ICASET-2021

Virtual Conference

INTERNATIONAL CONFERENCE ON

Advances in Science, Engineering and Technology

21st & 22nd May 2021

Andhra Pradesh

Organized by

K.S.R.M. College of Engineering

(Autonomous)

in Association with

Institute For Engineering Research and Publication (IFERP)

International Conference on Advances in Science, Engineering and Technology

ICASET-2021

Virtual Conference

Andhra Pradesh, India

21st -22nd May, 2021

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KSRM College Of Engineering, Andhra Pradesh

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Editorial

We cordially invite you to attend the **International Conference on Advances in Science, Engineering and Technology (ICASET-2021) - Virtual Conference** which will be held on **21st-22nd May, 2021.** The main objective of **ICASET-2021** 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 Science, Engineering and Technology. 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 their view process, and to the authors for contributing their research result to the conference.

Since March 2021, the Organizing Committees have received more than 160 manuscript papers, and the papers cover all the aspects in Electronics, Computer Science, Information Technology, Science Engineering and Technology. Finally, after review, about 93 papers were included to the proceedings of **ICASET-2021**.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **ICASET-2021**. 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 Advances in Science, Engineering and Technology** this year in month of May. The main objective of ICASET-2021 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 sessions 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 become known as a thought leader.

I express my hearty gratitude to all my Colleagues, staffs, Professors, reviewers and members of organizing committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

Er. R. B. Satpathy
CEO (Chief Executive Officer)
Institute for Engineering Research and Publication (IFERP)

Message from Chairman

Sri K. Raja Mohan Reddy

Chairman, KSRMCE
Andhra Pradesh, India

Message

On behalf of the International Conference on "Advances in Sciences, Engineering & Technology (ICASET-2021)" on 21st and 22nd, May, 2021. I welcome all the intending participants and speakers from universities, engineering colleges and industry around the globe to share ideas and new perspectives on a wide range of engineering and computing research and technologies. I would like to extend my most sincere congratulations to the authors and speakers for their contributions. It is their efforts and vision which provided the impetus to put together this outstanding technical program. I hope that the conference will be stimulating, informative and worthy to all participants.

Best wishes

Sri K. Raja Mohan Reddy

Message from Correspondent

Smt. K. Rajeswari

Correspondent, Secretary and Treasurer, KSRMCE
Andhra Pradesh, India

Message

This is exciting to know that Centre for Research and Innovation (CRI), KSRM College of Engineering is organizing "2-day International Conference on Advances in Sciences, Engineering & Technology(ICASET-2021)" on 21st and 22nd, May, 2021. Providing platform to scholars in contributing towards new knowledge in Sciences, Engineering & Technology is going to play a major role in creation and sharing of knowledge in relevant fields. Throughout this conference, I would ask everyone to stay engaged, proactive and contribute towards shaping the future of our generations. My personal respect and thanks goes out to all of you. I wish you all a very fruitful and rewarding conference.

Wish best wishes

Smt. K. Rajeswari

Message from Vice Chairman

Sri. K. Madan Mohan Reddy

Vice Chairman, KSRMCE
Andhra Pradesh, India

Message

Warm and Happy greeting to all. I am immensely happy that Centre for Research and Innovation (CRI), KSRM College of Engineering is conducting "2-day International Conference on Advances in Sciences, Engineering & Technology(ICASET-2021)" on 21st and 22nd, May, 2021.

Globalization, privatization and digitalization today have dramatically reshaped the education system in India and have created tremendous opportunities for internationalization, especially transnational or cross-border education. There are various pillars of the Education System in a nation. We have invited eminent dignitaries from different sectors to get a better understanding of these pillars of the Education System and the several strategies involved.

The conferences help for strategic planning and the mechanics of bringing internationalization of the education system into action.

I congratulate the Co-coordinators, HODs, staff members, Participants from our colleges and other colleges for their efforts in organizing and participating in this conference and wish the conference all the success.

With best wishes

Sri. K. Madan Mohan Reddy

Message from Secretary

Sri K. Chandra Obul Reddy

Management Member, KSRMCE
Andhra Pradesh, India

Message

I hope everyone is safe and happy. On behalf of KSRMCE, I extend a very warm welcome to all the delegates and participants for the "2-day International Conference on Advances in Sciences, Engineering & Technology (ICASET-2021)" on 21st and 22nd, May, 2021. KSRMCE has borne the mantle of excellence, committed to ensure the students their own space to learn, grow and broaden their horizon of knowledge by indulging into diverse spheres of learning. In our endeavor to raise the standards of discourse, we continue to remain aware in order to meet with the changing needs of our stakeholders.

