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ICPST - 2022

International Conference on Physical Science and Technology

21st - 22nd May 2022

VIRTUAL CONFERENCE

Co-host

VISHWATMAK OM GURUDEV COLLEGE OF ENGINEERING

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

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International Conference on

Physical Science and Technology

Exploring Novel research innovations in advanced Physics for future

(ICPST-2022)

Virtual Conference

2022

21st & 22nd May

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VISHWATMAK OM GURUDEV COLLEGE OF ENGINEERING

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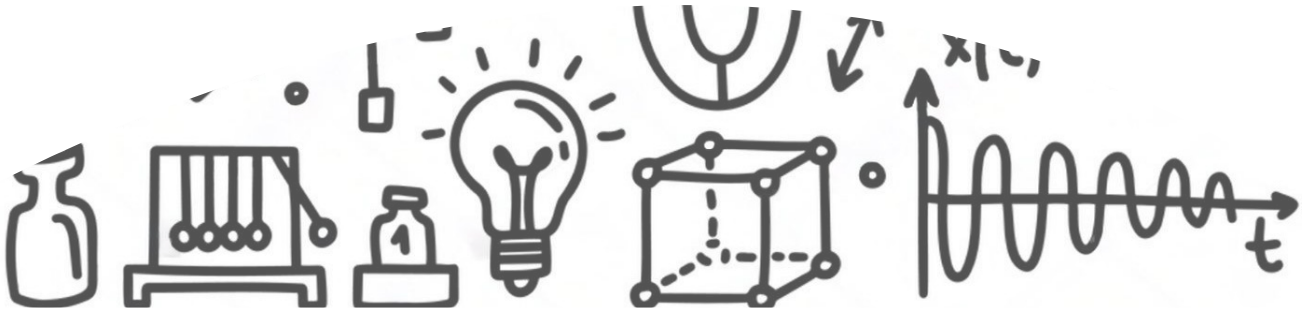

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Editorial

We cordially invite you to attend the **International Conference on Physical Science and Technology (ICPST -22)** on **21st–22nd May 2022**.The main objective of **ICPST -22** is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Applied Sciences, Engineering, Technology and Management. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

These proceedings collect the up-to-date, comprehensive and worldwide state-of-art knowledge on cutting edge development of academia as well as industries. All accepted papers were subjected to strict peer-reviewing by a panel of expert referees. The papers have been selected for these proceedings because of their quality and the relevance to the conference. We hope these proceedings will not only provide the readers a broad overview of the latest research results but also will provide the readers a valuable summary and reference in these fields.

The conference is supported by many universities, research institutes and colleges. Many professors played an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in there view process, and to the authors for contributing their research result to the conference.

Since March 2022, the Organizing Committees have received more than 280 manuscript papers, and the papers cover all the aspects in Applied Sciences, Engineering, Technology and Management. Finally, after review, about 193 papers were included to the proceedings of **ICPST -22.**

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **ICPST -22** We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.

Acknowledgement

IFERP is hosting the **International Conference on Physical Science and Technology - 2022** this year in the month of May. The main objective of Physical Science and Technology is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The session will serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and be known as a thoughtful leader.

I express my gratitude to all my colleagues, staffs, professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful.

Rudra Bhanu Satpathy
Chief Executive Officer
Institute for Engineering Research and Publication (IFERP)

International Conference on

Physical Science and Technology

(ICPST-2022)

21st & 22nd May 2022 | Virtual Conference

Keynote Speakers

International Conference on Physical Science and Technology
ICPST - 2022
Keynote Speaker

Dr. Anand Kishore Kola
Professor, Department of Chemical Engineering
National Institute of Technology, Warangal
Telangana, India

Education:

•Ph.D in Chemical Engineering from National Institute of Technology, Warangal, Telangana

•Master of Business Administration (MBA) in Human Resource Management (HRM) from DDE, Pondicherry University, Pondicherry.

•Master of Arts (M.A) in Sociology from SDLCE Kakatiya University, Warangal, Telangana.

•Bachelor of communication and Journalism (BCJ) from SDLCE Kakatiya University, Warangal, Telangana

Research Interests:

Environmental Engineering, Energy, Advanced Separation processes, Modeling, Simulation and Optimization, Biochemical Engineering, Waste water treatment, Membrane separations, Reactive distillation, Inverse fluidization, Pharmaceuticals and nanotechnology.

Teaching & Research Experience:

Twenty two years of experience in teaching different Chemical Engineering courses and Research since 26.02.1999 to till date at the Department of Chemical Engineering, National Institute of Technology (Formerly Regional Engineering College) Warangal, TS, India

International Conference on Physical Science and Technology
ICPST - 2022
Keynote Speaker

Mr. Dhananjay Singh
Vice President-Engineering
eGovernments Foundation
Bengaluru, India

Experience Summary:

- 18+ years of IT Experience with 10 years in Leadership roles.
- Working as Vice President Engineering at eGov Foundation (https://egov.org.in/).
- Handling Engineering team for National level Platform DIGIT(www.digit.org) for Urban governance.
- IIM-Bangalore - GMITE (1-year, Executive Management).
- Pursuing PGP AI/ML (Post Graduate Program in Artificial Intelligence and Machine Learning) from Great Lakes Institute of Management.
- Exposure of handling 15+ million GBP portfolio for Telecom OSS platform.
- Was part of Top 20 High Potential Leaders of Infosys China, 2012 HIPO (Org level leadership).
- Exposure of setting up office, Engineering process and governance, Operations, P&L, L&D, and HR Policies.
- Managed large Multi-Geography Engineering team for Europe, APAC, USA, UK, AMEA, and LATAM.
- Excellent exposure in Transformation initiative, Product and Platform thinking, Outsourcing strategy, SDLC, Agile Methodology, Vendor Management, Stakeholders Management, and Start up environment.
- Good exposure of managing large Urban governance, Telecom, Healthcare, Retail, Manufacturing, CPG domain portfolios with team size of 600+.
- Certified in the areas of AWS, Python, Agile, and the Service Delivery.

Professional Experience:

- VP- Engineering, eGoverments Foundation, Dec-2018 till date
- Head of Engineering/Principal S&IT at British Telecom, Feb 2015-Dec 2018
- Group Project Manager at emids Technologies Pvt. Ltd, Sept 2014- Feb 2015
- Senior Project Manager in Infosys Limited, Bangalore, Feb 2006- Sept2014.
- Software Engineer with Cybercom Resources (P) Ltd, Bangalore, Oct 2002 - Feb 2006.

International Conference on Physical Science and Technology
ICPST - 2022
Keynote Speaker

Dr. M.Suguna Lakshmi
Senior Principal Scientist
Polymer Science and Technology Division
Central Leather Research Institute (CLRI-CSIR)
Tamil Nadu, India

Dr. M. Suguna Lakshmi is a Senior Principal Scientist in Polymer Science and Technology Division of Central Leather Research Institute (CSIR-CLRI). She received her Ph.D. Degree in Polymer Nanocomposite from University of Madras in 2012. She worked in CSIR-NAL from 1991 to 1998. She is having 31 years of Experience in the field of Materials Science. Her Area of Expertise includes: Epoxy and their allied resins synthesis, characterizations and property evaluations, Epoxy-Nanocomposite materials for high performance applications, Nanoclays and Nanodrug formulations, Fibre reinforced Nanocomposites, Flame retardant leathers. Currently she is active in doing research on 3D Printing technologies. She has published 47 papers in peer reviewed journals. She has presented her research in 37 national and international conferences. She has guided several post graduate students and guiding PhD students. She is a Life member in the Society for Polymer Science India, Chemical Research Society of India.

Keynote Adress : ICPST

I am glad to be a part of this ICPST-2022 conference programme which I am sure will enrich every participant with the updates on latest developments in science and technology of physics, chemistry and engineering. Holding this conference on the theme “Physical science and Technology” is a timely relevant since this would lead to fruitful discussions on the emerging research and technology due to the recent advancements gained in understanding the fundamental principles lies in well maintaining the components of eco system for the sustainability of earth’s resources, climate and energy. I am pretty confident that the students and professionals will find this an awesome opportunity to share and learn the latest developments in the concepts of physical science and technology.

My best wishes to the organisers for the grand success of this conference.

Your’s Sincerely

(Dr. M.Suguna Lakshmi)

International Conference on

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Ramesh Baabu, Dean Engineering, BEST IU, India
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ABSTRACTS

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Performance of Geopolymer Concrete Beam with Hollow Spacing for Conduits

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Abstract: Geopolymer concrete (GPC) deputizes as the most preferable green alternative material to Ordinary Portland cement concrete (OPC). The self-weight of the structural members is an inevitable permanent load on the whole structure. The notion of introducing a conduit in a structural member was developed to satisfy the needs of optimizing the weight, conserving material, cost reduction, and more utility space. The feasibility of designing the GPC beams with holes/pockets/hollow pipes is not studied in detail. Hence the present study aims at evaluating the structural behavior of GPC beams with a different array of conduits (both lateral and longitudinal directions) using Finite Element (FE) analysis. The FE simulations were carried out using ABAQUS software where a series of reinforced geopolymer concrete beams is modeled with conduits arranged in various configurations such as longitudinal and transverse directions. The performance of the proposed beam configuration is evaluated and compared with a control specimen which is modeled without conduits. To obtain the desired performance, the arrangement of the conduits was optimized in different layouts such as longitudinal and transverse directions. The developed FE model is utilized to record the structural behavior such as load-deflection behavior, first crack load, ultimate load carrying capacity, and cracking behavior of GPC beams. The potential of the GPC beams with conduits over the solid OPC beams is explored thoroughly in this study.

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Effect of Bladelet in Centrifugal Pump Impeller using Corrosion Resistant Materials

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Abstract: An impeller is a rotating component used to increases or decreases the flow and pressure of fluids, which has wide spread applications in aircraft sector, automobile industry, medical field and power plant technology. In real time applications bronze and hardened steel impellers quickly erode when presented to destructive mediums, for example, waste water, seawater, sewage, , chlorine, bromine, and numerous chemicals. They are dependent upon cavitation and electrolysis (galvanic erosion) which rashly demolishes the impeller drastically. The corrosion is the major problem of the impeller that increases pump operating and maintenance expenses which obligated the industries to search for alternative materials. The main criteria is to select the appropriate selection of material for the impeller to resist corrosion. Materials such as Caprolone (Nylon) and ABS (Acrylonitrile Butadiene Styrene) have been consider for the study considered which has chemical, thermal stability along with toughness and strength. The design and analysis of impeller is designed, analyzed using commercially available simulation tools. In this study two models were analysed that is impeller without bladelets and with bladelets. From the analysis it is observed Impeller with Bladelets showed 75% Better Performance than without Bladelets for Both Brass and ABS materials.

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App for Carpooling

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Abstract: Carpooling can be depicted as a method of transport where travellers share their outing or vehicle. This method of transportation is productive as sharing a ride splits the expense related with it among the travellers. This application framework permits the travellers to share the ride. This approach proves useful not only in saving expenses but also for reducing traffic and air pollution. Travellers who need to make a trip can join the ride already created or would themselves be able to make one.

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Impact Assessment of Intermittent Aeration, and Biochar Addition in Vertical Flow Constructed Wetland to Reduce COD/N Loads

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Abstract: The constructed wetlands with distinct COD/N ratio (1:1, 3:1, 5:1, 8:1, 10:1) loads were used to study the mechanistic behavioral changes of COD/N with increasing strength of wastewater. The study investigates the intermittent aeration on treatment efficacy of biochar (BC)-packed vertical flow constructed wetland planted with Colocasia esculenta that could be a sustainable solution to the problem of low-cost treatment facilities in rural and sub-urban regions. Mesoscale research compiles the results induced with a homogenized layer of biochar (BC) and river bed and colocasia plantation (P) in VFCWs. Three reactors were established in two sets: intermittently aerated (i.e. airflow rate of 1.0 ± 0.6 L min- 1 for 6 h d- 1) and non-aeration, and changes in the parameters such as COD, TN, NO3-N, NH4+-N, and TP (total phosphorous) were recorded. The reactors established with intermittent aeration facility recorded the maximum reduction efficacy for COD, NH4+-N, NO3-N, TP removal was 99.0, 97.0, 81.0, and 89.0%, significantly higher ($p < 0.05$) than non-aerated reactors as 91.3, 70.9, 86.97 and 64.4%, respectively. The study demonstrated the significance of the biochar and plantation in non-aerated reactors; however the increasing COD/N ratio was inversely related, but it was not in the case of intermittently aerated systems, indicating slow adsorption rate and fast aerobic degradation of organic matter. The study suggests that oxygen supply management and BC addition in the substratum of VFCWs can be an effective strategy to operate wetland effectively in remote areas for domestic and rural wastewater treatment with low energy input.

Keywords: Biochar, N mineralization, COD, intermittent aeration, Vertical flow constructed wetlands

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Experimental examination of ordinary and forced convection heat transfer through cylindrical attach Fins

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Abstract: This study work deals with the experimental analysis of convective heat transfer through pin fins in natural and forced modes. Cylindrical pin wings with the dimensions specified in 5.2 were used for experiments on pin fin devices. Variation in dissimilar parameters was observed in the two modes of convection heat transfer as mentioned in 8 and 9. This work has aided in the comparative study between natural and forced heat transfer throughout pin fins.

Keywords: convection heat transfer, natural mode, forced mode, circular, pin fin.

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A Review on Modified Residual Energy Aware for Electing Optimal Cluster Head Selection in Wireless Sensor Network

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Abstract: WSNs are a collection of specialized transducers that provide sensing services to IOT objects that have limited power and storage. Because it is practically impossible to replicate or recharge batteries in sensor nodes, energy consumption is one of the most significant design concerns in WSN. The clustering technique is crucial for power conservation inside an energy-constrained network. Picking the right cluster head can assist in network load balancing, saving energy usage and boosting longevity. The study is focused on a cluster head election mechanism that can be used in IoT fields such as environmental surveillance, smart cities, and systems. WSN apps have dramatically advanced in recent years. Clustering is a technique used in WSNs to extend the network's lifecycle and improve operational processes. Every cluster elects a leader, referred to as the Cluster Head. Optimized grouping has the potential to save a lot of energy in the system. The authors of this paper discussed a variety of clustering protocols for WSN.

Key Words: Wireless Sensor Networks, Internet of Things, Cluster Head selection, Residual energy, Network Lifetime, Energy efficiency.

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Effects of Neutral Collisions and Radiative Heat-loss Functions on Longitudinal Thermal Instability of Partially-ionized Plasma with Finite Electrical Resistivity Effect

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Abstract: The effect of neutral friction and radiative heat-loss function on the thermal instability of viscous two-component plasma has been investigated incorporating the effects of finite electrical resistivity and thermal conductivity. A general dispersion relation is obtained using the normal mode analysis method with the help of relevant linearized perturbation equations of the problem and a modified thermal condition of instability is obtained. We find that the thermal instability condition is modified due the presence of radiative heat-loss function, thermal conductivity and neutral particle. For the case of longitudinal propagation we find that the condition of thermal instability is independent of the finite electron inertia, magnetic field strength, finite electrical resistivity and viscosity of two-components, but depends on the radiative heat-loss function, thermal conductivity and neutral particle. From the curves we find that the temperature dependent heat-loss function, thermal conductivity and viscosity of two-components shows stabilizing effect, while density dependent heat-loss function and finite electrical resistivity shows destabilizing effect. The effect of neutral collision frequency is destabilizing. These results are helpful in understanding the structure formation in HI region.

Combination of One or More Characteristics for Optimizing Energy in Cloud Computing

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Abstract: The extending advancement in the interest for dispersed figuring organizations, due to the verifiably progressed change and the high adaptability of the cloud, requires more undertakings to further develop the electrical energy adequacy of cloud server ranches. In this paper, an energy-capable creamer (EEH) framework for working on the efficiency of consuming electrical energy in server ranches is proposed and evaluated. The proposed structure relies upon both the sales' reserving and laborers' mix approaches as opposed to depending upon only one procedure as in existing related works. The EEH structure sorts the customers' requesting (tasks) according to their time and power needs before playing out the booking. It has a booking estimation that thinks about power use when taking its arranging decisions. It in like manner has an association estimation that chooses the underloaded laborers to be refreshed or rested, the over-trouble laborers, the virtual machines to be moved and the specialists that will get moved virtual machines. Moreover, the EEH structure joins a development computation for moving migrated virtual machines to new laborers. Eventual outcomes of generation tests show the predominance of the EEH framework over approaches that depend after using only one method for managing lessen power use in regards to Power Usage Effectiveness (PUE), Data Center Energy Productivity (DCEP), ordinary execution time, throughput and cost-saving.

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A Numerical Approach to Spdde via Fitted Scheme

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Abstract: A fitted scheme is to solve the singularly perturbed differential-difference equations. The considered equation is first reduced to the ordinary singularly perturbed problem by expanding the term containing a negative shift and a positive shift using Tayl0r series expansi0n procedure, and then a three-term scheme is obtained using the theory of finite differences. A fitting factor is introduced in the derived scheme with the help of singular perturbation theory. Th0mas algorithm is employed to find the solution to the resulting tridiag0nal system of equations. To approve the applicability of the scheme, a few model illustrations have been solved by taking the different values for the perturbati0n parameter ε, delay parameter δ, and the advanced parameter η. We have presented maximum absolute errors and computational order for the standard examples chosen from the literature.

Keywords : Singular Perturbation, Differential-Difference Equations, Boundary Layer, Positive shift, Negative Shift.

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Defect Minimization Through Casting Simulation -A Case Study In Small Scale Foundry

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Abstract: Nowadays manufacturing sector has entered a new era. Conventional and manual manufacturing system is replaced by modern manufacturing technology. The productivity in this sector has increased to a very high level. Modern technology has minimized the use of resources and also minimizes the defects. Foundry technology is not an exception to it. For quality casting manufacturing there is a need of proper design of gating and rising system which can minimize defects in casting product. Castings are very important part of manufacturing industries. In modern days, foundry industries also use modern technology with various software's to improve the quality of product, comparing with others industries. Keywords: - Casting Simulation, Casting Defects

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Analyses on Named Entity Recognition for Marathi

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Abstract: Artificial Intelligence has a notable sub-control system named Information Extraction (IE). From unstructured information sources, which stand by the predefined semantics, that is to say, people, location, et cetera, the needed data is detected by the IE. A significant task of IE along with Natural Language Processing (NLP) is the recognition of Named Entities (NEs) as of computer-readable Natural Language (NL) text. Named Entity Recognition (NER) smoothens the IE; thus, it attains higher popularity in numerous Information Retrieval applications. Obtaining NEs like temporal entities, proper nouns, along with numerical values, is the major intention of NER. At first, NR recognizers are structured in such a way to handle the formal English text. To extract NEs, a dedicated NER system is constructed for Indian Languages (ILs) like Marathi. Thus, the NER, features utilized for the NER, NER for Marathi languages, problems along with challenges in Marathi NER, various methodologies of NER, and comparative evaluation of NER methodologies had been elucidated in this work. The NER's average performance in the classification together with identification of Marathi language; in addition, the average percentage of F-measure in the correlation of NER schemes, that is to say, Machine Learning (ML), for several languages, are also evaluated here.

Keywords: NER, Marathi language, Marathi NER, Challenges in Marathi NER, Approaches of NER, and NER techniques.

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Fabrication and performance Evaluation of Metal-Polymer Based Triboelectric Nanogenerators Using Gold Nanoparticles for Self-Powered Applications

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Abstract: In this study, we show how to make a triboelectric nanogenerator out of aluminium and PDMS (Poly dimethyl siloxane) layers to harvest mechanical energy from our surroundings using a relatively simple technique. The proposed TENG device generates electricity using a contact-based triboelectrification process between an anodic layer of aluminum(metal) and a cathodic layer of PDMS (polymer). To boost the performance of the produced TENG, spherical gold nanoparticles were made and sprayed on to increase the contact area by roughening up the metallic layer's surface. For an applied load resistance of 68kΩ, an open circuit voltage of 169mv, a short circuit current of 120.4μA , and a maximum output power of 6.006μW were attained using static weights/force on the TENG device. The device's voltage, current, and power output characteristics were also measured for various load resistances. The constructed TENG shows how it can be used in self-powered devices.

Keywords: Triboelectric nanogenerator (TENG), PDMS (Poly-dimethyl-siloxane), Energy harvesting, Self-powered systems.

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Bagasse as Reinforcement for Composites – A Mini Review

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Abstract: Bagasse fibres are one of the most common natural fibres that could be processed with sugarcane stalks based on the requirement. They are often utilized because of it quick accessibility. These bagasse fibres possess reasonable strength and mechanical properties. Their properties can be further improved by the application of certain treatments. They show superior properties when it is made as a reinforcement with another natural fibre. They are used in variety of applications, few of them are applied in industries of automobiles, buildings etc., and they also have good advantages while used as cement composite. This mini review exhibits the overall view on production and utilization of bagasse fibre across various applications in the aspect of reinforcement.

Keywords: Bagasse, Sugarcane, Natural Fibre

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Evaluating Standard Atmospheric Parameters Using Matlab

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Abstract: MATLAB is a programming language and numeric computingenvironment. Simulink of MATLAB is a graphical editor, customizable block libraries, and solvers for modeling and simulating dynamic systems. ISA stands for International Standard Atmosphere, the values of ISA model are calculated by taking various thermodynamic equations into consideration defined by (ICAO) International Civil Aviation Organization. ISA does not change by season or region of flight. It is only impacted when altitude decreases or increases It is used for the calculation of pressure, density, temperature and other properties over a wide range of altitudes. Aircrafts fly in the earth‟s atmosphere and therefore, it is necessary to know the properties of this atmosphere. ISA model is used for the standardization of aircraft instruments,aircraft design and, takeoff and landing parameters. The Present paper makes an effort to strike a relationship between altitude and atmospheric parameters using a MATLAB code. It takes altitude as input and gives various parameters as output The results of the code are accurate and match with the ISA model.

Keywords: International standard atmosphere, MATLAB, ISA model.

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Review on Malware Detection Using Different Machine Learning Approaches

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Abstract: The malicious software is termed malware in short, which steals information, corrupts files, or just performs mischievous activities to irritate users with the intention to harm computers along with computer users. The malware required to be detected prior to it impacts a huge number of systems to safeguard computer systems along with Internet as of malware. Currently, there have been numerous researches on Malware Detection (MD) methods. Static, Dynamic, and hybrid techniques are the classification of MD methods. Static Analysis (SA) is centered on the appraisal of suspected code operating the application devoid of evaluating them. The execution of code in a regulated environment like an emulator for detecting its behaviour is done by the dynamic technique. For MD, there has been augmented utilization of Machine Learning (ML) along with Deep Learning (DL) algorithms. Exploiting diverse ML along with DL algorithms, a comprehensive survey of malware investigation and detection methods are given and compared in this work. Centered on the '3' main kinds of analysis, this work concisely encompasses MD methodologies that are illustrated together with their advantages and disadvantages. This survey can be regarded as a vital referral for the developers in the field, even though the advancing processes of malware and their detection systems are quickly mounting.

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Review on Marathi Word Sense Disambiguation Using Machine Learning

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Abstract: Word Sense Disambiguation (WSD), which is a branch of Artificial Intelligence (AI) that deals with Natural Language Processing (NLP), has been a fundamental and continuing issue for a long time. In NLP, WSD deals with the word's evasion; a single word has two or more meanings in which the respective context distinguishes the meaning. Sentiment analysis, Machine Translation (MT), Information Retrieval (IR), along with knowledge graph construction are the diverse domains where the WSD is used. As humans have a Biological Neural Network (BNN), they are intelligent enough to understand the word's meaning. Computers can be trained to work in the same manner as BNNs do. Knowledge-based, supervised, semi-supervised, along with unsupervised are the diverse recommended methods for disambiguation. Despite the presence of several diverse languages, in this work, the language utilized for WSD was Marathi. Hence, WSD, WSD's common methods, Marathi WSD, and Machine Learning (ML)-based methods for WSD have been analyzed. The performance of Transmuter and Anuvadaksha for Technology Development of Indian Languages (TDIL) Marathi corpus together with a human translation in English and Marathi is compared, and the accuracy of ML algorithms or models for Marathi is carried out.

Keywords: WSD, Marathi WSD, Machine learning, WordNet, Lesk approach, Knowledge-based, Supervised based, and Unsupervised based

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Investigations on Bi doped Cu_2Se prepared by solid state reaction technique for thermoelectric applications

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Abstract: Influence of Bi doping on the structural and thermoelectric properties of Cu_2Se are investigated. $Cu_{2-x}Bi_xSe$ (x = 0.00, 0.004, 0.008, 0.012) was prepared by using conventional solid-state reaction technique. According to room temperature XRD results, $Cu_{2-x}Bi_xSe$ samples have Monoclinic crystal structure. Doping Bi to the Cu site functions as a donor, lowering the hole concentration, except for x = 0.004. Resistivity of $Cu_{2-x}Bi_xSe$ sample increases with increase in Bi content. Seebeck coefficient data confirms that the holes are most common charge carriers in $Cu_{2-x}Bi_xSe$ samples. At 700K, $Cu_{1.988}Bi_{0.012}Se$ sample has the highest power factor of $1474\mu Wm^{-1}K^{-2}$, showing a great potential in developing high performance Cu_2Se based thermoelectric materials.

