concrete- **Paper Id: ICSTS- 2022075**

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Abstract: *Pulverized Fuel Ash (PFA) or 'fly ash' production exceeded 220 million tons in India by the year 2020 and it would exceed 400 million tons by the year 2025. This creates huge problems for storage of PFA. It requires thousands of hectares of land for storage. By the chemical composition, PFA is classified in Class – C and Class – F. Class – C has Pozzolanic properties and self-cementing properties rather to Class – F which attains the same properties after adding activator. Alkali and Sulfate content in Class – C PFA are higher. Use of High-Volume Pulverized Fuel Ash (HVPFA) in addition to lime and admixtures may be permitted to act as Pozzolanic Binder in ordinary concrete to form Geo-Polymer Concrete. The construction industry is increasingly turning to the use of environmentally friendly materials in order to meet the sustainable aspect required by modern infrastructures. Consequently, for the last two decades, the expansion of this concept, and the increasing global warming have raised concerns on the extensive use of Portland cement due to the high amount of carbon dioxide gas associated with its production. The development of geo-polymer concretes offers promising signs for a change in the way of producing concrete. However, to seriously consider geo-polymer binders as an alternative to ordinary Portland cement, the durability of this new material should be evaluated in any comparative analysis. The main purpose of this study to evaluate the durability characteristics of HVPFA based geo-polymer concretes subjected to the tropical environment, compared to ordinary Portland cement concrete with similar exposure.*

Keywords: Geo-polymer Concrete, Durability.



Comparative Probabilistic Analysis of Cantilever Retaining

Wall- Paper Id: ICSTS-2022076

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Abstract: *Retaining Wall; a structure which retains material at upstream side. The retained material will be of any type like, soil or water. When the retained material at upstream side is soil, it is called as Earth Retaining Wall. And when water retained at upstream side, it is called as Water Retaining Wall, or Dam Structure. Probabilistic approach offers the framework to overcome the inconvenience. And sources of internal and external inconvenience and modes of failures are characterized. The main objective of modelling and analysis to provide one factor for quantifying the overall reliability of structure.*

Keywords: Probabilistic Analysis, Cantilever Retaining Wall.



Comparative Reliability Based Design of Cantilever Retaining

Wall: A Review- Paper Id: ICSTS-2022077

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Abstract: Probabilistic approach offers the framework to overcome the inconvenience. And sources of internal and external inconvenience and modes of failures are characterized. The main objective of modelling and analysis to provide one factor for quantifying the overall reliability of structure. Design of the retaining wall must checked for internal resistance and external stability. Internal resistance against maximum bending moment and shear force, and external stability against sliding, overturning and bearing pressure. Analysis is for separate mode of failures and for factor of safety. The conventional method of design is based in deterministic approach and factor of safety. Based upon the modes of failure, the conventional design has two types of inconvenience. First, design is based on load and factor of safety. Second, soil resistance is not considered. Therefore it is a great challenge to design the cantilever retaining wall by overcoming the uncertainties on factor of safety and soil resistance. Load and Resistance Factor Design method based on geotechnical variability is known from Canada and Europe.

Keywords: Reliability Based Design, Cantilever Retaining Wall.



Impact Assessment of Diverging Diamond Interchange on Sustainability- Paper Id: ICSTS-2022078

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Abstract: *Diverging Diamond interchange is an infrastructural deployment capable of handling heavy traffic. It can help in managing the traffic at complicated junctions with more efficiency. Therefore, it is becoming popular alternative for the transportation planners in most of the developed countries. It can be considered the better option to be adopted for improving the safety and the performance at the junction. It can also minimize the vehicular and stop delay, consumption of fuel along with and emission. In this paper it has been tried to assess the impact on traffic parameters along with the environmental parameter due to proposed Diverging Diamond interchange. The location at Mahalunge and Baner junction (Pune city, Maharashtra) is taken into consideration. It results in degradation of level of service (LOS) of existing Intersections resulting in enhanced in fuel consumption and emission. Here VISSIM software has been used for analysing the current situation at the intersection and Diverging Diamond Interchange is proposed for the intersection under consideration. Modelling has been done using VISSIM for getting the actual reflection of results. The result shows the change in scenario. It is observed that there will the notable changes in overall situation related to traffic along with environmental benefits after implementation of proposed Diverging Diamond Interchange. The results obtained reflects that the implementation of Diverging Diamond Interchange will reduce the traffic parameters like Q-length, delay, number of stops up to about 90%. It may also curtail fuel consumption up to 14% which ultimately reduces the emission and related pollution.*

Keywords: Diverging Diamond Interchange (DDI), conflict points, level of service, Sustainability



Probabilistic Finite Element Analysis of Skewed Railway

Underpass: A Review- **Paper Id: ICSTS-2022079**

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Abstract: Underpass, it is also known as 'Subway'. It is a cross road underneath the road traffic or railway. Or it is an underground concrete box beneath the Road Traffic or Railway. The purpose or the Underpass are as passing the Animals, Pedestrian way, approach way. Nowadays, it is most commonly adopted in Road Traffic & Railway Road Systems. Especially adopted in the railway systems, where the train arriving frequency is high. The main objective for providing the underpass is a short underground access way for people, traffic vehicles or passing animals from one side to another side. 2D & 3D Analysis of Railway Underpass will be carried out by using Finite Element Method (FEM). For the analysis, along with above governing parameters, different loading conditions & various load will be adopted according to IRC: 6-2000, "Standard Specifications and Code of Practice Road Bridges". The Indian Roads Congress and Directorate of bridges & structures (2004), "Code of practice for the design of substructures and foundations of bridges" Indian Railway Standard. Fixed End Condition will be considered for 2D & 3D Analysis. Modelling of the Railway Underpass will be done in SAP 2000. And Railway Underpass will also analyzed manually by using Slope Deflection Method. And results of analysis will inter validate and also with previous results (if available).

Keywords: Probabilistic Analysis, Skewed Railway Underpass.



Construction waste quantification in residential building architecture: A critical review- **Paper Id: ICSTS-2022080**

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Abstract: *Effective management of construction material and minimization of construction waste is one of the important parameters for reducing impact on environment. Precise quantification and Prediction of construction waste is one of the successful techniques to reduce the amount of waste generation at source. Quantification and Estimation of construction waste at each stage or phase of project is very essential to accurately compute and predict the total waste generation. Quantification of waste also include the appropriate segregation of generated waste to compute exact quantity of waste material at site. This article aims to review the quantification of construction waste generation at various stages of construction project, also reviews the different techniques applied to quantify the amount of wastage. Amongst many measures that is endow consist of various primary and secondary techniques for statically analysis of the quantified waste. The primary technique for statistical analysis includes questionnaire surveys and estimation based analysis on the quantified data. The secondary technique consist of the material flow analysis, circular economy and weighing methods. The preciseness of the quantified amount of construction waste certainly helps to predict the type and amount of waste generated also it enables to formulate the waste management strategies and overall reduction of waste generation at source.*

Keywords: Quantification of construction waste, prediction of waste, material flow analysis,