The Conference aims to bring different ideologies under one roof and provide opportunities to exchange ideas face to face, to establish research relations and to find global partners for future collaboration. The themes and sub-themes for this conference are indicative of relevant research areas to give the prospective authors innovative prepositions about the ambit of discussion.

I wish all the participants to utilize this opportunity and make this conference a grand success.

With best wishes

Sri K. Chandra Obul Reddy

Message from Director

Prof. A. Mohan

Director, Kandula Group of Institutions
Andhra Pradesh, India

Message

It gives me great pleasure to send you a very sincere message of support and good wishes at Centre for Research and Innovation (CRI), KSRM College of Engineering is holding "2-day International Conference on Advances in Sciences, Engineering & Technology(ICASET-2021)" on 21st and 22nd, May, 2021. I am highly indebted to the better team work between the staff of KSRMCE and collaborating with IFERP for this successful mega event and hope that the conference participants will deliberate on important issues faced by our country. More networking and collaboration will come forward as result of this interaction of academia, researchers, entrepreneurs and other major stakeholder involved in higher education and research. The ICASET-21 is a platform, where researchers and practitioners openly exchange ideas and report progress in the exciting area of communications and networking. We greatly value the participations and look forward to the insightful vision and thoughts of the invited speakers.

I look forward for your convenient stay with us and hope that you will actively participate in upcoming events.

Best wishes

Prof. A. Mohan

Message from Chairman

Prof. V.S.S. Murthy

Principal, KSRMCE
Andhra Pradesh, India

Message

It is undeniably a great pleasure for me to know that Centre for Research and Innovation (CRI), KSRM College of Engineering is holding "2-day International Conference on Advances in Sciences, Engineering & Technology(ICASET-2021)" on 21st and 22nd, May, 2021. I extend my warmest wishes to all organizing members and participants. In many ways, this is not only a favorable event to reflect and think on contemporary challenges and future prospects in the fields of Sciences, Engineering and Technology, but also an appropriate time to consider how this Conference can contribute to the advancement of this fast developing global community. I would be most grateful if this Conference could further promote society through development of emerging technologies. The Conference theme will provide an ideal opportunity to reflect upon the many contributions that multi-disciplinary coalition-building, understanding and intercultural gathering can provide in identifying effective solutions to global crises and challenges of science and technology and also relate it to our indigenous scenario. With the warmest wishes for your success!

Best wishes

Prof. V.S.S. Murthy

Message from Convener

Dr. M. Venkatanarayana

Dean, CRI & Professor, ECE, KSRMCE
Andhra Pradesh, India

Message

The Centre for Research and Innovation (CRI), KSRM College of Engineering is conducting "2-day International Conference on Advances in Sciences, Engineering & Technology (ICASET-2021)" on 21st and 22nd, May, 2021. My message is about lifelong "learning and development". Staying in touch with fresh and emerging evolutionary developments of Engineering and Technology is essential.

Today's challenge is to create new technological solutions to address the real problems. I thank the higher authorities for supporting me to conduct this event. My best wishes to all participants and speakers to make this conference a great success.

Best wishes

Dr. M. Venkatanarayana

Keynote Speaker

Prof.Dr. Ernesto Damiani

Professor, Università degli Studi di Milano, Italy

Dr. Ernesto Damiani is the Senior Director of Robotics and Intelligent Systems Institute at Khalifa University, Abu Dhabi, UAE. He is also Director of the Khalifa University Center for Cyber Physical Systems (C2PS). Dr. Damiani is the Chair of the Information Security Program and a Research Professor in EBTIC. He leads the SESAR research lab at the Department of Computer Science, Università degli Studi di Milano, Italy. He is also the President of the Italian Consortium of Computer Science Universities (CINI). Ernesto's research interests include secure service-oriented architectures, privacy-preserving Big Data analytics and Cyber-Physical Systems security.