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Organ Classification of medical imagesUsing Deep Convolutional Neural Networks – A Comparative Study

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Abstract: Medical images classification is a challenging task using Convolutional Neural Networks. Generally, Medical image understanding is time taking and difficult, only skilled medical experts analyze easily. Using deep Convolutional neural networks(CNN) is an efficient technique to understand and classify any type of image. In this paper, we proposed a comparative study of deep con- volutional neural networks of medical organ images of three types such as CT(Computed tomography), MRI(magnetic resonance imaging), and X-ray images. images are taken from Image CLEF of organ dataset, classified into ten types of organ classes. By using PyTorch, preprocessed and trained and classification with CNN (Convolutional Neural networks), AlexNet, VGG-16, VGG- 19, ResNet-18, ResNext101-32x8d, and DenseNet121 models with fine-tuning parameters to gain good results. finally, VGG-16 got high accuracy of 72.4% compared to all models. And another part, we proposed an application based on every classification model using question answering prediction related to input images, Here, we achieved a 97% answerprediction.

Keywords: Classification, Convolutional Neural Networks(CNN), VGG16, VGG19, AlexNet, ResNet-18, Inception-v3, ResNext-101-32x8d and DenseNet121.

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Four-Channel High-Resolution Frequency Counter for QCM Sensor Array using FPGA XC6SLX9 Module

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Abstract: A frequency counter is essential for the QCM sensor array data acquisition. An electronic nose or tongue using QCM sensor array requires a multichannel frequency counter to detect the frequency shift of the sensor parallelly. In addition to the multichannel capability, resolution, precision, and speed are important factors for the frequency counter. Those requirements are fulfilled by FPGA based frequency counter. This work shows the development of a multichannel frequency counter using a Xilinx Spartan 6 XC6SLX9 module and a microcontroller. The counter works based on a reciprocal counter utilizing the internal logic block of the FPGA. The timing has been modified and adjusted without eliminating the concept of reciprocal counters. The frequency data is sent to the microcontroller via the SPI for further processing. Counting stability is achieved using a 50MHz TCXO clock source. This study shows that the counter can measure the frequency of incoming signals with a resolution of 0.033 Hz at 10 MHz with a sampling time of 1 second. The precision is achieved by calibrating the timing clock to a 10MHz OCXO with precision and stability of 50ppb. The resource is optimized by utilizing PLL and DSP blocks for the counter. Only 5 % Registers and 3 % LUTs of the FPGA resource are used to build a four-channel frequency counter. The system has been tested to monitor the frequency changes of a QCM sensor array.

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Comparative Study of Trajectory Tracking Control for Autonomous Vehicles via Geometric and Model based Methods

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Abstract: With rapid development in automotive field, it is becoming increasingly important to have a comprehensive understanding of the various technologies used in modern hi-tech vehicles, among which Autonomous Vehicle/Self driving cars are gaining large popularity. An autonomous vehicle is capable of sensing its environment and operating without human involvement. Automated control of vehicles is a challenging task due to the varying dynamics of system, nonlinearity, component noise, disturbances, and unknown parameters. Motion control for trajectory tracking is one of the core issues in the field of autonomous vehicle researched besides the environment perception, dynamic decision and planning. The paper compares the performance behaviour of various trajectory tracking control algorithm for varying parameter affecting the tracking performance. The control algorithms to track the trajectory using basic geometric methods like Pure-pursuit, Stanley methods and model-based techniques like MPC (Model Predictive Control). The simulation results indicate a controller performance over an 4DOF (Degree of Freedom) lateral dynamic model for trajectory tracking of autonomous vehicle.

Key words: Trajectory tracking, Lateral dynamic model, Controllers, Pure-pursuit, Stanley, MPC

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Compressibility and Shear Strength Characteristics Of Treated and Non – Treated Soft Soils-The Review

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Abstract: The demand for land use has created a necessity for the improvement of soft soil deposits, thereby imposing various geotechnical challenges due to excessive settlement and low shear strength characteristics of soft soils. Different soil improvement methods can be used to overcome these problems, including dynamic compaction, sand Piles with preloading, Band drains with Fill preload, Stone columns, Geosynthetics, and Vacuum preloading method etc.

Preloading is one of the most applied soil improvement techniques due to its simplicity, reliability, and economic efficiency as compared to other methods. With advancement in latest techniques various other methods are incorporated along with preloading to improvise the bearing capacity and minimize the settlement problems related to soft soils. This paper presents review of literature related to the preloading consolidation technique of ground improvement infused with geosynthetics and encased stone column techniques to counter issues affecting the efficiency and performance of soft soils. This paper offers an overview of the development and theory of traditional preloading in conjunction with geosynthetic layers on soil and encased columns. It also emphasis on predicting the ground reaction to a preloading inclusive of other methods as described.

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A novel Bismuth heterostructure substrate for Surface enhanced Raman scattering

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Abstract: β-Bi_2O_3/$Bi_2O_2CO_3$ heterostructurenanoplates were synthesized through facile hydrothermal method via thermal treatment of $Bi_2O_2CO_3$ precursor. Furthermore, thermal treatment of precursor transforms to α-Bi_2O_3/$Bi_2O_2CO_3$ and α-Bi_2O_3 phase by increasing the calcination temperature. The β-Bi_2O_3/$Bi_2O_2CO_3$ heterostructure were employed as active substrate for surface enhanced Raman scattering (SERS). On β-Bi_2O_3/$Bi_2O_2CO_3$ substrate Methyl orange as a probe molecules exhibit excellent SERS intensity. The lowest detection limit for MO was determined to be 20 μM as compared with the enhancement of MO adsorbed on Ag colloids with detection limit of 25 μM reported by Si, M.Z. et al

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Application of Probabilistic Neural Network and other Machine Learning Algorithms for Speech Emotion Recognition

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Abstract: Emotions are fundamental part of human interactions. Emotion recognition is the approach of discovering human emotions. Generally, Emotion recognition is done using text, speech, audio, face, etc. In this research, Speech emotion recognition is used, Speech Emotion Recognition (SER) is the mission of identifying the emotional facets of speech. In this paper, we identify five basic emotions such as happy, sad, angry, fear and bored. Pitch and frequency features are explored. EMO_DB and RAVDESS databases are used for training and testing the Probabilistic Neural Network (PNN) classifier. Results show 95.76% accuracy for EMO_DB database and 85.32% accuracy for RAVDESS database. Comparison of other algorithms such as Gaussian Mixture Model (GMM), Recurrent Neural Network (RNN), Hidden Markov Model (HMM) and Convolutional Neural Network (CNN) is also presented. The highest accuracy is of 95.76% by using Probabilistic Neural Network (PNN) with EMO_DB database. Results also reveal that Probabilistic Neural Network (PNN) is a superior option as classifier for emotion classification than other classifiers.

Keywords: Speech emotion recognition; Probabilistic Neural Network.

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High Strength Pavement Block

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Abstract: Interlocking concrete pavement block is an solid unreinforced precast member laid over a bedding material. It is a load carrying component of the pavement. However the conventional pavement block become brittle due to many operational and environmental constraints. The main objective of this project is to produce high strength interlocking pavement block by using silica fume and polypropylene fibre. The main reason for the use of silica fume is to produce high strength and improved durability. polypropylene fibre are used inorder to arrest cracks. In this project work M50 grade is used and the test are conducted for various proportion of silica fume with cement 10%,20%,30%,40% and 2% polypropylene fibre were added. The pavement blocks were casted and tested as per the standards given in the Indian Standard for precast concrete blocks (IS 15658:2006). The test results are then compared with the conventional pavement block.

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Experimental Investigation of Mechanical Properties of Geopolymer Concrete Using Hybrid Fibers

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Abstract: Concrete is one of the most commonly used building materials, typically associated with Portland cement as the key component of concrete production. The market for concrete as building material is on the rise. The cement production has been expected to rise from around 1.5 billion tonnes in 1995 to 2.2 billion tonnes in 2015.

On the other hand, one of the main environmental concerns has become a huge problem over the past decade due to global warming. Global warming is caused by human activity releasing greenhouse gases, such as CO2, into the atmosphere. CO2 contributes about 65 per cent to global warming from greenhouse gases. The cement industry accounts for about 6 percent of all CO2 emissions, since Portland cement output releases about one tonnes of CO2 into the atmosphere.

While Portland cement use is still inevitable until the near future several attempts are made to minimize Portland cement usage in concrete. These initiatives include the use of additional cementing materials such as fly ash, silica powder, granulated blast furnace slag, rice-husk ash and metacaolin, and alternative binders to Portland cement. In this regard, Davidovits' proposed geopolymer technology shows considerable potential for application in the concrete industry as an alternative binder to the Portland cement. In terms of minimizing global warming, the geopolymer technology could reduce the CO2 emissions from cement and aggregate industries to the atmosphere by around 80 percent.

To establish a method of proportioning the mixture to create geopolymer concrete based on fiber. Low-calcium (ASTM Class F) fly ash was used as the base material, GGBS, an alkaline solution for producing concrete from geopolymers. The concrete properties studied included the concrete's compressive strength, flexural strength and tensile break behavior when using fibers (glass and crimped steel).

Keywords: Ground granulated blast furnace slag, crimped steel fibre, glass fibre.

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Cost-Analysis of Flexible Pavements of Low-Volume Roads with Recycled Concrete Aggregate Bases/Subbases stabilized with Cement and Bitumen-Emulsion

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Abstract: India has more than 5.8 million kilometres of road network out of which Low Volume Roads (LVRs) accounts for 80 percent which includes Other District Roads (ODRs) and Village Roads (VRs). LVRs are the tertiary road system in total road network which provides accessibility for the rural habitations to market and other facility centres. In India, LVRs are being planned and programmed in the context of overall rural development and provide "all-weather roads" connectivity. The present study focused on cost-analysis of low-volume roads with flexible pavement incorporated with either cement-treated bases or bitumen-emulsion stabilized bases. The research was done on mechanical characterization of mixes treated with either cement or bitumen-emulsion. In addition to the mechanical characterization, the stress-strain analysis was carried out for design of flexible pavements for subgrade CBR of 5% and traffic ranges from 0.6 msa to 1msa. This paper deals with cost-analysis of these design-sections and the overall-cost, transportation costs and material-costs were compared with the unstabilized sections given in IRC: SP-72-2015. Finally, it is concluded that the utilization of cement treated bases/subbases is more economical as compared to bitumen emulsion stabilized bases for low volume roads. But, the material quantity for bitumen emulsion stabilized bases is lower than that of bases/ subbases stabilized with cement.

Keywords: Low-volume Roads, Flexible Pavement; Cement-Treated Bases; Bitumen-Emulsion Treated Bases, Recycled Concrete Aggregates

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Trip Generation Models for Guntur Region Using Regression Analysis

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Abstract: Transportation models will play an important role in urban development planning process in the metropolitan cities of developing and developed nations. These models are constantly facing problems in meeting the social, economical and infrastructure needs of increasing population due to migration, growing interest from the public it is required to improve present transportation models to meet the future travel demand requirements. To minimize this travel demand one has to understand the urban characteristics such as size of city, urban form, its structure and socio-demographics. Even though some studies taken place for various urban areas in the past, they are limited to their regions only as these parameters are related to the population density, employment, road density, environment etc. these influencing parameters will vary from region to region. In this paper an attempt has made to develop and validate the models of trip generation for Guntur district which was the newly formed capital of the Andhra Pradesh after bifurcation of Telangana state in the year 2014.

Key Words: Travel Prediction, travel demand modeling, population, trip generation.

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Mechanical Properties of Self Compacting Concrete using Copper Slag as a Fine Aggregates

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Abstract: Normal concrete lacks the strength and durability that massive concrete constructions, such as high-rise buildings, bridges, and structures subjected to harsh climates, require. The needed thickness of concrete members and the cost of concrete constructions can both be decreased by improving concrete strength. Copper slag will be used to replace fine aggregate in percentages of 0,10,20,30,40, and 50% in this investigation. The use of copper slag as a fine aggregate substitute in concrete minimizes the cost of disposal, lowers the cost of concrete, and helps to conserve the environment. Furthermore, industrial waste and by-products can be used as substitute materials in concrete and structures, which is a better option than dumping them because it protects the environment and prevent the depletion of finite natural resources In this project, M40 grade concrete is made with varied ratios of copper slag instead of fine aggregate (0,10,20,30,40, and 50%) to determine the mechanical qualities of the concrete.

Keywords: M Copper slag; Fine aggregate; Mix proportion; Workability of concrete; Slump value; Admixtures.

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Seismic Analysis of multi-storey building with floating column [G + 5] using STAAD. Pro Software

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Abstract: The main goal of in this project is to use STAAD Pro to do response spectrum analysis and design a multi-story structure [G + 5 (3 dimensional frame)]. The design entails manually calculating loads and assessing the entire structure with STAAD Pro. Limit State Design, as defined by the Indian Standard Code of Practice, is employed in the STAAD-Pro analysis. STAAD.Pro comes with a cutting-edge user interface, visualization tools, and sophisticated analysis and design engines that can do complex finite element and dynamic analysis. We continued to experiment with multi-story 3-D and 2-D frames under a variety of load conditions. The appropriate analysis and design of a G + 5 3-D RCC frame under various load combinations was our final project. We evaluated a 3-D RCC frame with G as the y-axis. The ground floor and the remaining five storey's were all 3 metres tall. Under the load case specifics of STAAD.Pro, the structure was subjected to self weight, dead load, live load, and seismic loads. The fixed supports at the structure's base were also defined. After completing the design, we may work on the structure and investigate the shear force and bending moment values using the generated diagrams in the post-processing mode. It is envisaged that strict adherence to the loading standards proposed in this code would assure the structural safety of the buildings being developed.

Keywords: Seismic Analysis, Response spectrum analysis ,Floating column, RCC Frame Analysis, STAAD-Pro

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Comparative Study on Cement and Flyash by Reinforcing PPF as a Filler in Bituminous Mix

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Abstract: A study has been carried to explore the use of fly ash and polypropylene fiber (PPF) in bitumen mix. Fly ash has been used for many years in road construction as a filler material and hence it reduces material being sent to landfill and there are many environmental and sustainability reasons for using fly ash. In order to increase the stability and durability of the pavement the fly ash is reinforced with the polypropylene fibers, incorporating materials like fibers in the pavement provides durable roads which require lesser maintenance than the conventional asphalt concrete pavements. Polypropylene fibers had good adhesion nature with bitumen and the process of strengthening was increase. In this study, it was observed for fiber-reinforced specimens that the Marshall Stability values increased and flow values decreased in a noticeable manner. It also shows that fatigue life of specimen was increased in gradual manner. This incremental strength of mix implies that PPF will give positive impact to asphalt related research studies. The reinforcement of fiber results good resistance to fatigue and rutting. Therefore, it is studied to determine the application of polypropylene fibers which alters the characteristics of bituminous mixture in a very beneficial way.

Keywords: Fly Ash, Polypropylene Fiber, Reinforcement, Filler, Stability, Fatigue Life

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Experimental Investigation on Vermiculite Concrete With Supplementary Cementitious Materials Flyash and Silica fume

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Abstract: The goal of this experiment is to see how well vermiculite functions in concrete as a fine aggregate replacement. M30 grade concrete is made with cement, fine aggregate, coarse aggregate, vermiculite, potable water, and mineral admixtures such fly ash and silica fume. The water cement ratio (w/c) has been fixed at 0.45.This project will be done on concrete cubes and split tensile cylinders with varied amounts of vermiculite: 0%, 20%, 40%, 60%, 80%, and 100%. Compression, split tensile, and flexural strength of vermiculite concrete specimens are examined after 7, 14, and 28 days of curing, demonstrating a considerable increase in strength. Vermiculite is utilized as a principal filler in concrete instead of sand. The use of fine aggregate instead of vermiculite will aid to reduce the structure's self-weight. As a result, the cost of building is reduced.

Keywords: Vermiculite,Fly ash,Silica fume,Admitures,M30,Curing, Strength properties

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Exploratory Survey on Durability Concepts of High Strength Concrete with Copper Slag and Carbon Fiber

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Abstract: Due to increase in rapid advancement of infrastructure system the requirement of sustainable materials in construction is essential. It is very difficult to overstate the role of material (SAND) today as it plays a prominent role in concrete production. In recent years, due to excessive and gravel mining the dredging of river beds affects the structures spotted near by. And also created a huge problem to human and environment. And also in order to protect the natural availability of resources like sand and gravel, My research study was intensively focused on replacement of fine aggregate with copper slag (In 0%,10%,20%,30%,40%and50%) proportions. Copper slag is an industrial waste from Copper industry .By using copper slag in construction work we can reduce the open land dumping there by protection of imprudent place as well as natural resources .Along with copper slag 0.25% carbon fibers were added as admixture constantly for all 5 mixes as they will increase crack healing capacity ,high durability and higher tensile strength . Main aim of present work is to show the effective usage of copper slag and to study the durability properties, Acid attack test, RCPT, Abrasion resistance test were conducted for all mixes with different copper slag percentages.% Loss in weight and compressive strength was 0.177and 2.03 and Amount of charge passed was 345.6mA having abrasion depth of 0.0093mm at 30% replacement of fine aggregate with copper slag while the Nominal mix having % Loss in weight and compressive strength was 2.52 and 11.205 and Amount of charge passed was 1043.1mA and abrasion depth of 1.65mm.

Key words: Fine aggregate, Copper slag, Carbon fiber, Acid Attack, Rapid Chloride Permeability, Abrasion Resistance of concrete

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Experimental Investigation of Self-Compacting Concrete Incorporating Waste Foundry Sand

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Abstract : While self-compacting concrete (SCC), a relatively recent development in the field of concrete technology, has a number of advantages over conventional concrete, it is not without its drawbacks. Due to the weight of the surrounding environment, self-compacting concrete does not need either external or internal compaction, as indicated by its name. As a result, it is levelled and consolidated without the need for either. Because SCC is able to distribute and fill all corners of the formwork only by the use of its own weight, it does not need vibration or any other kind of consolidation effort.

Due to its excellent quality and widespread use as a moulding material, foundry sand is widely used as a moulding material in the ferrous and nonferrous metal casting industries. But after a period of time has passed, it degrades and becomes a waste material that is referred to as used or spent foundry sand since it is no longer used in the production process (UFS or SFS). Overall, wasted moulding sands are considered nonhazardous waste, with the vast majority of them being recycled (i.e., not corrosive, ignitable, reactive or toxic).

The findings of this research suggest that it is possible to use recycled foundry sand as a partial substitute for sand in the manufacturing of concrete in certain circumstances. The strength and durability of concrete were investigated in this experimental investigation, which used natural sand that had been partially replaced with waste foundry sand. One of the objectives of the research was to determine the strength and durability of concrete. One of the key objectives of the inquiry was to evaluate the strength and durability qualities of concrete (WFS). Natural sand was substituted with four different percentages of WFS, each of which was equivalent to 0%, 5%, 10%, 15%, and 20% of the original amount of natural sand. It was the first time that the characteristics of self-compacting concrete were investigated in this research. An evaluation of the strength properties of concrete was performed at the ages of 7, 28, and 56 days in order to determine its strength characteristics. A compression test as well as a splitting tensile strength test were performed. Sulfate resistance and chloride permeability were determined at seven-, 28-, and 56-day intervals, and a quick chloride permeability test was performed at 28- and 56-day intervals to evaluate the durability characteristics and chloride permeability, respectively.

According to the results of the trials, it was discovered that utilising waste foundry sand (WFS) as a partial substitute for sand up to 15% of the time resulted in an improvement in compressive strength, splitting tensile strength, and tensile strength of self-compacting concrete. Due to these advancements, both the resistance of concrete to sulphate attack and the quick chloride permeability of concrete mixtures have seen significant improvements. The results of the tests revealed that the treatment had boosted the strength and durability of the concrete by up to 15% as a result of the increased strength and durability.

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Strength Characteristics of Reusing Demolished Construction Materials in Concrete

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Abstract: Buildings are an essential component of economic development in any sector, and they use resources not only during construction but also during operation. Buildings consume a lot of energy, water, and building materials, generate a lot of trash, and pollute the air and water during their design, construction, operation, and maintenance. However, demolishing existing structures causes a slew of problems; one option is to recycle the demolished construction waste in concrete, a process called as green concrete. There were numerous points of view and hypotheses about reusing construction waste in concrete, as well as attempts to replace fine aggregates, coarse aggregates, and even cement.

Green concrete is made by substituting coarse aggregates from demolished old concrete with natural coarse aggregates in various dosages. The basic qualities of concrete, such as specific gravity, water absorption, unit weight, and density, are unaffected by reusing demolished trash. After curing for around 7 days, 14 days, and 28 days, modified concrete is tested for strength and other basic qualities, and the results are recorded and graphically displayed.

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Assesement of Fluoride Distribution on Groundwater Applying Multivariate Analysis Using GIS

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Abstract: Study on the geochemical features of ground water was conducted by collecting samples from existing bore wells and open wells, as well as surface water bodies such as lakes and tanks. The parameters of drinking water were tested for electrical conductivity, pH, TDS, and the concentration of di and monovalent elements. The area is made up of Precambrian crystalline granites. The hardness of the groundwater varies from acidic to alkaline. Weathering of rocks is the primary source of fluorine in groundwater.

Key Words: Geochemical, Water Parameters, Concentration of ions, Distribution map, Study area.

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Petrological and Geochemical Studies on Granites from the Cuddapah Basin, southern Part, of Telangana, India

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Abstract: The granites of the Chityala area were studied in terms of petrology and geochemistry. When working with granites, use modal analysis. As a result of later petrogenic processes, the early magmatic structures have been completely obliterated. Granites are notable for their textural intergrowth and perthite and myrmekite replacement structures. Seventeen example samples contained major elements, whereas six samples had trace elements. There are trend graphs for the major oxides and trace elements. The lamellae in the thin sections seen had a tendency to curl and taper to a point.

Key words: Geochemistry process, granites, trace element, petrology, study area.

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Geochemistry of Heavy Metal in Soils of Miryalaguda Area, Nalgonda District of Telangana

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Abstract: A Geochemical studies carried out Miryalaguda mandal of Nalgonda district, in Telangana, for heavy metals as there are many chemical and agro-chemical industries are located in the region. These industries are indiscriminately releasing the untreated effluent waters in to the streams and open lands, which are polluting the soil and ground water and ultimately deteriorating the quality of both the soil and water. In view of this, the present investigation has been taken up to study the heavy metal contamination of soils and to evaluate the nature and extent of soil pollution. The heavy metal concentration of Cu (5.40 to 43.20 ppm), Pb (11.96 to 33.08 ppm), Zn (24.52 to 94.76 ppm), Co (0.66 to 33.80 ppm), Ni (13.22 to 40.10 ppm) were found to be high on comparison with world median values for soils. This particularly relates to the uncontrolled waste dumps and effluents from industries. Heavy metals presence in soil is a hazard and create serious problem to the fauna and flora of the region. The present investigation could clearly indicate the extent of pollution due to heavy metals in soils effecting the anthropogenic activities.

Keywords: Geochemistry, heavy metals, contamination, soil pollution

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Unconfined Compressive Strength of Human Hair Treated in Expansive Soils

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Abstract: Soil reinforcement technique has been used in present times to improve the shear strength of weak soils.The main objective of this study is to investigate the suitability of solid waste materials such as human hair fibers in the process of soil stabilization as a reinforcement which can replace conventional commercial fiber materials. Human hair fiber is a natural nonbiodegradable waste material which creates health and environmental problems. Physical properties of soil like Atterberg's limits, compaction characteristics & strength characteristics of virgin soil samples were determined. The soil sample were treated with different percentages of Human Hair fiber (0.5%,0.7%,0.9%,1.2%and1.5%).The strength of the soil sample increased up to1.2% and then it decreased.

Keywords: BC Soil, Human hair fibers, compaction, UCC, CBR.

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Impact of Rice Husk Ash in Road Works by Improving the Strength Characterics of Expansive Soil (Black Cotton Soil)– an Inclusive Study

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Abstract: In this paper, experimental impact on improving the strength characteristics of expansive soils by using rice husk ash (RHA) as the stabilizing agent. The following test were conducted to know the strength characteristics of stabilized RHA expansive soils e.g Unconfined Compressive Strength (UCS) for a curing periods (7,14, 28 and56) , and California Bearing Ratio (CBR) rate at unsoaked and soaked conditions for a percentages (%)10,20,30 and 40. The results are found that by increasing the percentage of RHA the UCS is increasing gradually and CBR value also increasing for soak and unsoaked conditions

Keywords: Black cotton soil (problematic soil), RHA, CBR Values (soaked and unsoaked),UCS Values

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Experimental Investigation on Ferrock Concrete

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Abstract: As we know concrete is widely used in today's construction industry but the main problem with traditional concrete is that it emits Carbon dioxide. Cement is the most prominent material being used in construction field which emits 6% to 8% of total Carbon dioxide in the world during its production which is the principle constitute of global warming. It's far expected that for each 1kg of cement produced, 0.9kg of Carbon dioxide is produced, and this equates to the evolution of approximately 3.24 billion tons of Carbon dioxide per year. Hence to reduce carbon emission and to promote the utilization of waste products for environment, a product name Ferrock was constituted. This proposes to asses the capability of Ferrock to be used as one of the great feasible alternative of cement in concrete. It is an Iron based binding compound which uses variety of waste material to form a carbon negative building material. The study compares the environmental impacts of ordinary Portland cement and Ferrock. The composition of Ferrock is taken as Iron dust 60%, Fly ash 20%, Metakoalin 10%, Lime stone powder 8% and Oxalic acid 2%. The main aim of the project is to investigate the compressive strength, flexural strength and carbonation depth test by replacing cement with 10%, 15%, 20%, 25% in concrete and to find the optimum ratio of replacement which would give desired results in both Compressive, Flexure strength and reduction in carbonation emission along with sustainability. Test results were taken on 7,14 and 28 days of curing period. The results obtained have indicated that this material can be used as convention material for all future constructions.

Key Words: Ferrock, carbon negative, global warming, compressive strength, flexural strength, oxalic acid.

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Experimental Study on Strength Properties of Ternary Concrete Using Curing Agents

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Abstract: As water is becoming a scarce material day-by-day, there is an urgent need to do research work pertaining to save water in curing concrete. Curing of concrete is maintaining satisfactory moisture content in concrete during its early stages in order to develop the desired properties. Good curing is not always practical in many cases. Curing of concrete plays a major role in developing the concrete and improves the durability and performance. Keeping importance to this, an attempt has made to the develop self- curing concrete by using the water soluble "polyvinyl alcohol" and Concure-WB as internal and external curing agents respectively.

The aim of the project is to study the strength and durability properties of ternary concrete using polyvinyl alcohol and concure-WB as curing agents. The function of these agents is to reduce water evaporation from concrete. In this study the compressive strength of ternary concrete is investigated.

The use of self -curing agents is very important from the point of view that water resources are getting valuable every day(i.e., each 1 m3 of concrete requires for about 3 m3 of water for construction most of which is for curing). The benefit of self curing agents is more significant in desert areas where water is not adequately available.

Ternary concrete is of grade M20 prepared by mixing cement, Sugarcane Bagasse ash, Fly ash, fine and coarse aggregates in different proportions.

In the study, the effect of ordinary concrete, ternary concrete of two different proportions (cement-90% and 70% ;Bagasse ash - 10% and 20% ; Fly ash- 0 and 10% ; fine and coarse aggregate 100%) with pond curing and using curing agents on compressive strength is investigated for 7 and 28 days.

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Study On Strength And Sorpitivity Of Geopolymer Concrete By Using Sugarcane Bagasse Ash

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Abstract: Concrete is the most used construction material today, yet it is also one of the most environmentally destructive. Because of the cement industry's environmental issues, there is a pressing need to employ alternative, sustainable technologies. Geopolymer is an alternative substance that can replace cement as a binder. The strength and sorptivity qualities of fly ash and ground granulated blast furnace slag (GGBS) based geopolymer concrete were investigated in this experiment. The goal of this study was to develop a cementious material that did not emit carbon dioxide. Geopolymer concrete is a crucial and promising material.
The alkaline liquids employed in this study for the polymerization process are sodium hydroxide (NaoH) and sodium silicate solutions (Na2Sio3). To make the blend, 8 molarity and 10 molarity solutions were used. In the present study the workability, compressive strength, split tensile strength, flexural strength and Sorptivity of geo polymer concrete is determined by using sugar cane baggage ash as the replacement of porous material in concrete. The percentage of baggage ash used as 0%, 5%, 10%, 15%, 20% and 25%.
Key words: Geopolymer, Sorptivity, alkaline liquids, workability, strength

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Experimental Study on the Performance of Pervious Concrete Using Viscosity Modifying Agent, Super Absorbent Polymer and SBR Latex.

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Abstract: In this paper, the effect of fine aggregate and coarse aggregate behaviour on the pervious concrete are studied. Materials used in this study are ORDINARY PORTLAND CEMENT of Type 1, fine aggregate appreciate of grade II and 4 sizes of coarse aggregate namely 4.75 mm to 9mm, 9mm to 12.5 mm, 12.5mm to 16mm, 16mm to 19.5mm are used. Mixes were prepared with the water cement ratio of 0.34, cement content of 400kg/m3 and maintaining the combination.

Cement ratio as 4.75:1. Moreover Fine aggregate was replaced with coarse aggregate with in the range of fifty – hundred % by weight. Various mechanical properties of mixes were evaluated. Coefficient of permeability decided by using falling head permeability method. The link between the strength, abrasion resistance, permeability and total void present in aggregate supported angularity number has been developed.

They reported that the compressive strength, flexural strength and split lastingness increased when fine aggregate within the mix increases. During this investigation I observed that because the size of coarse aggregate decreases, compressive strength is increased. This can be thanks to the rise involved area, which increased, because the aggregate size is reduced. The common increase in compressive strength from seven to twenty-eight days were 27%. Similarly, there's a rise in 24% of compressive strength from 28 to 56 days. It's seen that by decrease in angularity number in various mixes a relentless increment of compressive strength of about 0.5 N/mm2. Similarly, trend was observed for the flexural strength and split strength.

Pervious concrete mix with small size aggregate produce less permeability, when put next with the combination with large size aggregate. Angularity number and permeability are highly correlated. Permeability depends upon the results of aggregate sizes further because the effects of addition of fine aggregate Permeability increases with the employment of enormous size aggregate.

However, permeability decreases with increase in sand content. It's evident that permeability values for all the mixes range between 0.401cm/sec to 1.258cm/sec which is sufficient enough for a drainage layer for pavement.

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Experimental Investigation of Reactive Concrete Powder

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Abstract: Reactive Powder Concrete (RPC) is composed of very fine powders cement, sand, and silica fume, steel fibres. A very dense matrix is achieved, and this compactness gives RPC ultra-high strength and durability properties.

A comparison of the physical, mechanical and durability properties of RPC and highperformance concrete shows that RPC possesses better (Both compressive and flexural strength) results compared to HPC. HPC leads the way to achievement of the maximum compressive strength of the order say 100-150 Mpa or so. However, at such a level of strength, the coarse aggregate becomes the weakest link in concrete. In order to increase the compressive strength of concrete even further, the only way is to remove coarse aggregate.

This philosophy has been employed in what today known as Reactive powder concrete. The principal objective of this study is to compare mechanical and durable properties of M25 grade High performance concrete with RPC120. In the present study, performance of reactive powder concrete without quartz powder and containing silica fume as a replacement for cement and High performance concrete M25 grade with silica fume as as admixture at the varying percentage of 0%, 5%, 10%, 15% and 20% by each is investigated.

To compare the results of cement replaced mixture, specimens without cement replacement are also casted.

Performance of the various mixes is tested by the Compressive strength, and Tensile strength. The results show improvement in compressive strength, and Tensile strength in cement replaced mixes in Reactive powder concrete.

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Experimental Study of Concrete By Replacement of Cement With Coconut Powder, Silica Fumes and Polypropylene Fibers

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Abstract: The rising cost of construction materials in developing countries has necessitated research into the use of alternative materials in civil engineering construction. Construction is a matter of optimism, it is a matter of facing the future with the confidence. Now a days the cost of constructions and the material cost is very high. Cement is a binding material which is used in mixing of concrete, which emits co2 which leads to environmental impact and global warming. So, this may be decreased by using alternative materials with pozzolanic characteristics for the cement. A material which is having similar properties of cement can be partially replaced in practice. This is accomplished by partial replacement of cement with coconut shell powder (CSP), Micro silica and polypropylene fibers are included. CSP is an effective and environment friendly approach. CSP sample with replacement of 5%,10% and15% were cast for M40 grade. Micro silica and polypropylene fiber were used in quantities of 5%, 10%, 15%, and 1%, 2%, 3% respectively. The tests performed on cement were done are setting time, and workability test slump test and the strength test are compressive test, split tensile and flexural strength. Strength test were carried out using CSP, micro silica and polypropylene fibers. No. of trial mixes is required to select the desire optimum replacement of cement by CSP waste material.
So, in this project the CSP on concrete is used to achieve required strength of concrete.

Key Words- Coconut shell powder, micro silica and polypropylene, slump test, compressive test, setting time, split tensile, flexural strength.

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Strength Characteristics of SCC with Addition of Glass Fibres

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Abstract: Self-compacting concrete is the flow able concrete used for construction of complex structures. Self-compacting concrete eliminates the problems of bleeding, segregation and usage of vibrating equipment in inaccessible heights. When vibrating machines are operated continuously by workers they may suffer from heart diseases as they receive high vibration while operating. We know concrete is strong in resisting compression forces and weak in resisting the tensile forces. In order to make it stronger in tension glass fibers are added. Many literatures shown that addition of glass fibers results in higher flexural strength and tensile strength compared to normal concrete. Self-compacting concrete together with glass fibers resists extreme weather conditions controlling sudden crack formation. This research aim to evaluate the strength properties of Self-compacting concrete with addition of glass fibers in order to determine the strength properties of concrete we need to obtain the physical properties of each material used in the production of concrete mix. Concrete mixes with varied proportions (0, 0.75, 1.5, 3) % and determining the compressive strength and split tensile strength of casted cubes and cylinders cured for 7days, 14days and 28days the results are reported and represented graphically.

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An Experimental Investigation on Partial Replacement of Coarse Aggregate in Concrete by Using E - Waste

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Abstract: Electronicwaste or e-waste is outlined as discarded electrical or electronic devices. Used electronics that are destined for reuse, resale, salvage, utilisation or disposal come back underneath e-waste class. Informal process of e-waste will cause adverse human health effects and environmental pollution. E- waste is that the quickest growing waste within the world thanks to rapid climb in technology. E-waste consists of discarded refrigerators, TVs, radios, Mobile phones, Air conditioners, computers alternative |and several other electronic gadgets that have reached finish of their life or become a obsolete. the target of this study is to induce the characteristics of concrete that are replaced by e-waste as a rough combination. during this study, coarse aggregate is partially replaced by e-waste up to 30% with regular intervals (0% to 30%) and properties like compressive strength, tensile strength are calculable. Keywords: Electronicwaste,coarse aggregate, compressive strength, tensile strength.

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Assessing the potential of REED BED Technology in sewage treatment plant with treatment of domestic wastewater

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Abstract ; In this project, we conclude that using the concept of hydraulic retention time on reed bed system for 10days by maintaining constant discharge rate 0.173m^3/sec, optimum results obtained by using reed bed technology were pH=6.4,BOD removal efficiency =63%,TS removal efficiency=65%,SS removal efficiency=68%).In this Research we also conclude that Application of Reed Bed Technology in Sewage treatment plant the, BOD removal efficiency=83%, TS removal efficiency=85%, SS removal efficiency=84%. The reed bed system can also be implemented in sewage treatment plant as a tertiary treatment which provides better results in economical and financial aspects.
Key words; pebbles, aggregates, gravels and sand

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Experimental Study on Partial Replacement of Cement, Fine Aggregate and Coarse Aggregate with Fly ash, Granite Powder and Waste Glass

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Abstract: Cement is widely used in construction works, due to high cost of cement many attempts have been made to replace cement. In this study cement is partially replaced by fly ash, which is generated in thermal power plants. The percentage of fly ash used 0%,10%,20%,30% and 40% by weight of cement. Granite powder is partially replaced by fine aggregate which is generated by polishing. The percentage of granite powder is taken as 25% constant by referring the journal, granite powder concrete by T. Felixkala. Waste flat glass gathered from broken windows and used as partial replacement of coarse aggregate. The waste glass is added in different proportions 0%,10%,15%,20% and 25% for M25 mix. The concrete samples were produced, tested using compressive strength and flexure strength for 7 and 28 days and compared with conventional concrete.

Keywords: Fly ash, Granite powder, Waste glass, Compressive strength and Flexure strength.

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Strength Behaviour of Concrete by Replacement of Cement With Egg Shell Powder, Micro Silica and Glass Powder

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Abstract: In construction industry concrete is one of the heart of the material. Most widely used man made construction material after water. Now-a-days people looking for easiest construction techniques. So to minimise the use of cement and decrease the construction cost, for economic and eco-friendly as well as strength and durability. On the earth surface many wastes are producing day to day life, so as to convert the wastage into some reusable purpose and store the resources for future reference. The objective of this study is to find an optimum replacement of Egg shell powder along with silica fumes and glass powder in concrete. Partial replacement of egg shell powder by 5%, 10%, and 15% , silica fumes by 2.5%, 5%, and 7.5% , and glass powder by 1%, 2%, and 3% 0f weight of cement. The maximum compressive strength of 49.6N/mm². An experiment to demonstrates strength features such as setting time, slump test, compressive strength, split tensile strength and flexural strength test.

Keywords : Egg shell powder (ESP), micro silica (MS), glass powder (GP), compressive strength, split tensile strength, flexural strength test.

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AI Based Fatigue Alert System

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Abstract: The main reason for motor vehicular accidents is the driver drowsiness. This work shows a surveillance system developed to detect and alert the vehicle driver about the presence of drowsiness. Here we use an application using Android operating system to implement the Human Computer Interaction System. For the detection of drowsiness, the most relevant visual indicators that reflect the driver's condition are the behavior of the eyes, assent of the head and the yawn. The system works adequately. Due to a large number of traffic accidents when driver has fallen asleep this proposal was developed in order to prevent them by providing a non-invasive system, easy to use and without the necessity of purchasing specialized devices.

This model describes a simple fatigue detection approach for a Smartphone with Android application using Android Studio 2020.1 and Mobile Vision API (From Google ML Kit) for fatigue detection before and while driving. Physiological analysis and a quick facial analysis were performed to check drowsiness before the driver starts driving. The Smartphone camera was used for facial analysis, and it will be undertaken by Google Vision API which determined the head position, blinking duration and yawning frequency through the eye opening and mouth opening probabilities. So, when the analysis show that the driver is drowsy, it will start producing alarm sounds by which the driver gets alerted.

Keywords: Fatigue alert system, ML Kit, JAVA SDK, Android Studio

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Design and Implementation of FFT Based Speech Recognition System

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Abstract: This paper introduces the implementation of front-end speech recognition system using optimal feature extraction and template generation blocks. l. The methods investigated for speech recognition have difficulties in memory size, area, and power in regard with implementation. In most cases complex FFT and DCT transform models were used for processing the speech samples. Here FFT involves complex arithmetic and DCT comprise of matrix computation. This paper presents area efficient multiplier less designs for computing the FFT and DCT transform. There two algorithms are implemented with optimal word length modification with some insignificant error margin during feature extraction. Here 8 point FFT radix-2 transform is used for domain transformation and 8-point DCT is used for energy compaction of spectrum coefficients. The optimization introduced for implementing the speech recognition system can offer an efficient balance between hardware complexity reduction and performance penalty gap that arises at stage-level. Finally, optimal template generation using max pooling is used to retain potentially predominant feature which are unique for isolated speech recognition system. Here MATLAB generated speech samples are used for functionality verification and XILINX FPGA hardware synthesis is used for performance validation of proposed area efficient speech recognition system.

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Design of elliptical shaped Filtering-antenna with DGS, and inset feed for ISM-2.4Ghz Band Applications

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Abstract: In this paper work an antenna with filtering characteristics called Filtering-antenna or Filtenna design is proposed and simulated using HFSS tool. It offers a band width of 500 MHz centered at 2.4 GHz and useful for ISM 2.4 GHz band applications. In the design the feed line of inset feed elliptical patch antenna connected to an interdigital filter. The antenna is wide band that radiates up to 8GHz frequency and the filter offer a 900 MHz band from 2.2 GHz to 3 GHz. With the integration of these two results a filtenna that radiates in the frequency range from 2.3 to 2.8 GHz. In this design hairpin shaped structure by shorting at both ends with vias are used in the filter to improve the resonance effect and so that the return loss are improved. Three dumb bell shaped defects in ground improved the flatness in the return loss so that the efficiency and gains are improved. The final structure size is 0.42λ0 X 0.34λ0 on FR4 substrate with 1.6 mm height. Along with ISM 2.4 GHz band the model offer Wi-fi, card less phone communication, blue tooth and mobile communications etc. applications.

Key words: Filtenna, Interdigital filter, Elliptical patch, Inset feed, and Vias.

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Orthogonal Thirty Two Phase Sequence Sets Design Using MGA

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Abstract: Multiple Input and Multiple Output (MIMO) radar system and spread spectrum communication system can fundamentally improve the system performance by using a group of specially designed orthogonal signals. In this paper Thirty Two Phase sequence sets are synthesized using Modified Genetic Algorithm (MGA). MGA is used as a statistical technique for obtaining approximate solutions to combinatorial optimization problems. This algorithm combines the good methodologies of the two algorithms like global minimum converging property of Genetic Algorithm (GA) and fast convergence rate of Hamming scan algorithm. Some of the synthesized results are presented, and their properties are better than four-phase sequence sets known in the literature. The synthesized Thirty Two Phase sequence sets are promising for practical application to multiple radar system and spread spectrum communication. The synthesized sequences also have complex signal structure which is difficult to detect and analyze by enemy electronics support measure. The convergence rate of the algorithm is shown to be good.

Key words: Autocorrelation, Hamming scan, Polyphase codes, Genetic algorithm, Radar signal.

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Railway Track Defect Detection System

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Abstract: This paper is intended to propose a device which can automatically detect any defects in railway tracks. The created device will be attached into the trolley and it consists of a sensor that will detect a defect and as soon as any defect is detected then the railway operator will get signals like buzzer, SMS, latitude and longitude location through cloud database so he can get the exact location of defect detected. The proposed approach is because the Indian Railway is the biggest railway network in Asia so there should be an efficient methodology to detect and correct any kind of mishap due to railway tracks. The proposed system is different from others because the device is embedded, which could reduce manual work and labor wages. This project aims at the eradication of any kind of casualty in the Indian Railway and if this system is creating even if a small refinement, it will make a difference in the nation.

Keywords: IoT, Raspberry pi, Ultrasonic Sensor, IRSensors, GPS, GSM, Buzzer.

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Smart Hand Glove To Convert Sign Language To Text Using Android App

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Abstract: Technology enables us to communicate with a person who is miles away but the differently-abled persons (the deaf and the dumb) still find difficulty in communicating with normal people. The deaf and dumb communicate with each other using sign language but for a normal person this sign language is difficult to understand. Therefore, this creates a barrier in communication as well as between the people. The main aim of this project is to overcome this barrier by designing a glove using Raspberry Pi 3 Model B+, flex sensors, accelerometer, ADC, HC-06 Bluetooth module, and an android app. The Smart Hand Glove converts the sign language symbols into the corresponding pre-defined messages by using flex sensors that measure theangle between the fingers and an accelerometer that measures the tilt. These analog values are converted to digital by using an ADC. The digital values are sent to Raspberry Pi 3 Model B+ and the output is displayed using the android app connected via Bluetooth. The proposed model is safe and cost-effective and it can be used by anyone. It is also feasible.

Keywords: Raspberry Pi 3 B+, Android app, HC-06 Bluetooth module, Flex sensors, Accelerometer

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Design and Implementation of Smart Parking Slot Indicator Using FPGA

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Abstract: The days of simply seeing a few vehicles on the road are long gone. With the rise of urbanization and population, within the previous couple of decades, there has been an increase within the number of vehicles [1]. As a result, the issue of parking has become quite essential. The restricted automobile parking space and more vehicles have caused parking challenges in large malls, educational institutions, and organizations. People generally waste a lot of time trying to find a parking spot in such situations [2]. To address the current issue, a project dubbed "Smart parking space indication utilizing FPGA" is being developed. This method has mainly two modules. The primary module is to search out whether a slot is on the market to park the vehicle or not. The second module is to seek out the precise vacant slot and guide the user with directions to locate the vacant slot. This can be about designing an efficient system which takes over the task of identifying number of free slots within the lot and therefore the details of tangible free slot available. A Verilog HDL code is implemented to style the proposed circuit, which is then further synthesized on FPGA to induce the desired design.

Keywords: Number of vehicles, Parking, wastage of time, Smart indicator, FPGA, Verilog HDL.

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Smart Navigation System for Visually Impaired Friends

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Abstract: The objective of this paper is to provide the low-cost assistive device with localization and mapping of the visually-impaired people. This can be used as plug and play device low power consumption and economical solution to visually-impaired. Further, the smart assistive device will be an integration of computer vision techniques and sensors network which can be validate the sturdiness and consistency of the obstacle recognition and detection modules. Need to test the obstacle detection data and the module is reliant on the collected data from both the smartphone camera and ultrasonic sensors, which will be nourished to the recognition unit to categorize the existing things of the scene. "Humans are not disabled. A person can never be broken. Our built environment, our technologies, is broken and disabled. We the people need not accept our limitations, but can transfer disability through technological Innovation"

Keywords: Assistive device, GPS, machine learning, image processing and computer vision

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Digi Angle Meter

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Abstract: Angle measurements are very important in measurements. In metrology, there is a wide angles. Nevertheless, the choice of measurement device can be influenced by the type of component to be measured, and the degree of accuracy and precision required. Digitized devices are accurate at measuring angles. The device stores angle and inclinometer measurements in its memory for future use. In other words, we are working on a Digital Angle Measuring Device. With it, users can easily measure angles and re-use them. A revolutionary and versatile measuring tool, the instrument combines an angle finder, protractor, and level, making it ideal for applications in the auto industry, construction industry, drilling industry, and many more. There are no special fixtures needed to calibrate it directly displays values. This document gives a brief overview about the different types of methods and instruments used by the people who are working with carpentry, interior and exterior designing to measure the angle between planes in their work. However, they all are old methods and devices to measure the angles. Most of the time these devices used to not give accurate measurements and there are some devices which give accurate measurements but they are expensive, very large to carry and also difficult to handle. To solve these problems, we have come up with an idea which gives a solution to the above problems. Which consists of an Arduino microcontroller and sensors

Keywords: Metrology, IoT control system NETPI network platform Smart house system

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TAP2PAY – IoT Based Automated Bus Fare Collection System

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Abstract: Public transit, such as the metro, has evolved significantly in recent years. Demand for intelligent transportation systems is being driven by passenger safety, convenience, and the desire to improve the performance of existing public transit. In India, the paper-based ticket system for collecting bus fares has been identified as a major cause of financial loss. It's tough to guarantee that every single person will buy a ticket. When travelers arrive at their destination, a paper ticket is rendered worthless. As a result, we suggest an RFID-enabled automated card-based system for bus travel. The proposed system enables to reduce the time for issuance of tickets, eliminated the use of paper tickets and exchange of physical cash.

Keywords: RFID, Smart Bus Fare Internet of Things Automation

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Locus Tracker Using Gsm/Gps Module

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Abstract: Location based services have enabled people to locate and track the location of other people, objects, machine, vehicles, and resources, from the comfort of their home as long as they have the required gadgets such as a smart phone. Most applications today use Global Positioning System (GPS) to provide location information; for example, social networking sites like Face book allows users to share their location with friends and family. Another common example is applications that allow users to retrieve weather forecast data based on their current location. The purpose of this project is to develop a tracking / monitoring device for vehicles using GPS and GSM devices. This project is useful in many situations, like in case of car theft detection. Also, if somebody wants to track the location of children if lost, at that time it will be very helpful. This device is very useful for women's safety as well.

Keywords: GPS, GSM, configure, coordinates, SAMD controller, LCD.

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Extraction of Number Plate of a Vehicle Using Improved Segmentation

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Abstract: Background/Objective: With the increase in criminal activity, it is critical for the traffic police authority to take the appropriate safety precautions to prevent blurring and pixelation. Statistical Analysis/ Methods: Number Plate Recognition is a technology that extracts text from an image and recognises the letters straight from the number plate image. It's a burgeoning field of study. Because number plate requirements are not completely followed everywhere, identifying nonstandard number plate characters can be challenging. To solve this gap, we use a region-based segmentation technique of the alphanumeric characters on the licence plate in this study. The proposed method begins by obtaining an image of the vehicle's licence plate. To obtain the car number plate region in an image, image segmentation is employed. The Template Matching method can be used for character recognition. The system's performance and efficiency can be increased by gathering appropriate samples. Applications: Law enforcement agencies benefit enormously from these systems since they remove the need for Radio Frequency Identification tags and other similar devices.

Keywords: Number Plate Recognition, Gray Processing, Image Acquisition, Image Binarization, region props, optical character recognition.

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Design and Development of Advanced 6t Sram Cell

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Abstract: The trend of Static Random Access Memory (SRAM) along with CMOS technology measuring in different processors and system-on-chip (SoC) products has charged the need of innovation in the area of SRAM design. SRAM bitcells are made of minimum geometry devices for high density and to keep the pace with CMOS technology scaling, as a result, they are the first to suffer from technology scaling caused side-effects. At the same time, success of next generation technology depends on the successful realization of SRAM. Therefore, different SRAM bitcell topologies and array architectures have been suggested in the recent past to meet the nano-regime challenges. Some of the major challenges in SRAM design carries poor stability, process variation tolerance, device degradation due to ageing and soft errors. In this chapter, introduction and importance of SRAM in memory executive of a modern computer system and its peripheral circuitries have been presented. Different SRAM bitcell topologies and their merits and de-merits are also highlighted.

Keywords: Static Random AccessMemory (SRAM, CMOS, Power dissipation, Read and Write Delay Static Noise Margin (SNM), Leakage Power

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Parking Slot Indication System Using Image Segmentataion

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Abstract: To meet the developments, technology is plays a key role. There have been many areas which are not yet advanced. One of the major issues in Metropolitan Cities is searching for parking spaces. We have come up with a novel solution to this problem with the implementation of parking space management system using image processing. It deals with detection of cars parked in the parking space which uses a camera as a sensor to detect the presence of the empty parking space in the parking area. The image is captured with the help of a camera and then, sent to the processor. The processor has code dumped into it. It compares the image, which is sent by camera with the reference image, and performs the further analysis based on background colors and images by extracting the required information. This approach is quite simple and yet, efficient in obtaining the required results.

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Implementation of New Generation Bathroom

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Abstract: The modern generation is in the need of comfort, safety, and health benefits. The advancement of automation in every field made the work to be easier. The need for bathroom automation, due to the accidents that are happened in the bathroom is not recognized at the correct time and had led to death. Moreover, the comfort and health-improving parameters in the bathroom environment are in lack of development. In this paper, the intelligent bathroom design with multi-features that promote health, safety, and comfort to the modern man. In this system, the intelligent valve control and the smart shower with water-saving feature based on the distance and mold growth controlling with automated humidity-controlled exhaust fan. The entire system provides the bathroom with smart facilities that ensure the hygienic bath to the modern man.

Keywords: New Generation Bathroom, Impaired, Optimum Temperature Water, Ergonomics, Sensors.

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Different Models for Weapon Detection using Image Processing

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Abstract: The object detection system is developed to achieve high detection positive rates in a public dataset. Object detection is a challenge which is applied in the life of people i.e. for surveillance activities in public places. It is the branch of computer vision were the objects (weapons) carried by the people are highlighted which helps in detection. The deep learning network has evolved rapidly these days for functioning of various tasks. Image processing activity involves two procedures, drawing the bounding box around an object in an image and assigning a label to it. This procedure involves various models to detect as fast as possible. YOLO is considered as the fastest and accurate for real time object detection. The YOLO family models are fast and more accurate when compared with R-CNN.

Keywords: Object detection, surveillance, computer vision, deep learning, YOLO, R-CNN

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A novel approach for Detection of Primary User Emulation with Mobility using CRN

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Abstract: The detection of possible network attacks is essential for wireless networks, particularly for mobile cognitive radio networks due to its characteristics such as dynamic spectrum allocation and constant frequency hopping. The primary user emulation attack is one of the most significant attacks in cognitive radio because it hazards the complete cognitive cycle. The techniques used for the detection of primary user emulation found in the literature are based on a fixed attacker location. However, in a mobile environment, the attacker usually has dynamic locations and this compromises the currently applied security techniques and generates inefficient attack detection. Therefore, our work proposes a novel technique using a cross- layer design for the detection of primary user emulation with mobility. This attack detection technique was tested with experiments using software-defined radio equipment and mobile phones in indoor scenarios with dynamic locations and with a mobile phone base station built up also with software-defined radio. The obtained results show that the combination of the three utilized techniques, energy detection, motion estimation, and application information analysis, can optimize the detection with around 100% of effectiveness for the primary user emulation attack with the dynamic location. The proposed technique shows that the energy detection time is around 100 ms and the processing time of the information analysis in the mobile phone is about 30 s. This result shows a practical and effective approach to detecting primary emulation attacks. The proposed technique, to the best of the authors' knowledge, has not been presented before in the literature with experiments nor with mobility conditions of the attacker as presented in our proposed work.

Keywords: Primary user emulation, Cognitive radio network, PUE attack, Cross-layer design, Wireless networks security.

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Field Instruments Used in Process Industries: A Review

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Abstract. Today in manufacturing industries many types of filed instruments are used to make a process more reliable and accurate. Mostly in industries, some parameters are to be maintained with in the specific range for efficient production, which can be controlled by industrial field instruments. These devices are advanced and made up of an electronic circuitry which enables them to continuously send and receive data over a wide geographical range. This advantage of these field instruments make them more suitable for a automated industry. Some devices are as follows: Temperature sensor, Temperature transmitter, Pressure/vacuum gauges, Pressure switches, Level transmitter, Level switches, Flow meter, Conductivity meter, pH meter, Load cell and Control valve.

Keywords: Automation, Industrial Field Instruments, Ultra High Temperature Processing and Calibration.

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Industrial Automation Using Raspberry Pi

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Abstract: In the demand-driven world, where the business requirements are increasing rapidly. We have to also adapt to new working solutions in order to meet the expectations. Industrial automation (IA) greatly reduces the need for a human workforce. Automation, or automatic control, is the use of various control systems for operating equipment, such as machinery, processes in factories, boilers, and heat-treating ovens, aircraft, and other applications with minimal or reduced human intervention. The biggest benefit of automation is that it saves energy, labor, and materials and improves quality, accuracy, and precision. Wireless communication technologies are widely applied in fields like industrial automation. Wireless communication, as well as smart sensors and actuators, offer opportunities to improve automation in a sustainable manner. To learn about industrial automation, a review process has been undertaken for 15 research papers that were published in the period from 2012 to 2020. After an exhaustive review process, three key aspects were found they are safety, security, and authentication. Therefore, those issues were resolved in the project.

Keywords: Automation, Raspberry Pi, Safety, Security, Authentication.

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Design and Implementation of Advanced Automated Crowd Indicator With UART

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Abstract: This paper presents "Design and Implementation of Advanced Automated Crowd Indicator With UART", which is mainly designed for crowd controlling using Bidirectional Digital visitor counter which as well as count number of people entering in the hall very accurately. When a person enters into the hall a counter is maintained for presenting the number of people and is updated by one and when a person leaves the room counter is maintained for presenting the number of people and is decreased by one. In order to perform this mechanism, there were several phases in the design process such as designing a flow chart, algorithm and simultaneously the code is developed to implement & stimulate the logic. The proposed digital Crowd Indicator was designed on Xilinx ISE using Verilog HDL and can also be implemented on FPGA board for real time purpose. The PIR, IR sensors, counters are interfaced with FPGA board along with UART.. The overall count of people inside the hall will be presented on Liquid crystal display(LCD). When a person passed through the Infrared Receiver's then the Infrared Rays falling on the receivers are obstructed. This obstruction is sensed by the IR sensor. If the hall reaches the maximum capacity then a security alarm or a buzzer sound will be enabled.

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Image Quality Analysis of Deblocked Images

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Abstract: Deblocking is an image filter that smooths the sharp edges of a decoded compressed image to enhance visual quality and prediction performance. Here in this work, image deblocking is implemented using deep learning. Training a denoising convolutional neural network (DnCNN) will take place and then using the network to reduce JPEG compression artifacts in an image is performed. Quality of the deblocked images is quantified by four metrics namely SSIM, PSNR, NIQE and BRISQUE.

Keywords: Deblocking DnCNN, Deep Learning Compression.

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Bluetooth Controlled Door Latch

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Abstract: Locking System is very essential in our daily life. They provide safety and security for one's health and wealth. They act as the barrier to keep one's facility and workspace safe and help maintain privacy. Either there are cases in India where housebreaking is done just by breaking the door lock and stealing the properties in the houses. The main objective of our project is to safeguard the house even more securely than the door locks used.

Today's world is a smart world we live in and Smart Phones have a major contribution in it. A smart phone is now a very common device that everyone carries with them all the time. Smart phones have enabled us to perform various tasks while using a single device. Considering this phenomenon, we present a solution which is a smart and a secure way of locking the door that is "Bluetooth Controlled Door Latch". This project provides a solution to improve the home safety management of doors.

Keywords: Door lock, Smart phone, Bluetooth.

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Mitigation of Pilot contamination using fractional pilot reuse with Time-Shift pilot scheme in massive MIMO system

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Abstract: In this paper, we have proposed a combined technique of fractional pilot reuse (FPR) with time-shift pilot (TSP) scheme in order to mitigate the pilot contamination in massive multiple-input- multiple-output (MIMO) system. With the ever growing number of users and reuse of pilots in different cells, there is occurrence of inter-cell interference, leading to reduced efficiency of Massive MIMO systems in terms of system capacity. To solve this problem, we have used a combinational approach of FPR-TSP for cell centre users and orthogonal pilots for cell edge users. The users are classified into the cell-center and the cell-edge ones according to their signal-to-interference-plus-noise ratios (SINRs) at the receiver side. Then, the cell-centre users provided with high SINRs are allocated with reused pilots along with time shifting technique and the cell-edge users provided with low SINRs are allocated with orthogonal pilots. The analytical result and the simulation results of the proposed scheme have better demonstrated with comparative merits with respect to the conventional schemes.

Keywords: MIMO, SINR, pilot contamination, SE, pilot allocation, fractional pilot reuse, time- shift pilot

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Alert System for Alzheimer's Patient

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Abstract. In modern society, busy life has made people forget many things in day to day life. The elderly people and the victims of chronicle diseases who need to take the medicines on time without missing are suffering from dementia, which is forgetting things in their daily routine. Considering this situation study has been done.
The medicines to be given and their time period are noted in Raspberry pi. Alarm will be set on buzzer for the timing at which medicine is to be taken. Medicine name is shown on LCD display. There will be a button that has to be pressed by patient for confirming that medicine is taken. If medicine is not taken (button is not pressed) on time SMS will be sent to caretaker of the patient. Device must show location of patient whenever caretaker asks for his location.

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Design of a Compact Broad Band 3dB Directional Coupler for Satellite Applications

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Abstract: This article describes the development and implementation of a 3 dB directional coupler for C-band applications. The directional coupler is a four-port device that offers a 90-degree phase shift to one of the elements with equal power separation. The slot is etched to enable coupling in the side divider. This structure is often used to accumulate transmissions of double circular polarization. Tuning screws are typically embedded into the excitation region to customize the 90 degree phase difference. This system is implemented to operate C-band (6.5-8 GHz) which can be used in applications for satellite technology. The reflection coefficients of all four ports across the specified band are better than -22 dB. The transmission parameters, S21 and S31 are about -3 dB across the desired C-band and intended structure has phase difference around -90 degrees. Compared to other waveguide modules, this sort of directional coupler is widely utilized for its small size. The Commercial Computer Simulation Technology (CST) software accomplishes simulation in the optimal frequency band. An intended model is sensible for satellite applications.

Keywords: Waveguide components; directional coupler; power divider; phase difference; C-band.

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Device to Device Communication Underlaying Cellular Networks Using Energy Efficiency Optimization

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Abstract: In this paper we discuss about the D2D communication which is used to improve the communication rapidly. To maximize the EE, we use D2D in 5g networks which is key in D2D. It also reduces the throughput latency. We use D2D in overlay or underlay, in this we choose underlaid over overlaid because of high spectral efficiency. However, we give much attention to single cell scenario to which are existing technologies and we give less attention to maximize the EE of whole cellular network underlaid with D2D communication. By using successful transmission probability and AVSR reduces the interference problem which is introduced by D2D and cellular. The optimization problem is formulated with algorithms they are Branch and Bound and proposed derivative algorithm. To solve non- convex problem, we proposed a derivative algorithm, compare both algorithms which shows the propose derivative is lower than the BB. Finally, we perform simulation results by using MATLAB software which demonstrated that the EE with much better performance.

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GSM and GPS based vehicle theft detection system

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Abstract: In present growing economy, the country faces the uprising of the crime rate and vehicle theft occurs, which is the main concern for conducting this project. The safety of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system is installed in the vehicle, to track the place and locking engine motor. The place of the vehicle is identified using Global Positioning system (GPS) and Global system mobile communication (GSM). This system constantly watches a moving Vehicle and reports the status on demand. When the theft is identified, GSM send SMS to the LPC2138 microcontroller, then the microcontroller issues the control signals to stop the engine motor. Authorized person needs to send the password to controller to restart the vehicle and open the door. The main concept in this design is introducing the GSM and GPS Technologies into the embedded system. The designed unit is very simple &low cost. The entire designed unit is on a single chip. When the vehicle is stolen, owner will give a call to the kit placed in vehicle engine automatically stop which is indicated by the DC motor in turn sends the SMS to the authorized person showing the exact location using GPS. This is a more secured, reliable and low cost system.

Keywords: Global positioning system (GPS), Global system mobile communication (GSM), Microcontroller, DC motor, Short message service (SMS)

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Design and Implementation of Smart Sensor Based Dynamic Traffic Control System

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Abstract. This paper introduces SMART SENSOR BASED DYNAMIC TRAFFIC CONTROL SYSTEM USING FPGA. Traffic light controller is a set of rules and instructions that drivers, pilots, train engineers, and ship captains rely on to avoid collisions and other hazards. Traffic control systems include signs, lights and other devices that communicate specific directions, warnings, or requirements. SMART SENSOR BASED DYNAMIC TRAFFIC CONTROL SYSTEM USING FPGA has many advantages over other with reference to the speed, number of input/output ports and performance which are all very important in design.

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Automated Immersion Water Heater

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Abstract: We find immersive water heaters in many middle class families especially in India. But, People often forget to switch off the power supply though water is heated. This leads not only to fire accidents, but also increased power charges. The objective of this project is to design an automated immersion water heater which heats the water to a prescribed temperature level. After water gets heated, the power will be off and gives the alarm to the user. It can also be set such that If the temperature of the water drops below a certain point, the heating process is initialized again to bring temperature up to the required level.
Although this is little expensive than a natural gas heater and normal immersive water heater, the main advantages are safety, not requiring the same level of ventilation and less electricity bill. Water can also be heated up at the most economical time of the day and kept warm via tank insulation.

Keywords: Immersive water heater, Temparature Sensor, Ardunio Uno. ROI(Return on Investment)

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IoT Based Vehicle Tracking & Monitoring System

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Abstract: A vehicle tracking and monitoring system is designed for monitoring the vehicle from any location A to location B at real time and provide safety environment to the traveler. The proposed system would make good use of new technology that based on Embedded Linux board namely Raspberry Pi and its advanced feature of storing database at real time. The proposed system works on Global Positioning System (GPS) and Global System for Mobile Communication (GSM) which is used for vehicle tracking and monitoring mechanism. For this purpose SIM908 Module is used which includes all the three things namely GPS GPRS GSM. The GPS gives current location of the vehicle; GPRS sends the tracking information to the server and the GSM is used for sending alert message to vehicle's owner mobile. The proposed system would place inside the vehicle whose position is to be determined on the web page and monitored at real time. In the proposed system, there is comparison between the current vehicle path and already specified path inside the file system of Raspberry pi. Hence if the driver drives the vehicle on the wrong path then the alert message will be sent from the proposed system to the vehicle's owner mobile and if the vehicle's speed goes beyond the specified value of the speed, then also the warning message will be sent from system to the owner mobile. The proposed system also took care of the traveller's safety by using LPG Gas leakage sensor MQ6 and temperature sensor DS18B20.

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Video Cryptography for Text Transmission

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Abstract: We know that now a days for transmitting the data or any other files from the sender side to the receiver side security plays a very important role. We can transmit the data from one end to the other end in various forms and in various ways. So in order to keep the data safely the third party person should not get accessed to that data. In order to get this we must secure the data which we are transferring from one end to other end. In order to secure the data there are many ways to secure the data. From various techniques we are using video cryptography in our project.

We can securely transmit the text inside the frames of video which are the basic building blocks of any video file. In the proposed project the video is distributed into the photo frames using and all the frames are sequentially stored. Then comes our text data which is to be transmitted is embedded into the frames. At the receiving end we decrypt the same in reverse order and hence the text is securely transmitted. Key Words: Video Encryption, Steganography, Video Cryptography, AES, DES, Water Marking

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Automatic Teller Machine Security Using Embedded System

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Abstract: Automated Teller Machines ATMs are used for one-of-a-kind approaches, generally for cash withdrawals. ATM users utilize many services on ATM and they will do billions of transactions. Meanwhile robberies happening in the ATMs are also excessive with the shortage of protection. The main objective of our study is to minimize the robberies occurring in the ATM's and this project, we are using the camera for face recognition. If any of the sensors like temperature activates then buzzer will alert sound and corresponding alert message will be sent to the authorized person. Besides if any person tries to open money locker, then the gas is sprinkled on the thief to make unconscious. To do this, we need to implement a low-cost stand-alone embedded web server based primarily on the Linux operating system, which includes the ARM11 processor and the Raspberry Pi. This device is designed to protect ATMs, including modules, especially door locks, the Internet, sensors and face recognition cameras. In addition to all intensity, an infrared sensor is used, which fire extinguishers detect vibrations and heat from ATMs and perform important movements. This machine uses an ARM11 controller, which is mainly based on embedded devices, to process data in real time using IR sensor. As soon as object is felt, the fact is transmitted to the base device based on ARM11. Then use the DC motor to close the ATM door. A relay will be brought on to the leak the fuel from an ATM center and make the thief in unconscious state and a warning message is sent to the authorized person. This will prevent.

Keywords: Raspberry Pi, USB Camera, Motor Driver, Servo motor, IR sensor, Temperature sensor, Buzzer.

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Design of Weed Detection System in Cotton Fields Using Template Matching

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Abstract: Agriculture is our country's backbone. Agriculture accounts for the majority of the Indian economy. As risks in the agriculture field increase, most farmers are looking for new jobs to supplement their income. Weed growth is the most serious threat to agriculture. It is estimated that weed removal accounts for approximately 30% of total crop production expenditure. Farmers must hire labour to remove weeds on a regular basis. Cotton is one of the most important cash crops grown in India for centuries. The main risk in agriculture is weed, which prevents plant growth. These weeds compete with the main crop for water, nutrients, sunlight, and space, among other things. They are hardwired to grow quickly and vigorously. If weeds are not removed, the main crop will suffer from a lack of nutrients, water, and space. These unwanted plants also reduce crop yield. Big crop quality and quantity are declining. There are many different types of weeds, and detecting all of them takes time. Cotton is our primary crop in this paper. We present a method for identifying cotton plants in which every plant other than cotton is considered a weed. Image processing techniques are used to accomplish this. The image is processed using a simple phenomenon known as template matching, which is normally used to detect an object from an image containing multiple objects.

Keywords: Gray Processing, Image Acquisition, Template Matching Technique.

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Compact Multiband Notch Antenna for UWB Applications

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Abstract: This paper proposes a CPW fed circular monopole patch antenna for Ultra Wide Band applications. A circular patch is placed on the top of low dielectric constant material Rogers RT/DUROID 5880. In this paper a circular patch antenna is incorporated with three notches. The bands Wi-MAX (3.4GHz to 3.7GHz), WLAN (5.06 GHz to 5.99GHz), and X band downlink (7.23 GHz to 8GHz) frequencies are notched in this antenna design. Simulations were done to verify the performance characteristics of multiband notch antenna by measuring S11, Radiation Pattern, Group Delay and Gain Plot. All the simulations are carried out in CST microwave Studio 2018.The proposed dimensions of the antenna in this paper is 28*28*1.6 mm3. The simulated results and the measured results are tested and verified.

Keywords: CPW feeding , UWB, WLAN, Wi-MAX, X Band downlink

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DWT Based Audio Steganography Using AES Encryption

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Abstract: Embedding secret message into digital sound is called audio steganography. Audio Steganography is presented where the bits of a secret message are embedded into the cover audio. In this project a new scheme for digital audio steganography is presented where the bits of a secret message are embedded into the cover audio.

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Underwater Image Enhancement Using SMQT

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Abstract: Image enhancement improves the perception of information in images for viewers and providing better input for the image processing techniques. We introduce an effective technique to enhance the underwater images captured and degraded due to the medium scattering and absorption. Our method is a single image approach that does not require specialized hardware or knowledge about the underwater conditions or scene structure. SMQT technique finds mean of the image, quantizing the pixel values and splitting the input image into two subsets. SMQT algorithm is non-linear and it can extract structure of the data. The results showed that the proposed method could enhance the quality of underwater images effectively. CLAHE plays a significant role in luminance enhancement of underwater images. At the same time, histogram equalization is performed on the sharpened image.

Keywords: Image Enhancement, Underwater Images, Successive Mean Quantization Transform (SMQT), Contrast Limited Adaptive Histogram Equalization (CLAHE), Histogram Equalization, Luminance.

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GDI based Accurate and Inaccurate CSLA in 45 nm Technology

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Abstract: Fast computing plays a key role in each processor technology. The main basic function of a computer is an arithmetic and logical operation that requires a multiplier. However, at the micro level of the multiplier, a large number of adders are required for its operation. Therefore, the design of the adder is essential to optimize the performance of the processing unit. Today, an error in the adder design output is tolerated to improve performance targets as an area power delay product. This document proposes a new inaccurate carry select adder (by incorporating an inexact FA) for better performance. The proposed approximate carry select adder (CSLA) design is a combination of functional blocks that are roughly higher and lower ripple carry adder blocks and a multiplexer block. But this greater number of nodes in the proposed adder design makes the calculation of this adder slow. To reduce the propagation delay in the summation process, the number of capacitive transistor nodes (number of transistors) must be reduced. Because Gate Diffusion Input (GDI) technology is used to design a proposed inaccurate CSLA adder with fewer transistors, reducing the number of capacitive nodes compared to CMOS (Complementary Metal-Oxide Semiconductor) technology at the switch level. Therefore, the value of the time constant is reduced, which reduces the delay in the circuit. Not only is the design delay reduced, but the area required to design the proposed adder is also reduced because fewer transistors are used. Here, the sum and carry-over are generated with less delay due to inaccuracies in the design. The simulation process is accomplished using a cadence tool (45nm technology) with different input bit streams and the results are compared to previous designs.

Keywords:GDI (gate diffusion input), CSLA (Carry select adder), Approximate adders, reconfigurable RCA

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Audio Signal Compression Using Wavelets

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Abstract: As the multimedia era unfolds, audio compression has become a fundamental technology. This paper describes about Daubechie and Haar wavelet-based audio compression. This method uses efficient wavelet selection and wavelet coefficients, quantization procedure using psychoacoustic models into an adaptive wavelet.

Keywords : Daubechie, Haar, quantization, psychoacoustic models

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Landsman Converter FED Electric Vehicle with Improved Power Factor

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Abstract: The Electric Vehicles (EV) are gaining immense popularity owing to its several attractive advantages like battery storage, minimum carbon footprint in addition to being eco-friendly. Electric cars bring a change in both the transportation and electricity sectors, and by merging the two, they have the potential to benefit both. This linkage necessitates the deployment of effective Power Factor Correction (PFC) techniques for charging EV batteries, which reduces the supply front-inherent end's Power Quality (PQ) issues.For PFC an efficient Bridgeless Landsman converter, which is capable of monitoring link voltage is adopted in this work. A PI controller based on an Artificial Neural Networks (ANN) is used, which aids in prediction and classification in terms of response time. The hysteresis controller is linked to a PWM generator, which calculates the converter's steady-state switching frequency and gives accurate results. The proposed method assists in successful minimization of harmonics with heightened efficiency.

Keywords: Bridgeless Landsman Converter, ANN, PWM generator, Hysteresis controller, PI controller

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Mayfly Optimization Algorithm based Developed Multi Level Inverter Configuration with Reduced Switches for Harmonic Suppression

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Abstract: In the medium and high-power inverter power conversion process utilized in renewable energy sources, the multilevel inverter plays a critical role. This paper presents a new 31-level inverter configuration with unequal sources that solved the switching angles using Mayfly optimization algorithm (MOA) and Differential Evolution Algorithm (DEA). The nonlinear transcendental equations are turned into a problem of optimization. The look up tables for creating switching patterns off line for the hardware circuit is created using the optimal switching angles provided by both MOA and DEA. In terms of harmonic content in the output voltage, MOA outperforms DEA in that it has a substantially lower harmonic content and a faster convergence rate. Simulation and experimental results demonstrate the operational effectiveness and precision of the novel algorithm-based proposed configuration in creating all the levels of voltage for a 31-level inverter.

Keywords: Selective Harmonic Elimination (SHE), Mayfly Optimization Algorithm (MOA), Differential Evolution Algorithm (DEA), Total Harmonic Distortion (THD), 31-Level Inverter

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Solar Tracking 2-Wheeler EV Charger

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Abstract: Solar power is the fastest growing means of renewable energy. The project is designed and implemented using a simple dual axis solar tracker system to charge the 2-Wheeler EV. In order to maximize energy generation from the sun, it is necessary to introduce solar tracking systems into solar power systems. A dual-axis tracker can increase energy by tracking sun rays and rotating solar panels in various directions. Hence, the overall efficiency of the energy generation is increased. This solar panel can rotate in all directions. This EV Charger notifies users about the battery and also detects any fire caused in/around the equipment, and sends the information/data to the concerned users via a SMS to their mobile number.

Key Words : Arduino IDE, GSM Communication, IOT.

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3-Valves Switching Regenerative Braking in BLDC Motor for Electric Vehicle Applications

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Abstract: Regenerative Braking System is an efficient method to improve usage of energy and can provide a long driving distance for the electric vehicles. In this paper the Regenerative Braking system (RBS) is combined with a Permanent magnet BLDC motor and it emphasizes the Braking system and distribution of braking force using a Proportional Integral Derivative (PID)
Controller. The Fuzzy logic is taken as into consideration for feedback of Battery State of Charge (SOC) and the Battery discharge voltage and discharge current. In comparison with The BLDC motor RBS with Single valve triggering mechanism has a disadvantage of Recovery energy, Braking time and maximum braking current. These improvements are observed in Three valve switching Mechanism and the Battery State of Charge, Currents and voltages are to be simulated in Matrix Laboratory (MATLAB) SIMULINK.

Key Terms: Brushless dc (BLDC) motor, proportional–integral–derivative (PID) control, regenerative braking system (RBS), State of Charge (SOC).

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Analysis of Thermoelectric Instant Cooling System Using Peltier Effect

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Abstract : The objective of this Paper is to develop a portable thermoelectric refrigeration system capable of maintaining temperatures between 6 °C and 8 °C. The main system consisted of thermoelectric module as cooling generator along with insulated cabin, battery and charging unit. Thermoelectric elements perform the same cooling function as Freon-based vapor compression or absorption refrigerators. To ensure the success of this project several criteria are to be satisfied such as portability, size and cost of the system. Based on the heat load calculations, the thermoelectric module is selected. The system was fabricated and was experimentally tested for the cooling purpose. The capability of the system to maintain the required temperature and the time for reaching the same were analyzed. The results showed that the system can maintain the vaccine storage temperature at 6°C and 8 °C under ambient temperature up to 28 °C with minimum power consumption of 64 Watt. The proposed thermoelectric module, to maintain the vaccine storage temperature, satisfied the design criteria. Coefficient of performance of the vaccine preservation (COPR) was calculated and found to be about 0.106. Along with them we are providing the solar panel to eliminate the energy consumption by the power supply and security system. In the field of military and medical science there are refrigerators used to cool samples or specimens for preservation. They include refrigeration units for storing blood plasma and other blood products, as well as vaccines and other medical or pharmaceutical supplies. They differ from standard refrigerators used in homes or restaurant because they need to be very hygienic and completely reliable. However, in case of transportation of component from one place to another place there is no refrigeration system. Due to such problem, portable refrigeration system is to be used. Thermoelectric refrigeration is new alternative because it can convert waste electricity into useful cooling, is expected to play an important role in meeting today fossil energy challenges.

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Control of Photovoltaic Inverters for Transient and Voltage Stability Enhancement

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Abstract: The increasing number of megawatt-scale photovoltaic (PV) power plants and other large inverter-based power stations that are being added to the power system are leading to changes in the way the power grid is operated. In response to these changes, new grid code requirements establish that inverter based power stations should only remain connected to the grid during faulty conditions but, also provide dynamic support. This feature in the literature to as momentary cessation operation. The few published studies about momentary cessation operation for PV power plants have not shed much light on the impact of these systems on the overall power system stability problem. As an attempt to address this issue, this paper proposes a control scheme for PV inverters that improve the transient stability of a synchronous generator connected to the grid. It is shown trough the paper that the proposed control scheme makes the PV inverter's dc link capacitors absorb some of the kinetic energy stored in the synchronous machine during momentary cessation. Besides that the proposed solution is also to improve voltage stability through the injection of reactive power. Experimental and simulation results are presented in order to demonstrate the effectiveness of the proposed control scheme.

Index Terms: Photovoltaic generation, synchronous machine, transient stability, voltage stability.

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Voltage Boost Switched Capacitor Converter with Speed and Direction Control for Electric Vehicles

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Abstract: This paper presents a Switched capacitor voltage boost converter along with few control methods of motor. i.e., speed control and direction controlling to improve the performance of electric vehicle.SC converter provides unique features that cannot be attained by the traditional voltage-source inverter (VSI) or boost VSI.
The speed is controlled using a controller called dsPIC and a hall sensor to provide effective results. The additional feature of controlling the direction is done by an Arduino board and an ultrasonic sensor to detect obstacles.

Key Words: BLDC motor, DSPIC controller, SC converter, Arduino, Speed control, direction control.

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Energy Optimized Remote Health Monitoring System

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Abstract: This paper deals with the remote health monitoring of the patient since it is difficult to monitor every patient by a doctor/hospital management during this pandemic time. And also, it is not possible to observe the health condition of quarantine people (who are suffering due to COVID-19). Traditionally the detection systems were only found in hospitals and were characterized by huge and complex circuitry which required high power consumption. In order to avoid the direct contact with patient we are implementing a system to monitor patient health remotely. The system consists of various sensors for measuring different parameters like Temperature, Oxygen level, Heart Beat (BPM), Body Movement, Humidity, Air Quality. The data collected from these sensors will be transferred via an Arduino GSM module to the Personal Doctor, Hospital Management, Family respectively through an SMS alert. The SMS should contain a link, by clicking on the link the data should be displayed on web page in a particular manner. If the range of the parameters exceed or subceed it should give an emergency alert.

Keywords: GSM, Arduino, Temperature, Heart Beat, Oxygen level, Humidity, Air Quality.

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Smart Shopping Trolley

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Abstract: Shopping is simple but waiting in long queues is a tedious task. The traditional way of billing system kills the time of the customer and the better way is to self-checkout using QR code and the customer can enjoy their shopping experience and this is possible by using barcode technology with interference with internet of things such as raspberry pi.

Keywords: Internet of things, barcode scanner, raspberry pi, load cell amplifier, QR code, LCD Display, UPI Platforms, invoice

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Design and Implementation of UAV with Compact System

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Abstract: The main objective of the project is to make the inspection of the transmission line effective and easy. The inspection of transmission lines are mainly carried out by manned aerial vehicles or foot patrol. However, these maintenance techniques are inefficient and expensive and can also endanger human life.
To overcome the above problem another solution is proposed : a radio- controlled plane (RC Plane) is a small flying machine i.e., controlled by an operator on the ground using a handheld transmitter. The plane is controlled using a transmitter communicated with the help of a receiver which sends signals to servos onboard the plane. The aerodynamics governing these aircraft is the same as those governing large aircraft. The aircraft considered in this study is designed to have optimum lift and drag characteristics. This is achieved by choosing the optimum values of fuselage length, wingspan, elevator, rudder dimensions, and the all-up weight determined by a series of iterative analyses. In addition, the optimum angle of attack such that a stall condition doesn't occur was also determined.

Key Words: Flight board pro, Ardu pilot, VTOL, IP Camera, Thermal camera, Fly sky (Fs-i6), geofence, Inspection, Transmission Line.

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Hybrid Circuit for Electrical vehicle On Board Battery charger & Battery Management System

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Abstract: Electric vehicles (EVs) require an onboard battery charger unit and a battery management system (BMS) unit that balances the voltage levels for each battery cell. So far, both units are two completely different power electronics systems. This paper presents a circuit that operates as a battery charger when the EV is connected to the grid and as a voltage balancer when the EV is driving. Thus, the proposed circuit utilizes two functions in one and therefore eliminating the need of having two different units reducing complexity and reduction in component count. The proposed circuit operates as a fly-back converter and achieves power factor correction during battery charging. Earlier, the constant-current constant-voltage (CC–CV) charging method is employed to charge the batteries. But, to limit the number of sensors that will be employed as a result of varying cells during charging, the battery current is estimated using a single current transducer and embedding a converter model in the controller. However, in the conventional wireless chargers there were drawbacks such as long charging time and reduced lithium-ion battery life cycle. In this paper with implementation of Pulse & Burp Charging method in the wireless power transfer system, improvement in battery charging efficiency, charging time and battery state of health are achieved. These benefits are due to the presence of rest periods in the Burp charge profile in comparison to traditional Constant Current (CC) and Constant Voltage (CV) methods.

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21 Level New Cascaded H-Bridge Multilevel Inverter using 12 Switches

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Abstract: Nowadays multilevel inverter (MLI) technologies becomes extremely main choice in the area of high power medium voltage energy control. Although multilevel inverter has a number of advantages it has drawbacks in the layer of higher levels because of using large number of semiconductor switches. This may leads to large size and price of the inverter is very high and also increase in losses. So in order to reduce this difficulties in the new multilevel inverter is proposed to reducing the switches. Two-level inverters are those which create a voltage or a current with levels either 0 or ±V dc. To achieve an eminence output voltage or a current waveform with a lowest amount of ripple content, they need high switching frequency. When working at high frequency, high power and high voltage applications these two level inverters have a few restrictions. This paper presents the21 level cascaded multilevel inverter. The proposed 21- level cascaded multilevel inverter is for reducing the total harmonic distortion which is shown in MATLAB/SIMULINK. The switching pattern of semiconductor switches is used to improve the performance of multilevel inverter. This scheme reduces the switching loss and also increases the efficiency. To authorize the developed technique simulations are carried out through MATLAB/SIMULINK.

Keywords: Cascaded Multilevel inverter,Harmonic Distortion,MATLAB/SIMULINK,THD

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Automatic Fall Detection and Monitoring System for Elderly People

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Abstract: Falling is among the most damaging event elderly people may experience. With the ever- growing aging population, there is an urgent need for the development of fall detection systems.
Recently the problems connected with the ageing population all over the world have become more and more severe. Many projects have been developed to enable the people to live longer in home environment, thus keeping their independence together with reducing the expenses of the public health care. The results in this area have a quick public impact. Different sensor systems have been proposed for monitoring the functional abilities in elderly and for detecting their functional decline. The sensors are located in the bathroom, bedroom, closet, front door, kitchen, living room and shower.
The statistic shows that 30% of the old people fall at least once a year and 75% of these events are responsible for accidental death. The feeling of fall increases the anxiety and the depression in the elderly. Therefore, the monitoring system must enable the caregiver to track remotely the user's walk around the rooms and to perceive immediately the falls without the need of confirmation request. We started to develop and implement a low-cost system directed to monitor the user walk, to detect the falls. An interface for communication between the patient and health care expert is also provided. This paper is aimed to report the results obtained in reliable fall detection of solitary living elderly.

Keywords: Arduino IDE, GPS, IOT, GSM, Telemetry

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Design of a Non-Isolated Single-Switch Three-Port DC-DC Converter for Standalone PV-Battery Power System

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Abstract: Standalone power systems with renewable energy sources such as solar and wind energy are developed rapidly. Solar energy which is readily accessible generally requires DCDC conversion system to transmit power. Also, energy storage components are essential to these photovoltaic (PV) systems as well due to the instability of solar irradiation. Rechargeable battery stores the excess energy from the solar panel and supplies the load. Therefore, DC-DC converter used as an interface for the solar panel, the storage and the load has been widely investigated. Three port converters are the cost effective way to connect the renewable source, energy stored component and the load, and thus, can be widely used in standalone renewable power system. The three-port dc-dc converter is obtained by combining the switches of two conventional cascaded DC-DC converters. Pulse-width modulation (PWM) and pulse-frequency modulation (PFM) are utilised to regulate the two converters respectively. The proposed design reduces the components and the size of the converter and maximises the number of control variables. MPPT and constant voltage regulation are implemented to control the voltages of the PV panel and the load respectively.

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High Voltage Gain Cascaded Interleaved Boost Converter for Solar Applications Using FLC MPPT Technique

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Abstract: The main objective of this work is to provide high voltage gain from interleaved boost converter. The conventional system has the two drawbacks. Maximum power point oscillations under solar irradiation conditions and it can be used only for low power applications.
In this work solar panels are connected in series with cascaded interleaved boost converter. Cascaded interleaved boost converters are connected in two stages which increases the voltage to high value when compared with conventional converter. This cascaded connection of interleaved boost converter is used in two stages where output voltage from stage one is given as input to stage two converter which helps to boost the output voltage. It minimizes switching losses and overall efficiency is increased when compared with the conventional converters. FLC based Maximum power point tracking is used in this work which gives accurate tracking of operating points and fast transient response despite of fluctuating atmospheric conditions. The evaluation of the performance has been carried out by using MATLAB/Simulink.

Key words: Cascaded interleaved boost converter, FLC MPPT technique.

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Hybrid Controller based Solar Power Fed Cascaded Multilevel Inverter for Power Quality Enhancement

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Abstract: This paper presents a new topology for the 15-level cascaded H-bride multilevel inverter with the hybrid controller. In this hybrid controller, the fuzzy logic controller is coordinated with the PI controller to improve the performance of the multilevel inverter. Unlike other techniques, the proposed hybrid controller-based approach helps in obtaining reduced Total Harmonic Distortion (THD) with reduced number of switch count. In this proposed system, seven power semiconductor switches are used to design the 15-level inverter. Compared to the conventional multilevel inverter the proposed multilevel inverter gives the less harmonic distortion and it also reduces the overall cost. The simulation results obtained using MATLAB/Simulink software proves the supremacy of the proposed system.

Index Terms: Multilevel inverter (MLI), Fuzzy logic controller (FLC), PI controller, Photovoltaic (PV).

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DVR Proto-Type Setup for Voltage Dip and Voltage Swell Problems

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Abstract: Power quality issues have been pulling in the eye of investigates for decade. The nearness of voltage unsettling influences at the purpose of normal coupling brings about glitch of delicate modern instruments, which ends up being matrix part disappointments. Although there are many strategies in practice, the term custom power relates to the utilization of energy hardware controller in an appropriate framework, particularly to manage different power quality issues. Now the custom power devices play a vital role in the field of power quality mitigation. The presence of sensitive loads lead to the power quality issues like sag and swell but it is inevitable. DVR is one of the popular and efficient custom power devices most suitable distribution network to mitigate the voltage dip and swell. Fuzzy based PI control is incorporated in this paper. The main salient feature is the use of linguistic variables rather than numerical variables. This control method depends on human capacity to comprehend the frameworks conduct and depends on quality control rules. An experimental investigation on the mitigation of sag and swell by using three phase dynamic voltage restorer (DVR) is proposed in this paper. It is observed that the compensating capability of the DVR is somewhat lagged due the finite voltage dip under particular loading. A Fuzzy based PI scheme is therefore proposed to improve the voltage compensation. The Simulation result is appraised with experimental results and it presented it witnessed the effectiveness of the control strategy.

Keywords: Power Quality PQ, Point of Common Coupling (PCC), Dynamic Voltage Restorer (DVR), Fuzzy Logic Controller Fuzzy logic (FL)

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Implementation of a novel 21 level inverter for a PV fed sytem with advanced boost capability

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Abstract: The significance of Renewable Energy (RE) Sources in the process of enhancing the function of motor load is remarkably high in the recent scenario as it is wrapped with bunch of beneficial impacts like minimum cost, easy availability and maintenance free approach, which initiates the preference of RE sources in this present work to satisfy the load demand in an efficient manner. For maximizing the PV output voltage in a wider range, the Sepic converter is significantly employed in this work, which involves in improving the operation of the oner all system in an efficient manner whereas the process of accomplishing the Maximum PowerPoint Tracking (MPPT) is significantly achieves with the assistance of ANFIS approach. The compensation of load demand is remarkably attained with the assistance of a 21 Level (31L) inverter Multi Level Inverter (MLI) is in an optimal manner, which in turn maximizes the reliability of the entire system without any complexities. The entire system is simulated using MATLAB Simulink and the obtained outcomes have proved that the proposed approach delivers optimal performance as is lessens the Total Harmonic Distortions (THD) to a greater extent.

Keywords: PV System, Sepic Converter, MPPT, ANFIS, MLI, THD

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Single phase grid connected system with ultra gain boost-Z source converter

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Abstract: DC-DC Boost Converters with maximum voltage gain are globally utilized in grid connected applications through integration with Renewable energy resources. With the focus of minimizing conversion losses, the kay is reducing the costs and size by eliminating transformer and other power devices. This paper proposes a High gain Converter for HVDC and Fuel based applications. The proposed boost-z source converter structure reduces the number of input DC sources and Switches. The high gain topology with low duty cycle suppresses the switching stress and switching losses. The Blocking diodes provide snubber protection for the proposed converter topology. The PI controller is used for Closed loop Steady state voltage operation in the converter. Grid Synchronization technique is used for mitigating the power quality issues. This project is developed using Matlab simulation.

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A variable speed drive with dynamic braking for Induction motor with a new topology

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Abstract: At present the automobile sector is looking towards Electric Vehicles as it is more beneficial than conventional type. Many researches are going for the best result to be obtained. As a part of it variable speed drive of induction motor came into picture for its advantages. In this paper it is designed of a variable and adjustable speed induction motor drive bound for Electric Vehicles. The vector control scheme is the major contribution in the proposed system. VSC based SVPWM (Space Vector Pulse Width Modulation) type of vector control scheme is used and a PWM inverter is used. This control scheme has provided excellent simulation results. This work was implemented and verified in MATLAB/SIMULINK software.

Keywords : Vector Control, Induction motor, SVPWM, VSC, Dynamic braking.

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Modelling and Designing of Renewable Energy Resources Based Electric Vehicle Charging Station

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Abstract: Recently electric vehicles are gaining more attention. Owing to the environmental benefits with reduction of fossil fuel use, EV markets are expanding. In this paper, a solar PV (Photovoltaic) array, a battery, a fuel cell and grid based Electric Vehicle Charging station is used to provide continuous charging in different modes. Primary this charging station is designed to use the solar power from PV array and also a battery to charge the Electric Vehicles. In case of unavailable of solar power or complete depletion of battery energy storage, the Charging station takes the power from EV Charging Station, Solar PV Generation, Power Quality, DG Set. grid/fuel cell. EV Charging station also performs vehicle to grid power transfer, vehicle to home and vehicle to vehicle power.

Key words: EV Charging Station, Solar PV Generation, Fuel cell, Battery energy storage.

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EV Charger Power Quality Improved With Bridge less CUK Converter Using Fuzzy Logic Controller

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Abstract: This paper presents a new configuration for improving the power quality of EV charger by reducing the THD of supply current fed to EV charger using BL Cuk converter with fuzzy logic controller. A fuzzy logic controller usually used to control the gate pulses of converter switches This EV charger incorporates less number of switches operating in one switching cycle, which were existed in a diode bridge rectifier of conventional charger. Hence, by using this charger, the efficiency of the EV charger is improved. The other advantage of this proposed system is that, the unwanted capacitive coupling loop is eliminated & conduction of inactive switch is eliminated in already existing BL Cuk converter. The flyback converter synchronizes the commands for constant current & constant voltage charging & provides necessary electrical isolation between converter circuit and flyback converter. The proposed charger draws power from an Ac Mains & there by reducing the THD in supply current to the limits specified by IEC 6100-3-2 guidelines.

Index terms: BL Cuk converter, flyback converter, battery charger, fuzzy logic controller, THD.

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ANN Based Sliding Mode Controller for DFIG Wind Energy Conversion System

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Abstract: This paper presents a novel topology for a DFIG wind energy conversion system with artificial neural network controller, which usually used to model complex patterns and prediction problems. At the generator rotor side, the stator energy manipulate is performed through controlling the rotor currents. The rotor current position version is completed from the stator and the rotor equations of the generator below the scenario of stator voltage alignment. At the grid aspect, a cascade manage loop is completed for the dc-link voltage law and the electricity switch the use of grid and dc-link modelling. The proposed controller is fast and robust. The proposed manipulate strategy is confirmed the use of an Matlab Simulink based DFIG wind turbine machine and the outcomes are provided to demonstrate the competencies of the proposed control system in monitoring and manipulate under one-of-a-kind operating conditions and robustness to uncertainties.

Index Terms: DFIG, ANN Controller, SMC, WECS.

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Improved Control Algorithm for Grid Connected PV System Using Asymmetric Cascaded H-Bridge Multilevel Inverter

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Abstract: The paper presents a single-phase cascaded H-Bridge Multilevel Inverter (MLI) for Grid Connected Photovoltaic (PV) system. The output voltage magnitude and output frequency of the Multilevel Inverter is regulated to track the grid voltage and frequency. In order to track the grid voltage and frequency parameters a Proportional Integral (PI) controller is used. In this paper PSO (Particle Swarm Optimization) algorithm of MPPT (Maximum Power Point Tracking) is used. This PSO algorithm is fed to the PV array and PI control then gets fast response to the output of the grid. The overall system is designed with MATLAB/SIMULINK.

Keywords: Multilevel Inverter, Photovoltaic, Proportional Integral, Particle Swarm Optimization, Maximum Power Point Tracking.

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Study of Electric Vehicle (EV) Speed and its Arrival patterns by fuel vehicles using Signal Processing Techniques : A Wavelet Approach

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Abstract: In future, totally electric vehicles (EV) are being introduced to the car market for air pollution mitigation in major cities. In this regard, government initiated to analyze the EV speed and its traffic for implementation purpose and the scheme for Fast adaptation and Manufacturing Electric Vehicle (FAME) in national mobility. This is the pivotal point of our research in the area of EV traffic study. In near future, our nation is to enact the rule to implement EV transportation through technology platform for electric mobility (TPEM). The purpose of the EV mobility is to mitigate the air pollution. In signal processing, the function Lipschitz exponent (LE) is the often measure of the abrupt changes of vehicle traffic pattern (by Poisson distribution) and speed study (by Gaussian distribution). In this paper we presented the using Lipchitz exponent to study the exact characteristics of speed and arrival of electric vehicle (assumption) through fuel cars. This experiment demonstrates that only understanding the EV speed and its traffic through statistical method. The results presented by linear regression and hypothesis testing of observed LE values of during heavy and less traffic. Histogram of LE values shows good results for peak and non-peak hours by histogram technique

Key words: Lipschitz exponent (LE), Wavelet Transform, slope, Linear Regression, hypothesis testing.

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Implementation of Transformerless Inverter for Photovoltaic System

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Abstract: A transformerless dc-dc buck-boost converter is proposed in this paper to regulate the performance of PV system. The voltage gain of the proposed converter is higher than that of traditional boost, buck–boost, CUK and SEPIC converters, and it can be achieved with a sufficient duty cycle. There is little voltage stress across the power switch. As a result, the low on-state resistance of the power switch can be chosen to reduce conduction loss and increase efficiency. The present converter has a minimal input current ripple. As a result of the easy integration of SCs with traditional B-BBCs, higher voltage gain is achieved with fewer losses. Photovoltaic (PV) systems can benefit from such converters. To justify the utility of converters for stand-alone PV systems, the operational principles and modes of operation are examined. Furthermore, the suggested modular construction allows for the expansion of SC cells to reduce voltage stress on switching components with larger voltage gains.

Keywords: Transformerless Converter, PV System, MPPT Technique etc.

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Implementation of Falcon Optimization Algorithm for the Study of Automatic Load Frequency Control

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Abstract. In this paper, an initial attempt has been made to optimize the traditional controller PID with a population-based searching approach of falcon optimization algorithm (FOA) for the study of load frequency control (LFC). Analysis of the power system is performed by laying area-1 with a disturbance of 1% step load. However, PID regulator parameters are tuned and subjected to the function of integral square error (ISE). Moreover, the supremacy of presented FOA tuned PID is deliberated with other soft computing controllers reported in early literature. Later, to boost the system performance further DC line is incorporated with the AC line in parallel to facilitate the transfer of bulk power during large disturbances.

Keywords: Falcon optimization algorithm, ISE index, Traditional PD controller, AC-DC lines, 1%Step load

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Dual-Battery Energy Storage for Hybrid Electric Vehicle using Fuzzy Logic Controller based Bidirectional DC-DC Converter

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Abstract: This paper presents a new topology for a non-isolated bidirectional dc-dc converter with fuzzy logic controller, which usually control the gate pluses of bidirectional converter switches. Bidirectional converter interfaces a primary energy storage (ES1), an auxiliary energy storage (ES2), and dc-bus of different voltage levels, for application in hybrid electric vehicle systems. In this paper fuzzy logic controller used to prove the dynamic characteristics of the fuzzy controller being fast and robust, simulation studies using PSIM program are out and compared to the results of the conventional controllers. The proposed converter can operate in low voltage dual source mode (i.e., step up mode) and high voltage regenerating mode (i.e., step down mode), both with bidirectional power flow control. The model can control power flow between any two low-voltage sources (i.e., low voltage dual source boost/buck mode).

Index Terms: Bidirectional dc/dc converter (BDC), dual battery storage, fuzzy logic controller, hybrid electric vehicle.

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Performance Evaluation of Chb-Multilevel Inverter Using Hysteresis Current and Pdpwm Controller for Sapf Applications

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Abstract: Multilevel inverter (CHB-MLI) based shunt active power filter (SAPF) offers a cost-worthy and accurate result for mitigating current correlated power quality difficulties in situations of medium-voltage and high-power grid. Minimization of Reactive power, easing of current harmonic component, and power factor correction depend on the accuracy of the control technique applied to the CHB-MLI-based SAPF unit. This paper proposes HCC and PDPWM-based control of a seven-level cascaded H-bridge inverter (7LCHB). For the application of shunt active power filter (SAPF) to reduce total harmonic distortion (THD) in supply current under nonlinear loads. The performance of the HCC and PDPWM Based PI controller is implemented and is verified for reduction of THD under non-linear loads. The PQ method is used to generate the reference signal. The PI regulator is adopted for DC voltage balance and the reduction of THD in source current. The recommended work is carried out in the environment of Mat lab Simulink. The comparative performance analysis of THD in source current,), power factor (PF), real power, and reactive power compensation (RPC) for HCC and PDPWM using PI controller are presented.

Indexing Words: Cascaded multilevel inverter, Shunt Active power filter (SAPF), HCC controller, PCC, Nonlinear loads (NL), PDPWM PI Controller

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Area Frequency and Tie-Line Power Control of An Inter-Tied Power System Using – STATCOM

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Abstract: Power system is said to be stable when generation is equal to the demand and unstable due to any uncertainties such as sudden change in load demand, fault conditions or any other disturbances; system frequency, voltage will cross its limits. If the system is operating with synchronism frequency is the main factor need to maintain within a permissible limit. This paper demonstrates the single area load frequency control and two-area load and tie line frequency control and tie-line power damping over the steady state value can be controlled by conventional integral controller which makes teadystateerroriszerobutitdoesn'tshowanyimpactonthetransientbehaviorofthe interconnectedsystemwithrespect to load changes. FACTS (Flexible AC Transmission) devices like TCSC and STATCOM Can stimulate the tie-line power oscillations exquisitely under sudden occurrence of load changes in any of thearea.

Keywords: two area, tie-line, STATCOM, LFC, AGC

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A Protection Method for Inverter Based Microgrid using Communication Assisted Over Current Scheme

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Abstract: Recent investigations present the extended utilization of Distributed Generating Systems offers a couple of assurance issues in the Microgrids. The arrangement of a beneficial security framework for such framework becomes challenge to the power engineers. This is an immediate consequence of the inverters have lacking insufficiency current capacities which achieves non sensibility of the common over current protection plot for inverter-based microgrids. In this paper, we have proposed another procedure for inverter-based microgrid using correspondence helped over current security plot. The proposed procedure has two critical stages. In the first place, we check the opportunity of the over current protection by using a total procedure for each line fragment of the framework. The method sorts out which moves should be set for security of the microgrid in the grid related and islanded action modes. By then, the selectivity and coordination issues of the over current exchanges inside seeing the PV units are enlightened by using upsetting and between staggering plans through correspondence frameworks of the quick cross sections. Diversions of an inverter-based microgrid with an exchange model are driven using MATLAB programming. The outcomes and results show that the proposed method can perceive imperfections in inverter-based microgrids.

Keywords: Inverter based Microgrid, Protection methods, Communication assisted over current protection

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An Innovative Mutated Ant Province Optimization (MAPO) based Controlling and Modified SEPIC DC-DC Converter for Grid-PV systems

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Abstract: Reducing the power quality problems and regulating the output DC voltage are considered as the essential problems need to be addressed for ensuring the increased performance of grid-PV systems. For this purpose, there are different types of converter and controlling techniques have been developed in the conventional works, but it limits with the major problems of increased complexity in computation, high error output, harmonic distortions, and reduced voltage gain. Hence, this research work objects to develop a novel Mutated Ant Province Optimization (MAPO) algorithm incorporated with the modified SEPIC DC-DC converter techniques for solving the regulating the output voltage with reduced harmonics. Here, the Perturb & Observe (P&O) Maximum Peak Point Tracking (MPPT) controlling technique is developed for extracting the maximum power yield from the solar PV systems. Then, the PV output voltage is random in nature, so it must be properly regulated for increasing the gain output. For this purpose, the modified SEPIC DC-DC converter is used, which regulates the random output voltage with reduced harmonics. But, the performance of converter is entirely depends on the controller, because it generates the controlling signals based on the optimal selection of parameters. Also, the switching components used in the converter circuit are operated based on the controlling signals. During simulations, the performance of the proposed converter and controlling techniques are validated and compared by using various measures.

Index Terms: Renewable Energy Sources (RES), Solar Pho tovoltaic (PV) systems, Maximum Peak Point Tracking (MPPT), Perturb & Observe (P&O), Mutated Ant Province Optimization (MAPO), Modified SEPIC DC-DC Converter, and LCL filtering.

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Low Cost IoT Enabled Air Cooler (IoT e-A.C)

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Abstract: Many philosophers say that life without technology is very difficult in today's dynamic world. As rapid increase of technology for the sake of human needs and comforts is the main constraint than any other thing in each and every sector to reduce human work and efforts to increase the comforts. In the present global cinerary, we have turn into more and more conscious of the concepts of smart cities such as smart home, health, transportation, education, defense, energy, naval and smart environment. Mostly the concept of 'SMART HOME' application has numerous advantages and attracting numerous of people from the different sectors based on their application. In this paper, the application together with conditioning and lighting control is implement using Node MCU embedded system microcontroller, Arduino Pro Mini & Blynk IOS/Bluetooth operated app/Android interface developer. Mostly the concept of this work paying an attention on operating a module based on the commands of program to operate as per the logic assigned or the path linked. This module can able to sense the Temperature (T) and Humidity (H). The speed of the cooler changes according to changes in T&H as the cycle repeated for the different values of T&H. One major advantage of sensors is that they can refill the water automatically according to the requirement of water level. The overall function illustration can be done with interfacing of various sensors to arduino, and the commands which send back to arduino based on sensing data as the sophisticate environment of many logic operation developments and testing. These kinds of modules have huge response and demand in air cooler markets with high performance and less human efforts.

Index Terms: Solar Energy, Temperature, Dust, Efficiency, Self Cleaning, Maintenance and Monitoring.

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Numerical method of a 2-point BVP on a variable mesh

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Abstract: Engineering, Physics and biology all utilize ordinary differential equations to describe diverse events. Second-order linear and nonlinear beginning and boundary value issues are used to represent a broad range of natural events (BVP). An efficient variable mesh numerical method for solving system on linear singular boundary value issues is examined in this paper (BVPs). Second- and third-order precision may be achieved using the suggested variable mesh technique. In order to demonstrate the effectiveness of our procedures, we provide numerical examples

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The Effect of Heat and Mass Transfer on the Unsteady Squeezing Flow Passing Through Parallel Plates in the Presence of Inclined Magnetic Field

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Abstract: The numerical study of squeezing flow with mass and heat exchange of an incompressible, 2-D viscous fluid between two plates held parallel to each other has been taken under consideration. The governing Partial Differential Equations (PDEs) are transformed into the dimensionless Ordinary Differential Equations (ODEs) by an appropriate transformation. To solve ODEs, we used the shooting technique implemented in Fortran programming language. The results obtained are compared to the articles previously published. By changing the values of different physical parameters, we observed the nature of velocity, temperature and the concentration distributions. At the end, the graphs and tables are shown which are obtained under this investigation.

Keywords: Magnetic Field, Chemical reaction parameter, Viscous dissipation, Squeezing parameter, Adams-Moulton Method.

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Study on Ammonia gas sensing Properties of Indium Zinc Nanocomposites by Green synthesis method using mangifera indica and Neem gum

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Abstract: This present paper outlines the synthesis of Indium Zinc nanocomposites using mangifera indica (IZO-1) and Neem gum (IZO-2) by Green Synthesis method. The structural properties was analyzed by X-Ray diffraction technique (XRD), as well Thermo gravimetric and differential thermal analysis (TG-DTA) was made for detecting their crystallization behavior. The results displayed polycrystalline hexagonal wurtzite phase with (002) as strong prefentially growth and more pronounced peak at (100) as well as (101) orientation. The smaller sized grains shows spherical morphology with polycrystalline in nature with SEM analysis. The optical performance indicated optical energy band gap as 3.1 and 3.18ev.The FTIR analysis shows the functional groups existent in synthesized In-ZnO NCs which displayed an intense band with sharp peaks at 3446.91, 3421.83cm-1 due to O-H stretching of hydroxyl functional group respectively for IZO-1 and IZO-2. From the analysis results shows enhanced ammonia sensing performance by simple synthesis, low-cost which gives excellent performance.

Keywords: Green synthesis, Indium zinc nanocomposites, gas sensing

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A Distributed Delay Model of one Ammensal on Two Mutualistic Species

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Abstract: In this paper we study the dynamic behaviour of one ammensal and two mutually helping species. Here the first species (x) ammensal on second species (y) and the third species (z) and second and third species are mutually helping each other. A distributed type of delay is induced in the interaction second and third species. Co-existing state is identified and stability analysis is carried out at this point. Further numerical simulation is carried out in support of stability analysis using exponential type of kernels and observed that the delay improved the mutualistic species population.

Keywords: Ammensal, Mutualism , Co-existing state , stability, delay kernels

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Multiple Encryption Method Using Polynomials And Fibonacci Numbers

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Abstract. In this paper, we constructed a new kind of RSA type cryptosystem by taking polynomials modulo ∅(n), where ∅(n) is the Euler totient function for n=pq by considering p and q as very large prime numbers.

Keywords: Cryptography, Polynomials, Fibonacci numbers.

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Artificial Intelligence and Machine Learning: A Blended Approach to Understand CO2 Absorption

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Abstract. Recent advances in the fields of artificial intelligence and machine learning have paved a way in solving the unsolved problems embarking into a new dimension, especially, when there is increase in complexity of molecules. Reports have shown the necessity to employ these techniques to address the environmental problems. Herein we report the CO2 sequestration process by means of artificial intelligence (AI) and machine learning (ML) tools. The AI and ML approaches adopted enhance the accuracy of the results and at the same time give scope to explore new strategies in understanding the CO2 sequestration process. Herein we considered the reported active compounds observed in traditional medicinal plants like Oscimum, Azadiracta, Psidium and Ficus leaves and Curcuma and, their interactions with CO2. The crystal structures of the active compounds, collected from NCBI portal, are used for all the calculations. To understand the probable interactions of CO2 with active components AI tool IBMRXN was used and the properties of molecules are evaluated. ML techniques are employed using density functional theory method. Keeping in view the complexity of the molecules, optimization of the molecules is carried out at M062X/6-31G(d) level of theory. HOMO-LUMO energy gaps and binding energies are calculated at M062X/6-311+G(d,p)//M062X/6-31G(d) level of theory.

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Optimization of Composite Aluminum 5083 Material Welds Using FSW Technique

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Abstract: FSW is a solid-state joining technology commonly utilized in aerospace, marine and automotive industries to join metals that are similar and dissimilar in composition. FSW produces improved weld zone mechanical qualities when compared to other welding methods. ANOVA and Taguchi approaches were used to optimize friction stir welding process parameters for SSM 5083 Aluminum alloy in this study. This material's microstructure and tensile strength are one of the parameters we investigated. When it comes to hardness and strength, A1B1C2 and A2B1C2 were found to be the optimum parameters for the stir zone, according to the results of the study. To establish the most critical welding parameters, tensile strength, hardness value, and microstructure were examined. The rotational speed, the welding speed, and the geometry of the welding equipment were the welding parameters. Using the Taguchi approach, the signal-to-noise ratio was the study

Keywords: Optimized parameters FSW, Taguchi technique

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Effect of annealing temperatures on structural and electrochemical properties of $Li[Ni_{0.5}Co_{0.25}Mn_{0.25}]O_2$ film cathodes

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Abstract. The thin films of $Li[Ni_{0.5}Co_{0.25}Mn_{0.25}]O_2$ were prepared by rf-sputtering technique and post-annealed the deposited films at various temperatures in a controlled oxygen atmosphere. The annealing temperature played an important role in the crystallinity of the films. The films post-annealed at optimized temperature displayed an XRD peak at 18.29°, which can be ascribed to the Braggs reflection (003) of hexagonal $Li[Ni_{0.5}Co_{0.25}Mn_{0.25}]O_2$. The lattice parameters of the optimized films were a=2.85Å and c=14.45Å with a c/a ratio equal to 5.070. The electrochemical performance of the post-annealed films was analyzed systematically. The films prepared at 300 °C offered a discharge capacity of 40 µAh.cm^{-2}.µm, however, which was further improved to 57.5 µAh. cm-2.µm by post-annealing at 700 °C.

Keywords: Batteries, $Li[Ni_{0.5}Co_{0.25}Mn_{0.25}]O_2$; thin films; Sputtering; Electrochemistry

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$LiFePO_4$ carbon nanofiber composite materials for high energy Li-ion batteries

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Abstract: $LiFePO_4$carbon nanofiber (LFPO CNF) composites were prepared by simple and effective electrospinning. XRD, Raman and FE-SEM were used to analyze structure and surface morphologies. The LFPO CNF composites showed a high discharge capacity of 162.2 mAh g^{-1} at a current density of 0.2 C and sustained 93% of its original capacity after 100 cycles even at a high current density of 10 C. The LFPO CNF composites with one-dimensional architecture area good candidates for high-performance lithium-ion batteries (LIBs)

Key words: Energy storage; Li-ion batteries; $LiFePO_4$; carbon nanofibers; Electrochemistry

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Diwali: Myths and Realities of Pollution in Five Capital Cities of South Indian States

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Abstract: The Bursting of firecrackers is a representative form of celebration across different cultures worldwide. In India, though it is common to burst firecrackers for every occasion; on the day of Diwali which usually falls in October or November, it reaches the zenith. The present work aims to study the air pollution caused by firecrackers in five south Indian states for a period of two festive seasons i.e., from 2020 Diwali to 2021 Diwali, and compare with monthly variations and critically analyze the same.

Keywords: Diwali, Fire Crackers, Pollution, PM2.5, PM10, Cities

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An Enhanced Quantum Algorithm for Error Correction And Improved Quantum Computing Speed

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Abstract: Quantum error correction (QEC) and error-tolerant quantum computing represent one of the most vital theoretical aspects of the quantum information process. Quantum Error Remediation is a theory on how to reverse or cancel noise and errors on quantum systems. The concept of quantum error correction is to represent redundant quantum
information. LAWE (learning Algorithm with errors)-based cryptography, whose security is based on the hardness of the underlying LAWE issue, is one of the most promising. The quantum LAWE problem is a quantum version of the LAWE problem, where the resolution algorithm can interrogate the LWE oracle in quantum computing. For this quantum LAWE issue, Grover and Ben Criger recently showed an efficient quantum resolution algorithm, with a test candidate. In this article, we first present an improved version of Grover's resolution search algorithm, which can handle a higher error rate
to achieve a greater probability of success. Oracles are used in many quantum algorithms, when the full implementation of a specific function is unknown. This algorithm for resolves constraint-satisfaction problems. We present a quadratic speed in running time by introducing amplitude amplification.

Keywords: Quantum algorithm, tolerant, Probability, Computing, Noise, Error correction, qubit,Surface code, Phase kickback.

Graphical abstract:

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A New Method development and validation for the determination of Nisoldipine in bulk and tablet dosage form

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Abstract: A novel and simple reverse phase HPLC method was developed and validated for the estimation of Nisoldipine in bulk and tablet dosage form. Chromatography was performed by isocratic elution on a Stainless steel Thermo scientific C18 column (4.6 x 250mm,5) packed with octadecylsilane bonded to porous silica (C18).Acetonitrile or Methanol and water in the ratio of 80:20 % v/v were used as mobile phase. The flow rate is 1.0 ml/ min and effluent is monitored at 240 nm. Nisoldipine was eluted at a retention time of 4.4 minutes. The standard curve of Nisoldipine was linear over a working range of 0.3– 8 µg/ml and gave an average correlation coefficient of 0.999. The limit of quantitation (LOQ) of the drug is 0.1 µg/ ml. Recovery studies were carried out by standard addition method and the recoveries are found satisfactory within the range of 99.24 to 99.6 %.The method is precise with % RSD below 2. The method is validated in terms of robustness and forced degradation studies were carried out.

Key words: Nisoldipine, RP HPLC, stability indicating assay, validation

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Dynamics of Tumor and Immune System Interactions with Time Delay

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Abstract: In this paper, we study the interaction of tumor and immune system with discrete time delay. This study intends to explore and examine the effectiveness of the model with vital parameter variations and delay effects of anti-tumor immune response. We established the conditions for the existence of the equilibrium points and their stability. Stability of the periodic solutions is discussed and Hopf bifurcation is established. Numerical simulations are supported to the analytical results.

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Phytochemical and Free Radical Scavenging (Antioxidant) Activity of Some Selected Medicinal Plants Their Total Phenolic Contents

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Abstract: The present study aimed at the evaluation of preliminary Phytochemical and free radical scavenging (Antioxidant) potential of leaf extract of selected plants, plants and their correlation with the total phenolic contents (TPCs). The free radical scavenging activity of ethanol extracts were assessed by 2, 2-diphenyl-1-picrylhydrazyl assay and total phenolic contents by Folin-Ciocalteu method. The percentage radical scavenging activities of samples were compared to the standard BHA. The leaf extract of Annona squamosa. L showed marked quantity of phenolics and promising free radical scavenging (antioxidant) activity followed by other extracts. The reductive ability of the extracts was found to increase in a concentration dependent manner. The results suggested that the phenolic compounds in extracts are most likely to be responsible for the observed free radical scavenging antioxidant activity.

Key word: Medicinal plants, Antioxidant activity, 2, 2-diphenyl-1-picrylhydrazyl assay, Phytochemical, Total phenolic contents.

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Application Of Briggs-Rauscher Reaction For Measurement Of Antioxidant Capacity Of Annona Squamosa .L Leaf

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Abstract: Briggs-Rauscher (BR) reaction is one of the most commonly studied oscillation reactions which has been applied for measurement of antioxidant activity of water-soluble substances. The present study aimed at the evaluation of free radical scavenging (Antioxidant) activity of Annona squamosa L. leaf. The free radical scavenging activity of hydro ethanol extract and isolated compound were assessed by Briggs-Raucher (BR) reaction assay method. By addition of free radicals (plant materials), there is an immediate quenching of oscillations. The reaction is followed potentiometrically and the inhibition time (IT), or time of no oscillations, is proportional to concentration of antioxidant. PH of BR reaction is about 2, what is similar to that of the fluids of the main digestive process (human stomach), giving in vitro information's on antioxidant activity at "real digestion conditions" and can help in assessment of nutrition for maintenance of health and prevention of diseases. The BR results were expressed as the relative antioxidant activity (r.a.c) with respect to catechol is determined on the basis of the inhibition time and is defined as the ratio. (r.a.c)= [std]/ [sample]

Key word: Annona squamosa L, custard apple, antioxidant capacity, Briggs-Raucher reaction.

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Role of Dy3+ Doped Antimony Lead Borate Glasses in White Light Emission

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Abstract: Glasses accompanying the arrangement 25 Sb_2O_3 - 30 PbO – (45–x) B_2O_3 –x Dy_2O_3 with x values 0.2 mol%, 0.4 mol%, 0.6 mol%, 0.8 mol% and 1.0 mol% were prepared by apiece liquefy-quenching process. Various material limits were evaluated. XRD, DSC, FTIR ranges, ocular absorption ranges, and photoluminescence ranges at 300K existed examined. Several bands have been observed in the optical absorption spectrum, were assigned to the lowest level of Dy^{3+} i.e. $^6H_{15/2}$ to various upper level. From the identified band positions, all bonding parameters are identified. The absorption spectrum gives the Judd– Ofelt (J–O) intensity parameters there by the radiative parameters such as absorption cross sections, transition probabilities, branching ratios etc. Disparity observed in the above properties with different Dy2O3 concentration were recorded and analyzed. Strong blue line (4840 AU, representing the transition $^4F_{9/2} \rightarrow {}^6H_{15/2}$) and yellow line (576 o AU, representing the transition $^4F_{9/2} \rightarrow {}^6H_{13/2}$) emission bands were observed in emission spectra upon exiting with 387 nm wavelength. The intensity ratios of yellow/blue luminescence of Dy^{3+} ions raises accompanying raising Dy^{3+} ions content, suggesting greater irregularity and more covalent nature betwixt dysprosium and O2 ligands. The calculated lifetime of the $^4F_{9/2}$ level has existed establish to decrease accompanying increase in dysprosium ions aggregation. With the increase in the aggregation of Dy_2O_3, the quantity effectiveness is more erect to increase. Using the emission spectra, the chromaticity coordinates were calculated and analyzed with Commission International deI'Eclarige Colour diagram.

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Rapid Sensing Room Temperature Ammonia Sensor Based on SnO_2 Thin Film

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Abstract. The SnO2 thin films were prepared by using the electron beam evaporation method. The crystallinity of as deposited and annealed SnO2 thin films were studied by using Grazing Incidence X-ray Diffraction (GIXRD) technique. The surface morphology was examined by scanning electron microscopy (SEM) and the chemical composition of samples was analysed through an energy dispersive X-ray (EDX). The gas-sensing performance of highly crystalline SnO2 thin film was studied at room temperature(R. T) towards various toxic gases. The SnO2 thin film-based sensor shows the predominant response towards ammonia at R.T. The SnO2 thin film-based sensor shows excellent stability and fast response and recovery times of 13 s and 18 s respectively.

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A Predator Prey Model with Holling Type Response and Harvesting Efforts

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Abstract. The present work is based on a two species predator prey ecological model induced with a Holling Type II functional response. Also the prey satisfies the logistic growth law and it has been harvested. The constraints for the existence of interior equilibrium and its stability are identified. Further, we analyzed the system dynamics by achieving the bionomic equilibrium and optimal harvesting policy using Pontryagin's Maximum Principle. Assuming suitable parameter values, the numerical simulations support our theoretical discussion.

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Study of Molecular Interactions in Binary Liquid Mixtures of Cyclohexane with P-Chloro toluene and P-Xylene at 313K

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Abstract: Ultrasonic velocity measurements are used effectively to study the molecular interactions in pure liquids and their mixtures. The ultrasonic velocity approach for the qualitative estimation of interaction in liquids gives the information about complex formations, formation of hydrogen bond, dipole–dipole, dipole-induced dipole interactions in solutions and their effect in physical properties of the mixture have received much attention in industrial and technological applications. Using ultrasonic method, the structural information of materials at molecular levels can be obtained. In the present work the ultrasonic velocity, density and viscosity values were measured in binary liquid mixtures of Cyclohexane and p-Chloro toluene, Cyclohexane and p-Xylene at 313K temperature. A host of acoustical parameters such as adiabatic compressibility, free length, acoustic impedance, free volume, internal pressure, enthalpy, Rao's constant and Wada's constant have been evaluated from the ultrasonic velocity, density and viscosity values measured for the binary mixtures. The change in the interaction parameters with the composition mixtures is discussed with respect to inter molecular interactions.

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Energy Transfer of Jeffery -Hamel Nanofluid Flow Between Non-Parallel Walls Using Successive Linearization Method

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Abstract. The present work studies energy transfer of Jeffery-Hamel nanofluid flow in non-parallel walls analytically using Successive Linearization Method. The governing partial differential equations of the present physics and their appropriate boundary conditions are initially cast into the dimensionless forms to reduce into the ordinary differential equations. The resulting equations thus formed is then solved by adopting the successive linearization method (SLM) to get the accurate numerical solution. Solution errors and residual norms were analyzed to elaborate the convergence and accuracy of the numerical solution. The present results validated with favorable comparisons with previously published results as the current investigations' unique cases. Parametric study of the governing parameters, namely Reynolds number, Prandtl Number, angle of inclination, and the nanofluid volume fraction on the non-dimensional velocity and temperature was conducted. Analysis discloses that the profiles of the flow are largely impacted by the physical parameters.

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Synthesis and Characterization of N'-(substituted benzylidene)- 5-ethyl-N-methyl-2-(3- (trifluoromethyl)benzyl)-2H-1,2,3-triazole-4- carbohydrazides: A Novel Class of Antibacterial Agents

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Abstract. The continuous demand for medicinally important scaffolds has motivated synthetic chemists to create a new era method for producing them that both are simple and efficient. N'-(substitutedbenzylidene)-5-ethyl-N-methyl-2-(3- (trifluoromethyl)benzyl)-2H-1,2,3-triazole-4-carbohydrazides (Scheme-1) were prepared by the reductive amination of 5-ethyl- N-methyl-2-(3-(trifluoromethyl)benzyl)-2H-1,2,3-triazole-4-carbohydrazide with various substituted benzaldehydes in ethanol. The reactive intermediate Ethyl 5-ethyl-2H-1,2,3-triazole-4-carboxylate was prepared by the reaction of Ethyl 2-pentynoate and azidotrimethylsilane (Dipolar 1,3-cycloaddtion). This on treatment with hydrazine hydrate furnished 5-ethyl-N-methyl-2-(3-(trifluoromethyl) benzyl)-2H-1,2,3-triazole-4-carbohydrazide. The newly synthesized compounds have been characterized by 1H NMR, MASS and IR spectral data and screened for antibacterial activity. Most of the compounds exhibited antibacterial activity comparable to that of widespread capsules.
Keywords. Antibacterial activity, N-alkylation, 1,2,3-triazole-4-carbohydrazide derivatives

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A Comparative Study Of Free Convection Flow Of Water Based Cu And TiO_2 Nanofluid Through Porous Medium With Suction/Injection

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Abstract: A comparative study of unsteady MHD free convection flow of water based copper and Titanium oxide nanofluids in the presence of radiation and thermal diffusion is considered. Main object of the present paper is to analyze the combined effects of Thermal diffusion, Radiation and chemical reaction on an unsteady magneto hydrodynamic flow of a nanofluid past a moving vertical permeable semi-infinite flat plate with constant heat source through porous medium. Dimensionless transformations are used to transform the governing partial differential equations into a set of ordinary differential equations. These differential equations are then solved analytically by perturbation technique. The results are presented graphically and discussed for various resulting parameters. The flow features and heat transfer characteristics for different values of the governing parameters viz. skinfriction coefficient, local Nusselt number, Thermal diffusion number, chemical reaction parameter and Sherwood parameter are analyzed and discussed in detail.

Keywords: MHD, Free convection, Thermal diffusion, Porous medium, and Suction.

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Finite Element Analysis Of Heat And Mass Transfer On MHD Flow Problems With Hall And Ion Slip Effects

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Abstract. The present research explores results of rotation and thermal radiation on not steady convective moving over not finite vertical moving non reflective plate. Ion-slip and Hall effects are studied. In this process the joined partial differential leading equations will be solved computationally making use of Finite element process. The results for basic segmentation is represented through visual aids. The Sherwood number, resistance force and Nusselt number against different variables are tabled. Analyzing outcomes, the velocity enlarges respectively with Hall parameter, ion-slip parameter rotation parameter, Grashof number. The results are reversed for slip variable. An increase in radiation variable increases fluid flow and temperatures, while increase in suction parameters augments concentration profiles. As Schmidt number and slip parameter are strengthened mass transport is influenced.

Keywords: Hall and ion-slip parameter, Transient, MHD, Rotating, Vertical Porous Surface, FEM.

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Harvesting Effect on Three Species Ecological Model with Ammensalism

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Abstract: The Present modelis devoted to an analytical investigation of affect of Harvesting on three species syn-ecological model during which the species of 1st kind (N1) is ammensal on thespecies of 2nd kind (N2), the species of2rd kind (N2) is ammensal on the species of 3rd kind (N3) and thespecies of 3rd kind (N3) is ammensal on the species of 1st kind (N1).Herespecies of 1st kind (N1) and species of 2nd kind (N2) are harvested at a rate proportional to their population sizes.Co-existing state is known and its native stability is mentioned. Solutions of linearized equation are applied. Further,with the help of suitable Lyapunov function global stability was discussed. In support of analytical results, numerical simulation were carried out using Mat Lab.

Keywords: Ammensal, Harvesting, Interior Equilibrium Point, Lyapunov's function and Routh-Harwitz criteria. Mathematical Classification: 34DXX, 34NXX, 97MXX,34D23 & 37B25.

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Image Similarity using Autoencoder

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Abstract: The photograph is a set of rows and columns knownas pixel values. Extracting the exceptional-suit photograph from a big series of databases is a rising task. Learning the similarityof fine-grained photographs is a difficult task. This Paper shows deep getting to know with the device encoder for the photograph similarity hassle, that's unmanaged getting to know hassle. The computerized encoder is the primary structure for this hassle and has created a deep neural network (DNN) to analyze the information through itself. Here it calculates the cosine similarity distance among the photograph function extract via a deep neural network (DNN). Autoencoder putting and lack of this autoencoder is 0.0068, it's far the exceptional version and have got adjusted it right here for epochs and batch length of its Deep Neural Network (DNN). Here we display a few applications: computerized encoder training, an automated encoder change, and the model of the Deep Neural Network (DNN). In all cases, the photograph produced appears sharp and resembles herbal photographs.

Index Terms: Deep neural network (DNN), Autoencoder, Un- supervised learning, Image-similarity, Cosine-similarity, recommendation.

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Improving the Performance of HR Attrition Model Using Feature Engineering Techniques

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Abstract: Attrition is one of the key issues faced by the today's IT industry and it has larger implications in terms of employee engagement and performance. Many a times, it is really hard to replace the right resources once they left the organisation and hence it is very much need to be tackled in advance before employee attrition. The current research paper is focussed on reviewing some of the traditional approaches to model the employee attrition as well as some of the opportunities of improving the performance of the model. One of the most prominent method to improve the model performance is using feature engineering techniques where information from existing independent variables are drastically improved and it will results in improving the accuracy of the model. Many practical situations, we can observe the information carried by individual variables is not much significant, but when we created few new features from the combinations of several such independent variables will give more valued input to the modelling phase.
In this paper, initially, we studied the impact of individual variables with out adding any new features and later created some new features from the existing variables which has better accuracy compared to first set of results. Logistic regression being used a primary modelling technique as our dependent variable is of binary nature of Yes or No. Accuracy is calculated in the test data and compared from different approaches.

Keywords: HR Attrition modelling, Feature engineering techniques, logistic regressions, performance improvement.

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Facile synthesis of pure and Cr doped WO_3 thin films for the detection of xylene at room temperature

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Abstract: This paper focused on the preparation of pure and Cr-doped tungsten trioxide (WO_3) thin films using the spray pyrolysis method. Different kinds of techniques were adopted to analyze these films' structural and morphological properties. The XRD analysis showed that the grain size of the WO_3 nanostructured thin films significantly decreased as the Cr doping concentration increased. The AFM results showed that RMS roughness of the films increased with Cr doping concentration increases up to 3 weight% then reduced. The increased roughness is favorable for gas sensing applications. Gas-sensing characteristics of undoped and Cr-doped WO_3 thin films were investigated with various gases at room temperature. The results showed that 3weight % Cr doped WO_3 film performed the maximum response towards 50 ppm of xylene with excellent selectivity at room temperature. We believe that the lattice defects, and increase in surface roughness, due to the Cr doping in WO_3 material might be responsible for increased xylene sensitivity.

Keywords: WO_3 thin films, XRD, AFM, xylene, sensitivity.

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Magnetically Recoverable Ecofriendly Fe_3O_4@SiO_2 Supported $Cu(OH)_x$ Catalyst For The Synthesis Of Imines Under Mild Conditions

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Abstract. An efficient and selective direct synthesis of imines from primary alcohols and primary amines or anilines has been achieved with no waste generation. This atom economical, environmentally benign reaction is heterogeneously catalyzed by Fe_3O_4@SiO_2 supported $Cu(OH)_x$ nanoparticles. The catalyst is highly selectivity towards the imine above 90% and the conversion and the selectivity of side product (homocoupling of benzyl amine) is less than 5%. The catalyst can be easily recovered by using external magnet. The catalyst can be recycled at least 5 cycles without loss of catalytic activity.

Keywords. Alcohols, imines, direct coupling, Cu(OH)x, Fe_3O_4@SiO_2

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A fitted Non Symmetric Finite Difference Method for Singularly Perturbed Differential Difference Equations with Mixed Shifts

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Abstract: In this paper, non-symmetric fitted finite difference method is proposed for solving singularly perturbed differential-difference equations with delay and advanced shifts. Taylor series is used to tackle the delay and advanced shifts to replace the given problem as singularly perturbed two– point boundary value problem. A fitting factor is introduced in the non symmetric fitted finite difference scheme which takes care of the rapid changes that occur in the boundary layerdue to perturbation parameter. From the theory asymptotic solution of singular perturbations, the fitting factor is obtained. Thomas algorithms issued solve the tridiagonal system of the discretization equation. The existence and uniqueness of the discrete problem along with stability estimates are discussed. The convergence of the method is analyzed. Maximum absolute errors of several numerical experiments are presented to illustrate the proposed method.

Keywords: Singularly perturbed differential difference equations, asymptotic approximation, Fitting factor, Tridiagonal system, discrete invariant imbedding algorithm, Truncation error.

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Design, synthesis and anti-cancer evaluation of new 3- substituted isoxazole-uracil scaffolds: In silico and In vitro approach

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Abstract: New series of substituted 6-chloro-3-methyl-1-((3-phenyl/naphthalen-1-ylisoxazol-5-yl) methyl)pyrimidine-2,4(1H,3H)-dione scaffolds (5a–l) were synthesized regioselectively by adopting 1,3-dipolar cycloadditions. The products were characterized by standard analytical techniques viz., 1H, 13C NMR, ESI-Mass and elemental analysis. Molecular simulations using Molegro virtual docker were conducted to examine the interaction abilities of ligands against quinone reductase 2 (PDB ID: 4ZVM) protein. Docking studies of ligands 5a–l revealed sharp interactions with Phe178, Phe106, Phe126, Trp105, Tyr104, Tyr155, Asp117, Gln122, Cys121, Tyr67, Gly68, Gly149 and Gly150 amino acids. ADME profiles by Molinspiration online toolkit concluded the drug-likeness of ligands. Inspired by the positive docking interactions, the analogues were subsequently screened for their in vitro cytotoxicity against MCF-7 and BT-474 tumor cell lines using a standard protocol of MTT assay. The majority of the compounds suppressed the proliferative activity of MCF-7 cells better than the standard drug, Cisplatin. In contrast to MCF-7 cells, the BT-474 cells seemed quite resistant to the treatment of test compounds (except for 5d, 5g, 5j and 5h). Among the new derivatives, 5g & 5j exhibited remarkable potency against MCF-7 cell lines with IC50 values 2.53 and 1.55 μM respectively. The non-toxic nature of synthesized ligands towards normal cell lines determines their ability to be developed as new chemotherapeutic agents.

Keywords: Isoxazole-uracil; Drug design; Molecular simulations; Quinone reductase 2; ADME; Cytotoxicity

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Exploration of Thermo-Physical Properties of Ferric Oxide Nanofluids for Heat Transfer Applications

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Abstract: Nanofluids are used in numerous number of applications such as in solar, processing industries, refineries, cancer therapy and automotives to enhance their performance. Similarly, problems faced while developing nanofluids on large scale are also high. In this context, this paper aims at reviewing the performed experiment and even certain aspects of thermo-physical properties. Nanofluids. In this work, we have considered mainly thermo-physical properties of Ferric Oxide nanofluids with preparation and even characterization.

Keywords: Nanofluid, Basefluid, Particle size, Thermal conductivity, Viscosity, Temperature, Heat transfer coefficient, Specific heat, Heat exchanger.

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Performance of Thermoset Powder Spray Coating on Mild Steel and Aluminum 6061

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Abstract: The regulations are becoming more ironclad and awareness of consumers to protect environment, by the use of volatile organic compounds to reduce the environment problems. Powder coating is a kind without any solvent. It enhances the performance, eco-friendly nature, and many applications like metal coating, automotive industries, etc. The materials which are coated have high resistance to uncertain weather conditions than that of the uncoated materials. The substrate materials are of mild steel and Aluminium 6061 which are coated with light ivory glossy (VG1008) and HNS 0012 respectively. The Challenge is to obtain a dense, Homogeneous Coating on metallic substrates. The Surface roughness, microstructure and corrosion resistance of coated materials is analysed and compared to uncoated materials.

Keywords: Powder Coating, VOCs, Automotive, Thermosetting, Electrostatic

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Experimental and Numerical Analysis of 3d Printed ABS Parts With FDM and Comparing with Conventional Manufacturing

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Abstract: The project work will present analysis of Mechanical behavior of 3D printed ABS parts.3D printing technology- an additive manufacturing process could be a method of creating Three Dimensional solid objects from a digital file. The emerge of 3D printing technology is challenging many products that are traditionally made. In an additive process an object is formed by laying down successive layers of fabric until the complete object is formed. during this work, the mechanical properties and behavior of a 3D Printed object is to be studied by varying parameters like layer thickness, orientation, deposition speed etc. Various tests like tensile test, compression test, to see failure characteristics of such materials are conducted. Supported experimental results, stress–strain relationship and failure criterion may be proposed. Then the strength and mechanical properties of a 3D printed specimen is compared with the merchandise made out of conventional manufacturing method i.e.; through Automated Injection Molding process.

Keywords: ABS(Acrylonitrile butadiene styrene), FDM Additive Manufacturing, Layer Thickness, Orientation, Deposition speed, Tensile test, Compression test, Stress, Strain, Merchandise, Injection Molding.

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Evaluation and Optimization of Laser Engraving of Work Materials

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Abstract: This paper represents the evaluation and optimization of laser engraving of MDF wood. The speed, power and stand-off distance are taken as input parameters and surface roughness is taken as output parameter. The experimental work will be designed based on Taguchi technique. The Process is evaluated using advance machine learning approaches like support vector machine(SVM) and Gaussian Process (GP) using normalized polynomial kernel. The SVM NPK model is showing the better results compare to GP NPK model for surface roughness.

Keywords: Taguchi, laser Engraving, MDF, Surface Roughness, SVM, GP

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Generative Shape Design of automotive Rear Upright Using Fusion 360

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Abstract: Uprights used in formula vehicles are specially designed according to the vehicle requirements and optimized by analyzing it to give better performance and sustain various loads acting on it during the acceleration, braking, cornering and repeated loading. Formula vehicles are designed for extreme performance, high speed cornering and therefore the upright should be designed for maximum possible loads to avoid failure. However, designing a bulky and heavy upright can increase the un-sprung mass and reduce the vehicles performance. Therefore, the main goal in designing an upright is to achieve less weight without compromising the vehicles performance and eliminate any chances of failure under maximum loads that can occur in the desired performance. Another important factors that should be considered while designing upright are the availability of material, cost and ease of machining.

Keywords: Generative shape design, rear upright, fusion 360, ANSYS stimulation

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Evaluation of 3d Printing Process Parameters

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Abstract: This paper variable represents the evaluation of 3-D Printing Process parameters using machine learning algorithm and optimization techniques. The experimental work will be designed based on Taguchi technique. The extruding temperature, feed rate , layer thickness , infill density and infill pattern will be considered as input variables. The surface roughness is selected as output. The Process is evaluated using machine learning algorithm techniques like support vector regression and Gaussian Process techniques using normalized polynomial kernel.

Keywords: Taguchi, Method PLA(Poly Lactic Acid) FDM 3D Printer Surface Roughness, SVM, GP

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Study and Preparation of Substrate Material for High Temperature Coatings

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Abstract: Study to increase the mechanical properties of materials for high durability, wear & tear resistance and cost efficient. The coating of materials done by using different methods of coating based on requirements. Properties will be improved by different coating alloys to improve mechanical properties of materials. Compared to traditional materials, amorphous elements have excellent corrosion and wear resistance and high elastic modulus, due to their unique short-range ordered and long range disordered atomic arrangement. This review first briefly introduces the problems involved during high temperature preparation processes of coatings, including laser cladding and thermal spraying. Metals, bulk metallic glasses, are undercooled frozen liquids.

Keywords: Thermal Spray Coating, spray gun

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Analysis of Shell and Tube Heat Exchanger Using CFD

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Abstract: The prime objective of our paper is to design the Heat Exchanger by varying different variables to increase its performance and efficiency, to get optimal solutions and make it ready to work in difficult and hazardous conditions. CFD technique is used to simulate the Heat Exchanger involving fluid flow and heat transfer. In this process, we find the temperature gradients, pressure distributions & velocity vectors. This Analysis shows that there is a difference in temperature values between simulated and experimental values.

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Evaluating Performance Parameters of Mild Steel with Zinc Thermal spray coating and Carbon-based Nanoparticle

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Abstract: This paper gives detailed information regarding parameters of mild steel which are going to be affected with the coating of zinc thermal spray coating and furtherly coated with carbon –based nanoparticles (Graphene). The use of coatings on materials is now widespread in global manufacturing for reducing production cost and improve productivity as per requirements for the particular industrial usage materials may get failed due lack of mechanical properties like strength, hardness, toughness. To overcome this type of circumstances we need to apply in proper proportioning for achieving desirable mechanical properties. Nanoparticle materials are mainly used for the structural reinforcement as they are 100 times stronger than steel and the electrical conductivity of polymer materials can be considerably improved by incorporation of conductive fillers such as carbon nanoparticles. This paper also reveals that corrosion resistance of mild steel can be improved after coated with nanoparticles(Graphene) .

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Design Analysis and Optimization of Automobile Chassis

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Abstract: The main objective of the paper is to improve the efficiency of Heavy Duty Chassis with 3 different types of sections (C & I & box)of heavy-duty vehicle using CAD tool solid works These assembly consists major components they are main frame (stiffeners, longerons) with required dimensions. And importing the components which are developed in CAD tool into CAE tool ANSYS for to analyze. To find out the deformations and stress efficiency of the components Appling the existing material (steel-710) and chosen material (steel 4130 & al-7075). And showing the comparison between 3 materials and cross sections, discuss each model/material and their limitation with suitable tables and graphs.

Key Words : Automobile chassis, chassis loads, modelling, structural analysis.

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Design and Analysis of Automatic Ramming Machine

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Abstract: Moulding is one of the important metals forming process in manufacturing components for various applications in industry. It is important to make cast product precisely. Automation and sophisticated electronic in ramming process help to improve the foundry environment and accuracy of the cast parts. Reliability of cast product depends on various parameters like permeability, compactness, adhesiveness etc. Hence process of ramming in moulding plays a vital role in the process of casting. The defects occur in cast component leads to great problem in foundry and all associated industries. Hence this ramming machine found large application in manufacturing industry. The machine is operating on pneumatic energy. Even though skilled labour is employed for ramming operation, the packing of moulding sand will not be even throughout the moulding box. So, we have selected the idea of "Design and analysis of Automatic Ramming Machine". This machine is operating mechanically. By using this machine moulding sand will be packed evenly throughout the box. The main aim of the project is to design and analyse the Automatic ramming machine with applying different kind of loads using Fusion 360. Based on this in future the ramming process will be improved more and reduce the time of ramming and improve the productivity.

Keywords: Ramming machine, pneumatic cylinder, Solid works, Ansys, Fusion 360, Materials & components.

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Evaluation of Process Parameters of A Double Pipe Heat Exchanger With Protruded Surfaces

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Abstract : Heat exchangers are used in industrial and household processes to transfer heat between two process fluids. In our project we are investigating the optimization process parameters of a double pipe heat exchanger with protruded surfaces and without protruded surfaces. The working fluid in both the cases is water, and the inner and outer tube was made from steel. There are several constructions which can transfer the requested heat, but in our project, we are increasing the efficiency of the double pipe heat exchanger. Optimum sizes can be calculated from the initial conditions (when one of the process fluid inlet and outlet temperature and the flow rate is specified). Thus, we can compare the results of both the cases and select the efficient model. This model of protruded surface is change in geometry of conventional double pipe heat exchanger to improve the heat transfer. The pipe with protruded surface has increased heat exchange as area of heat transfer increased.

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Design and Analysis of Connecting Rod Under Static Loading Condition

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Abstract: The primary objective of this article is to design the connecting rod using fusion 360 software and to perform the analysis using ANSYS software such that by doing this analysis we get to know about the strength of the connecting rod before it is going to manufacture. Doing analysis of connecting rod is the best method used before sending it to the manufacturing. In this project we will find out the total tensile strength, stress zone, factor of safety as output parameters for safe design of the connecting rod by considering load, material, and forces as input parameters. The testing done by using Fusion 360 and ANSYS software.

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Characterstics of Elements for Coating to Improve Mechanical Behaviour

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Abstract: Study of coatings that increase the mechanical properties of materials for high durability, corrosive & oxidation resistance, and cost-efficient. While their use in the industrial sector, such as Marine industry, Automobile parts, gas turbines in aircraft, turbine blades, boilers, etc., is very crucial for overall component efficiency, determining characteristics of elements for coatings to improve their mechanical properties such as Hardness, corrosion resistance, oxidation resistance, creep resistance, so on. is crucial, the mechanical properties of metal greatly influence the coatings to be used on them. High-temperature coatings like Thermal Spray coating, overlay coating, and Thermal Barrier Coating (TBC) are suitable. By the availability of Materials in the industry, Zinc Metallizing and Grey Cast Iron as the substrate is selected. Zinc Thermal spraying gave good corrosion resistance and increased Hardness, acting as a sacrificial coating on the substrate for good Galvanic protection.

Keywords: Thermal spray coating, Flame Spray method, Zinc thermal coating, Galvanic Protection.

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Formation Mechanism of Amorphous Elements for Coating to Improve the Mechanical Properties

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Abstract: Compared to traditional crystalline materials, amorphous alloys have excellent corrosion and wear resistance and high elastic modulus. Due to their unique short-range ordered and long range disordered atomic arrangement. This review first briefly introduces the problems involved during high temperature preparation processes of amorphous coatings, including laser cladding and thermal spraying. Amorphous metals, also known as amorphous alloys or bulk metallic glasses, are undercooled frozen metallic liquids. They show material properties which normally exclude each other, i.e. high hardness and strength with high elasticity at the same time. Cold Spray is characterized by a lower temperature solid state deposition, and thus the oxidation and crystallization related with a high temperature environment can be avoided during the formation of coatings. Therefore, CS have a unique advantages in the preparation of fully amorphous alloy coatings. As we have various methods for coating, Alloying elements increase the strength of cast irons through their effect on the matrix.

Keywords: HVOF Coating; Thermal spray processes; Spray gun; Zinc; Mild steel

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Design and Analysis of Pneumatic Sheet Metal Cutting and Bending Machine

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Abstract: Benefits and use of aluminum is increased now days in many industries like automobile, packaging, medical, aviation etc. The reason behind this is that the aluminum made things are quite easier to manufacture, handle and reliable to use. Generally other operated machines like by means of hydraulically are too costlier for small scale workshops and medium scale industries. In manufacturing industries, the bending & cutting machine is one of the most important machine tools. The bends has been made with the help of punch which exerts large force on the work clamped on the die. Normally the sheet metal cutting machine is manually hand operated one for medium and small-scale industries. By making it in automation mode becomes inevitable. The sheet metal cutting & bending machines works with the help of pneumatic double acting cylinder. The piston is connected to the moving cutting blade and tools. It is used to cut the small size of the sheet metal. The machine is portable in size so easily transportable. The automation strategy, when implemented is believed to result in reduced cycle time, costs and improved product quality. Other possible advantages are repeatability, increased productivity, reduced labor and decreasing of production time. The manually operated machine is converted into pneumatically operated machine by applying proper design procedure and required analysis.

Key words: Pneumatic System, Sheet Cutter, Bending Punch & Die, solidWorks, Ansys, keyShot.

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Design and Analysis of Hexagonal Leg of Bearing Puller Machine Using ANSYS

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Abstract: A simple, low-cost, lightweight, and energy-efficient hydraulic puller was created in this study. In today's world, pneumatic and hydraulic systems are used in practically every application. Precision is necessary for businesses such as automobiles, small service centres, and aircraft. Using Solid Works and Ansys software, this thesis is to develop a bearing puller, a device used for removing shaft mountings such as gears, bearings, and many other press-fit items. The goal of this research is to eliminate the human effort and wear and strain associated with mounting and unmounting bearings. Bearing Puller Machine applies equal and consistent force to the bearing, allowing it to be readily removed from the shaft without compromising the shaft's surface finish. Modifications should be conducted in the standard technique to safely remove and install bearings. Simple operation, bearing removal, and installation without hurting the bearing or shaft surface. Compact, portable, low cost, safe, and versatile are the goals of the modification. This can be used in industries such as automobiles, workshops, and factories where bearings are used. The puller is likely to not fail under the design working circumstances, according to the results of the analysis. The designed hydraulic bearing puller was built and successfully used to remove several bearings that had been caught in the shaft. In this thesis, solid works software is used in designing the Bearing puller machine. Instead of 3 jaw bearing puller split plates are used minimising the damage to the bearings. Ansys software is used for simulation and modelling, to check the load-bearing capacity of the design. Three different materials have been used based on their physical properties and the best working material has been identified.

Keywords: Solid works, ANSYS, Hydraulic puller, Split plates.

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CFD Analysis for the Enhancement of Heat Transfer in a Heat Exchanger with plain tube and Cut Twisted Tape Inserts

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Abstract: Double pipe heat exchangers are most widely used in engineering applications and industries like Automobiles as car radiators,condensers, chemical reactors etc. Higher rate of Heat transfer and higher thermal efficiency are the main goals to improve the efficiency of different Heat Exchanger devices. In order to achieve these goals, the compound technique is used. We have used compound method. The present study investigates the effect of Geometry of twisted Tape with water and plain Tube with water on heat transfer enhancement and pressure drop in counter flow Double Pipe Heat Exchanger (DPHE) using Simulations , the heat transfer characteristics like Nusselt number, heat transfer coefficients and pressure variation for VCSCTT inserts have been compared with that of the plain tube data. From the obtained velocity contours it has been found that the varying cross sectional cut provided in the twisted tapes enhance the eddy flow and create vortex which leads to the formation of more turbulent flow. Thus there is an considerable increase in Nusselt number and heat transfer coefficient with varying cross sectional cut inserts. when compared with that of the plain tube. Tube with cut twisted tape insert increment of about 48% in cold side heat transfer by using twisted tape insert.

Keywords : Varying cross sectional cut twisted tapes, Nusselt number, heat transfer coefficient, twist ratio.

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Design & Analysis of Adaptable Length Drive Shaft for ATVs

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Abstract: The current study investigates the feasibility of variable length driveshaft designs in All-Terrain Vehicles (ATVs). All-Terrain-Vehicles, while designing for BAJA, focus more on distinctive features and overall performance. In this process, it needs to accommodate different customized parts. Wherein, the driveshaft is one of them, which is not readily available in the market. Standard driveshafts are modified based on the length and joined using welding to obtain a perfect fit. This adequately increases informal fitting, and failure rate and creates alignment issues.

Through the process of developing this project, we have come across various journals which depict weight reduction with the use of composite materials. While some of them portrayed the integration of drive shaft with slip joints to self-adjust the length which has few limitations and applications.

This study aims to design and analysis of an adaptable length drive shaft for an All-Terrain Vehicle (ATV). The driveshaft used in these vehicles is to transmit the required torque from the gearbox to the wheels. It is designed as per design methodology then modeled in CATIA, analyzed using Ansys software, and is checked for a minimal value of errors to support various required functions of the driveshaft, to ensure its safety. The main objective is to design a more reliable adaptable length drive shaft by considering ATV design standards.

Keywords: Design and analysis, Driveshaft, All-Terrain vehicle, CATIA, Ansys.

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Study on Effect of Ethanol Blend in Direct Injection Compression Ignition Engine with Exhaust Gas Recirculation

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Abstract: The fuel mixture blend "Ethanol-Diesel" is usually known as 'E-Diesel', 'Diesohol' which is the fuel performing on the direct ignition compression ignition (D.I.C. I) engine. We are going to attempt the mixtures of 5%,10%,15%,20% of ethanol as a blend in the fuel mixture (Diesel) as part of our paper. The emissions which are harmful such as nitrogen oxide (NO), hydrocarbons (HC), carbon monoxide (CO) which are to be controlled through our procedural experiment in Direct Injection Compression Ignition system (D.I.C.I) with the ethanol blend with diesel fuel. Exhaust gas recirculation (EGR) is an pollution control technology for emissions which enables to reduce NOx emission for most of the diesel engines that exist. While the application of EGR for NOx reduction is the most common reason for applying EGR to commercial diesel engines in recent modern days, its application serves for other purposes too which includes: aiding knock resistance and reducing the need of high load, fuel enrichment in C.I engines, helping in vaporization of liquid fuels in this engine.

Keywords: Compression Ignition Engine, Ethanol, Exhaust Gas Recirculation, Diesel, Brake specific fuel consumption, Brake Thermal efficiency, Emissions, Carbon monoxide, Hydro carbons, Oxides of Nitrogen, Exhaust gas temperature

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Design, Analysis and Optimization of Kia Carnival Prestige Vehicle Wheel Rim

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Abstract: In this paper Kia carnival prestige vehicle wheel rim modeling and analyzing has been done with cad/cae tools. Wheel rim is designed with the help of solid works and then analyzed with static structural and dynamic analysis with defined boundary conditions. Based upon results, it is concluded that Al-7068 material is showing better results compare to the Al-7075.

Keywords: Wheel rim, Static structural analysis, Dynamic Analysis, Solid works, ANSYS.

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Effect of Evaporator Temperature on Closed Loop Pulsating Heat Pipe

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Abstract: A Closed loop pulsating heat pipe (CLPHP) filled with working fluids (base fluids) is experimentally investigated at different orientations . The experimental setup is made up of copper tube with 2mm and 3.1mm capillary dimensions and is turned into a serpentine manner with eight U-turns .The experiments are carried for different working fluids viz. water, ethanol, methanol and acetone at different inclination positions such as 0-degee, 45-degree and 90-degree and at a fill ratios of 50%.Different thermocouples are placed at different positions of test rig and temperatures are recorded through data logger. The present paper describes the variation of temperature with time at evaporator at 50% fill ratio for different positions of CLPHP. Based on these temperature data the performance of CLPHP has been analysed. Graphical representation of variation of temperature with time is analysed for different operating conditions for different working fluids .Comparative conclusions are presented for different orientations.

Keywords: Closed Loop pulsating Heat Pipe (CLPHP), Fill ratio, Heat input, Orientation, Temperature, Working fluid.

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Numerical Analysis of Diffuser Augmented Wind Turbine with Different Flange Angles

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Abstract: In the global scenario, there has been a rapid rise in for energy demand. This increase in demand for energy is creating new challenges. One of the challenges, is the necessity to explore energy from alternate sources. One of the promising alternate source of energy is wind energy. Inspite of various disadvantages of wind energy, like huge noise, inconsistent, high initial capital cost, etc., there are certain advantages like, it is unlimited source and available at free of cost. Therefore, there is a necessity to harness the energy available from wind. In addition to this, there is a necessity to augment the performance of existing wind turbines to a maximum. In this regard, understanding the physical phenomenon of the process of wind power generation with various augmenting methods is important. The present work is an attempt to augment the performance of a diffuser augmented wind turbine (DAWT). using CFD for different diffuser flange angles ranging from $80<\theta<160$ and L/D ratios of diffuser ranging from $0.63<L/D<1.47$. It is observed that as there is an increase in the diffuser angle, there is an increase in the coefficient of performance of DAWT. At 160 angle of the diffuser, the augmentation in the COP is 10% higher than the base model. With the increase in the L/D ratio, there is a decrease in the COP. L/D ratio of 0.63 provides better performance of DAWT than compared to other L/D ratios.

Keywords: DAWT, Diffuser angle, Tip speed ratio, coefficient of performance

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SVM and Gaussian Process Modelling of WEDM of Nimonic-105

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Abstract: This paper discusses the machining time and average cutting speed of Nimonic 105 grade super alloy using WEDM. Nimonic 105 has excellent heat resistant properties, high strength and excellent oxidation resistance. The high creep-rupture properties of Nimonic 105 make the alloy perfect for critical gas turbine applications For this purpose experimental work planned using one factor at a time approach considering six input variables such as pulse on time(Ton), pulse of time (Toff), Peak current (IP),Wire feed (Wf), wire tension(Wt), brass wire of different diameters. Optimum parameters settings are pulse on time (Ton)-122, pulse of time (Toff)-46, Peak current (IP)-210, Wire feed (Wf)-7, wire tension(Wt)-5, brass wire of diameters-0.15 mm for getting maximum cutting speed. Modeling done by using Support vector machine (SVM) and Gaussian process (GP) techniques. SVM technique is best due to its high Correlation coefficient value and low error compared to GP technique for training and testing both.

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Optimization of parameters for turning of OHNS steel

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Abstract- Preset scenario of industries is to lower the production cost, time, and increase the profit. For high quality production of components, hard turning is suitable process as it is having numerous advantages. It requires low cost and time, flexibility in production, improved surface finish and material removal rate (MRR). Due to its advantages, it becomes essential as grinding process. This process can be applied when the hardness of the material is above 45 HRC. The characteristics required with the machine for hard turning are hard cutting tools availability, required tool geometry, capacity of tool holding, and required power supply. Surface roughness and MRR are the most important factors which are essentially considered during machining process evaluation point of view. The selection of process parameters is a complex process. In this proposed experimental work, the detailed study of the analysis of surface roughness and MRR during turning of oil hardened non shrinkable (OHNS) steel is to be done. The applications of the OHNS are manufacturing of wheel axles, lay shafts, fasteners and gears due to their high strength and hardness. As the OHNS is a harder material, it's a challenging task to production engineers to machine it. For the good quality of surface finish and higher material removal rate in the industry to earn more profit, it is essential to do the optimization of the process. In this research work, the input parameters of the CNC machining of OHNS steel are optimized. The selected input parameters are spindle speed, feed rate, and material removal rate. The output parameters are surface finish and MRR. The experiments were performed as per the Taguchi DOE. The results were analyzed in MINITAB V 17 software. The significance of each parameter is analyzed in ANOVA and the parameters were optimized with validating the experimentation as per the regression model.

Keywords- Hard turning, Surface finish, material removal rate (MRR), Taguchi DOE, Optimization, and ANOVA.

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Effect of Bio Lubricant on Tribological Characteristics of Steel

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Abstract: This study was done on a ball on disc tribotester to find out the influence of bio lubricant blended with lube oil (SAE20W40) on tribological parameters of steel used in bearing materials (EN31). The tribotester disc is made of EN31 steel, 165mm in diameter, and the test ball is made of EN31 steel, 10mm in diameter. The test was conducted at 45°C with varying loads and rotating speeds for 1 hour. The petroleum based lubricant utilized in this experiment was SAE 20W40 combined with castor oil at 10%, 20%, and 30%. The lubricant's viscosity is measured.

The experimental results show that increasing loads, speed, and sliding distance increases the wear rate. Less than 10% castor oil in lubricating oil yielded nearly equal wear rates to the base lubricant employed in this study. Based on this research, 10% blended oil can be utilized as a lubricant for piston pumps, reducing the consumption of petroleum-based lubricants and saving oil reservoirs.

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Analysis and Optimization of wind lens for wind turbine

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Abstract: The wind-lens turbine consists of shrouded diffuser which increases the wind speed at rotor, developing electric power even in low speed wind. Energy crisis is one of the major problems facing the countries globally. One of the methods to overcome energy trouble is to use the energy available efficiently and also to reduce the energy that is being wasted. The fact that non-renewable sources of energy become cause of pollution and the increased ecological hazards and their rate of depletion has required to use of nonconventional and renewable sources. Therefore to adopt the methods of energy recovery is required. Energy recovery is a technique used to reduce the vitality input to an overall system by exchanging the energy from one system of an overall system to another. Wind lens turbine is the next generation small wind which can be installed anywhere. It has significant reduction in wind turbine noise, concentration of wind energy, compact and highly efficient, adaptable to the surroundings, highly safe systems and significant reduction in birds strike

Key Words: Wind Lens, Wind Turbine, Analysis, CFD

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Design and Analysis of Welding Fixture for Bogie Frame Assembly

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Abstract: This paper focuses on the Design and Analysis of Welding Fixture for Anti-vibration under carriage Bogie Frame Assembly for Compact Track Loader. The application of a Bogie assembly is to offering smoother transitions over uneven terrain, and the ability to travel at higher speeds with better materials retention. Due to the nature of welding process involving localized heat generation from moving heat source, rapid heating in the welded structures, and subsequent rapid cooling, problems such as residual stresses and distortions of welded structures remain important challenges in the industry.To assemble the respective child parts and to meet the required tolerances on the bogie frame assembly welding fixture specially designed with the help of CAD Software.In practice, welding distortion creates unwanted effects on manufacturing accuracy, appearance and strength of welded parts. By using Finite Element Analysis (FEA), the analysis is carried out to find welding distortion of Bogie Frame assembly. Along with optimum clamping force has been calculated which required for controlling the welding distortion.After successful Design and Analysis,the Welding fixture has been manufactured and has been implemented at shop floor. This welding fixture used for accurate assembly of the child parts with required tolerances , as well as helps in reduction of production loss and also manufacturing lead time for welding, positioning and holding parts.

Keyword: Welding Fixture,Finite Element Analysis (FEA), ANSYS Software,Catia,Welding, Distortion,Clamp.

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By Using Hec-Ras Model Flood Analysis of Wainganga River

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Abstract: Bhandara city lies on the bank of Wainganga River which is a flood prone area. Normal life in the city gets affected by the floods of the Wainganga River very frequently. In the present study, USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS 5.0.3) Model is used for the analysis of the flood. For various flood discharges and return periods (25 years, 50 years and 100 years) we can compute The water surface elevations. for the steady and unsteady flow simulations total 19 cross sections along the river near the city are considered. To generate flow hydrograph, previous available data is used for unsteady flow simulation. The output from a HEC-RAS model shows that at cross section 2,3 for steady flow conditions and cross section 19 for unsteady flow conditions are critical and subjected to the flooding of the adjoining area causing disturbance to normal life, protective measures should be taken to overcome this situation.

Keywords: HEC-RAS, Flood Analysis,USACE, Bhandara city, Steady Flow

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Utilization of first use plastic for road in Mumbai City to reduce environmental impact

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Abstract: The aim of this paper is to focus on using the available waste/recycled plastic materials present in abundant that can be used economically and conveniently. Using this technique referred from the author R VASUDEVAN for road construction proves eco-friendly, economical and use of plastic will also give strength in the sub-base course of the pavement. Plastics are user friendly but not eco-friendly as they are non-biodegradable. It is disposed to used land filling or incineration of materials which is extremely risky for environment and ultimately affects human being also. waste plastic such as polythene bags can be partially mixed with material use for road construction. In conventional road making process bitumen is used as binder. Such bitumen can be modified with waste plastic pieces. This waste plastic modified bitumen mix shows better binding property, stability, density and more resistant to water. Worldwide use of waste material in road construction is being increasingly encouraged so as to reduce environmental impact. The use of this innovative technology will strengthen the road construction and increase the road life as well as will help to utilization of waste plastic material. Plastic roads would be a blessing for hot and extremely humid climate, where temperatures normally cross 50°C and abundant rains create damage, leaving most of the roads with big potholes. The result shown in this paper by using this technique is the purpose of studying the waste plastic in road construction understand that coating of plastic reduces porosity, absorption of moisture and improve soundness that helps to improve the environment.

Keywords: plasticss , bitumen, binder ,incineration ,strength ,economical

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Partial Use of Waste Glass as a Coarse Aggregate in Concrete

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Abstract: This paper Investigate to determine the compressive strength of concrete contain waste glass as a coarse aggregate. The glass is a waste material obtain from the containers such as soft drink bottles, bottles and jars for food, cosmetics and other products. The glass can be used as a primary material in many cement-based products such as concrete block and bricks.

In this paper have prepared the concrete mix design of M25 grade concrete using different percentage of glass varying from 0% to 30% at an interval of 10%. Casted the 3 numbers of cubes for each combination (i.e 12 nos of blocks) for 3 days, 7 days and 28 days testing. Based on the analysis done, we had got to know the optimum percentage of glass. Strength comparison of M25 grade ordinary concrete and M25 grade concrete with optimum percentage of glass contain. It conclude that the strength of concrete with optium percentage of glass is more than that of ordinary concrete. It recognize that the compressive strength of the concrete with optimum percentage of glass is 2 to 3 kn/sq.m more then that of ordinary concrete.

Finally economic analysis of both the types of concrete is carried out to determine the ultimate result. Glass can be used as a cost-effective substitute for most of the aggregates. Glass is also recognized as an environmental friendly material.

Keywords: Glass, Strength Comparison, Economic Analysis,GGBS,Flyash

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Time and cost optimization of construction project by using mivan technology

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Abstract: Construction is one of the significant sectors and integral part of Indian economy. Also, it is of the important parameter in development of country. India is desperately planning for rapid manufacturing and creation of dwelling units for economical construction facilities Formwork enables to cast and construct the important elements and components of any construction facilities, which are required to be strong and effectively handle the structure. Mivan is comparatively a new construction technology upcoming for successful completion of mass project especially repetitive in nature. In this paper we have discussed about cost as well as time comparison of mivan technology with conventional formwork technology. The Mivan technology is appreciably efficient with cost, quality and time saving as compare to conventional one. The basic ideology is to reach a sturdy conclusion regarding the superiority of the two techniques over another. The traditional mode of construction for individual houses comprising load bearing walls with an appropriate roof above or reinforced concrete (RC) framed structure construction with infill masonry walls would be totally inadequate for mass housing construction industry in view of the rapid rate of construction. Further, such constructions are prone to poor quality control even in case of contractors with substantial resources and experience. "For undertaking mass housing works, it is necessary to have innovative technologies which are capable of fast rate construction and are able to deliver good quality and durable structure in cost effective manner". Several systems are adopted at different places in the world; eventually the systems which are reasonably economical and easy for operation with skilled labor are useful in India. Certain systems are in vogue and more and more contractors are trying to bring in new technologies. These are essentially based on the basis of mode of construction, namely, pre-cast construction or in-situ construction.

Keywords: Formwork, MIVAN, Time and Cost optimization, Project

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Waste Plastic as a Construction Material

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Abstract: The plastic waste quantity in municipal solid waste is increasing due to increase in population and changes in life style. Thus disposal of waste plastic is a hazardous and become a serious problem globally due to their non- biodegradability. Use of these plastic materials are not only helps in getting them utilized in cement, concrete and other construction materials, it helps in reducing the cost of cement and concrete manufacturing, but also has numerous indirect benefits such as reduction in landfill cost, saving in energy, and protecting the environment from possible pollution effects. Plastic wastes consist of the waste of plastics bags, water bottles, drums, straws and some polythene sheets. An experimental study is made on the utilization of plastic waste particles as coarse aggregates in concrete with a percentage replacement ranging from 0 % to 20% on the strength criteria of Concrete

In recent time use of such, Industrial wastes from polypropylene (PP) and polyethylene terephthalate (PET) were studied as alternative replacements of a part of the conventional aggregates of concrete. Plastic recycling was taking place on a significant scale in an India. As much as 60

% of both industrial and urban plastic waste is recycled which obtained from various sources. This project in particular deals with the possibility of using the waste polyethylene as partial replacement of fine or coarse aggregate in concrete. Concrete with 2% , 4% , 6% pulverized/non pulverized polyethylene material is prepared after doing the mix design. Various tests on cement like specific gravity, fineness, setting time, etc., tests on coarse and fine aggregates like specific gravity, fineness modulus, specific gravity, etc. are performed.

Keywords: polyethylene terephthalate, specific gravity, specific gravity

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The Effect of Granite Waste on Mechanical and Durability Properties of Blended Concrete

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Abstract: In several Indian states, industrial wastes such as granite waste powder (GWP), crushed granulated blast furnace slag, and metakaolin are readily available. Because of its pozzolanic properties of GGBS and metakaolin, they were employed as a partial replacement for cement in the preparation of concrete, with constant amounts of 40% GGBS and 10% metakaolin. In addition, granite waste was employed as a fine aggregate substitute in various percentages (0, 10%, 20%, 30%, and 40%) on a weight basis to reduce the use of natural resources, and a PC-300 Maximo- Plats super plasticizer with a dose of 0.3 percent was used to retain the required workability. To assess the mechanical and durability characteristics of blended concrete at the ages of 7 and 28 days, use M45 grade concrete with a (w/c) ratio of 0.36. The optimum compressive strength of blended concrete was attained at a 20 percent replacement of GWP, according to the experimental data.

Keywords: GGBS, Metakaolin, GWP, Mechanical properties.

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Soil Biotechnology System of Wastewater Recycling Treatment Plant Capacity 250 cum/d at VOGCE Campus

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Abstract: At VOGCE, the soil biotechnology system is a green technology solution to waste management based on a bio-conversion process. The current paper's goal is to apply SBT in order to reduce fresh water consumption on campus while also ensuring hygiene, odour control, and a green aesthetic. The requirement for a treatment facility in order to maintain land fertile and adjacent communities free of sewage water, which is harmful to the general population and the environment. This system is low-maintenance, produces less biosludge, is odourless, cost-effective, and energy-efficient. In comparison to other existing technologies, SBT is a green natural aerobic process that produces no greenhouse gases such as CH4 and needs very little energy (0.03 - 0.04 Kwh/ m3). When compared to traditional technologies, the eradication of bacteria without disinfection, i.e. 6 log orders for total coliform and 4 log orders for Fecal coliform, is 6 log orders for total coliform and 4 log orders for Fecal coliform. This is the greatest technology solution for the VOGCE campus's green building idea. The water treated by the SBT facility complies with the pollution control board's discharge standards.

Keywords: Primary sedimentation tank, Bioreactor, Biomedia, Waste water purification, Pathogen removal

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Eco Resort

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Abstract: This research paper intends to show the emerging conception sustainable ECO-RESORT. This research project aims to develop design for an Eco-Resort in rural area. Important element of this project is graining theoretical understanding method of construction and culture in details way. The research methodology is based on single case study. The result achieved, specifications in technologies, materials and tourism. The result show that low technology is possible to increase and design.

This research combining approaches from cultural geography, political ecology, ecological economics and post-development theory. The ethnographic case study seeks to understand how holistic sustainability is embedded in the ancient spiritual culture of India. I employ grounded theory for my research methodology which reveals three key themes that explain fundamental and interrelated dimensions of Vedic culture as sustainability. These three dynamics contribute to the understanding of what cultural features of a society are determinants of its sustainability or unsustainability.

Eco resort is a resort in which we are providing natural and eco-friendly environment for the visitors. In it we are providing services and facilities which are naturally available in our resort only. We are not taking anything artificial or materials which will be harmful to the environment and human beings.

Keywords: Eco architecture, bio climate, eco resort, sustainability.

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Watershed Management at Velu Village

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Abstract: Velu is small village located at distance of almost 30km from Satara city. It lies between North latitude 17.5779° and East longitude 74.2575°. Some measures have been adopted to recharge the ground water resources. Paani Foundation a non-government voluntary organization initiated experimental competitions and educational activities in 2016 at Maharashtra.
Under Indo-German Watershed Development Program (IGWDP), the watershed activities has been carried out. It is planned to take such engineering and biological measures which will direct this extra runoff to ground water storage. This project aims to use the techniques like rain water harvesting, contour tanks, check dams, percolation tanks, contour bunding, recharge well, drip irrigation, vanrai bandhara, farm ponds, etc.

Keywords: watershed, runoff, recharge, ground water

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An Analytical Study of Buying Behaviour of Policyholders of Life Insurance Companies

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Abstract: As a human being every person have the risk from one or other source. This has been well experienced in Covid 19 pandemic. It is extremely important to cover ourself for such situations including accidents, medical emergency and casualty of the earning person. For this insurance is important. Consumers are buying insurance due to varies reasons, it is taken as a case study to analyse the behaviour of the Indian consumers. They are influenced by emotional factors. But at the same time their purchase behaviour is influenced by rational factors. A typical Indian believes in future and try to have better and secured life for his family in future. A rupee earned by the person will be spent towards leading the family in present and for the better life in future. Life insurance covers both the components viz., risk coverage and saving. As the economy comprises of people in which majority of them are middle classed and salaried, Insurance has emerging as the best option for saving and risk coverage. But in India insurance is frequently well thought-out as a tax saving tool instead of its additional implied long term financial benefits. Indian people are predisposed to invest in property and gold followed by bank deposits. They selectively invest in shares also but the percentage is extremely small.
The study to be performed has the objectives to study insurance industry in general, to identify and analyse the factors affecting the choice of investors in choosing a life insurance policy and check consumer awareness about different insurance companies and their products. To know the different reasons for buying insurance products. It is projected to understand the prevailing view of the consumers towards various insurance policies in terms of price, features, returns, risk coverage, tax exemptions and service. Suggestions for the improvement wherever necessary are given as outcome of the study.

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Study of Theory of Constraints in the context of production planning and control

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Abstract: In the present work, it is proposed to apply Theory of Constraints in production planning and control division at equipment manufacturing company. Production planning helps considerably in reducing operational costs, improving customer service and utilizing the resources optimally. Thus production planning is one of the crucial tools for such manufacturing industry. The performance of any system is limited by the rate of throughput at the system's constraint; identifying the system's constraint as the weakest link of the chain and eliminating it is the main idea behind the Theory of Constraints. It actually emphases on continuous system improvement by dealing with constraints; the theory can be implemented to almost every sector and almost every size of companies. Theory of Constraints philosophy works very well in a traditional manufacturing environment, in both the manufacturing and non-manufacturing functional areas. The aim of this research work is to increase the effectiveness of the entire process from inception to delivery of the product using theory of constraint approach and to identify the system constraints in the existing production planning process.

Keywords: Theory of constraints, System constraints, production planning, throughput

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Production Planning Process Improvement Using Theory of Constraints

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Abstract: The project must have a direct impact on either customer or financial performance. It must reduce cycle time or improve on-time delivery, improve manufacturing productivity, or increase throughput. In order to tackle these issues in particular for this research work, an attempt can be made to implement the Theory of constraint methodology to arrive at suitable solutions. In the proposed methodology, production planning process improvement, increase in throughput and improvement in delivery time can be achieved by applying the five focusing steps and using the operation strategy tool, the drum-buffer-rope following by the thinking process tools of current reality tree and evaporating clouds can be used to identify and resolve problems during the implementation of TOC.

Keywords: Constraint Management, TOC, delivery time, five focusing steps

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Comparative Study between Composting and Implementation on Vermicomposting

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Abstract: Vermicomposting is the product of the composting process using various species of worms, and other earthworms, to create a heterogeneous mixture of decomposing vegetables or food waste, bedding materials, and vermicast. This process of producing vermicomposting is called vermicomposting.
Vermicast (also called worm castings, worm humus or worm manure) is the end-product of the breakdown of organic matter by an earthworm. These casting have been shown to contained reduced levels of contaminants and a higher saturation of nutrient than do organic material before vermicomposting.
Vermicomposting contains water-soluble nutrients and is an excellent nutrient, organic fertilizer and soil conditioner. It is used in farming and small scale sustainable, organic farming.
Vermicomposting can also be applied for treatment of sewage sludge. Furthermore, a variation of the process is (or vermidigestion) which is used to remove organic matter, pathogens and oxygen demand from waste water or directly from backwater or flush toilets.

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High Rise Building

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Abstract: A high-rise building of height – 183 m was employed to evaluate similarities and differences of wind load calculations done by using five major wind codes and standards. Evaluation was done in both ultimate and serviceability limit conditions. Member forces in columns, and beams, compressive stress in shear walls and support reactions obtained from finite element modelling was used to assess building responses in ultimate limit condition. Along and across wind, accelerations and drift indices were engaged to estimate serviceability limit state performances. Available 3 second gust wind speeds are converted into mean hourly and 10-minute average wind speeds to calculate wind loads on building. Wind speeds with 5 years return period was used in building acceleration calculation. The simultaneous use of higher terrain-height multiplier and importance factor may be lead to over design, even in cyclone prone areas. The use of post disaster wind speed does not exceed the drift limit but exceeds threshold acceleration value in across insert wind acceleration.
The rapid increase of the urban population in developing countries such as India, has forced the re-evaluation of the importance of high rise buildings. The impact of wind loads are to consider for the design of high rise building. There are many failures of structures have occurred in India due to wind. The wind loads on different types of structures are considered by IS 875 Part-3. The present study focuses on the effects of wind load on building with different aspect ratios i.e. H/B ratio, where H is the total height of the building frame and B is the base width of the building frame using ETABS. From this paper we get the review on the Effect of wind load on height of building by varying the no. of stories with increasing in the Aspect Ratio.

Keywords: High- rise building, Wind effects, Aspect ratio, STAAD PRO ,ETABS

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