Keynote Speaker

Prof.Moshe Vardi

Professor, Rice University, Texas, United States

Moshe Y. Vardi is a University Professor and the George Distinguished Service Professor in Computational Engineering at Rice University. He is the recipient of three IBM Outstanding Innovation Awards, the ACM SIGACT Goedel Prize, the ACM Kanellakis Award, the ACM SIGMOD Codd Award, the Blaise Pascal Medal, the IEEE Computer Society Goode Award, the EATCS Distinguished Achievements Award, the Southeastern Universities Research Association's Distinguished Scientist Award, and the ACM SIGLOG Church Award. He is the author and co-author of over 650 papers, as well as two books: Reasoning about Knowledge and Finite Model Theory and Its Applications. He is a Fellow of the American Association for the Advancement of Science, the American Mathematical Society the Association for Computing Machinery, the American Association for Artificial Intelligence, the European Association for Theoretical Computer Science, the Institute for Electrical and Electronic Engineers, and the Society for Industrial and Applied Mathematics. He is a member of the US National Academy of Engineering and National Academy of Science, the American Academy of Arts and Science, the European Academy of Science, and Academia Europaea. He holds seven honorary doctorates. He is currently a Senior Editor of of the Communications of the ACM, after having served for a decade as Editor-in-Chief.

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ABSTRACTS

Organized by
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Production of Xylanase from Agro Residues

Lucky Dubey, Department of Biochemical Engineering, School of Chemical Technology, Harcourt Butler Technical University Kanpur, UP, India

Lalit Kumar Singh, Department of Biochemical Engineering, School of Chemical Technology, Harcourt Butler Technical University Kanpur, UP, India

Abstract

Xylanase enzyme is most important and beneficial industrial enzyme that degrades the polysaccharide xylan molecule into xylose. Xylanase are produced by different microorganism like bacteria, yeast, fungi. In this study we produce Xylanase enzyme from two fungal strain *Aspergillus terricola*, *Aspergillus ochraceus* using agro waste like corncob in submerged fermentation in homogenous environment. Raw material corncob contain good amount of (per kg) 342g cellulose, 423g hemicelluloses and 28g of xylose for the production of Xylanase. These are the minimum source of pollution, with high yield of product formation. Auto hydrolysis is a division process performs at 200^{o}C for 30-50mins, it modify the hemicelluloses and decompose into soluble product including xylose. The production of Xylanase by *Aspergillus terricola* was 15% higher with the fusion of 0.75% (w/v) corncobs and 5% of corncobs liquor then Birchwood after 120-144hr of cultivation. For *Aspergillus ochraceus*, 36% of Xylanase was produced. In differentiation to Birchwood xylan, excessive yield were inspect using 1% untreated corncob as substrates. Xylanase have a various applications in beverage industry, food, paper and pharmaceutical industries so basically it is an industrial enzyme. In the whole study production of Xylanase from agro waste corncobs by auto hydrolysis process was construct to be important and favorable for many industries.

Keywords

xylan, auto hydrolysis, microbes, Xylanase, agro residues

Analysis of Cable Stayed Bridge under Veicular Load Using ANSYS

Ashika Jose, APJ Abdul Kalam University
Dalmiya Rajan, APJ Abdul Kalam University

Abstract

Cable stayed bridge are contrast to modern suspension bridges. The key *advantages* of the *cable-stayed* are; they have greater stiffness than the *suspension bridge*, so that deformations of the bridge deck under live loads are reduced. In this paper cable stayed bridge is analyzed under moving vehicular load. ANSYS software is used for the analysis. Load values are applied on the bridge as per IRC: 6-2010code. Class AA Tracked vehicle is applied as live load. The bridge is loaded with a tracked vehicle and at a particular velocity, the time required to cover entire span of bridge is taken for analysis. After considering number of steps, length of bridge and time taken to cover the entire span and speed of vehicle, deformation value is calculated by ANSYS software. The result obtained as the deformation value of the designed bridge.

Keywords

Cable stayed bridge, tracked vehicular load, moving load.

Thermal Analysis of Prefabricated Building using PCM (Phase Change Materials)

Anaya John, APJ Abdul Kalam Technological University (KTU)
Rakhi Elizabeth Thankachan, APJ Abdul Kalam Technological University (KTU)

Abstract

A prefabricated building informally a prefab, is a building that is manufactured and constructed using prefabrication process. Utilizing phase change materials (PCM) for thermal energy storage strategies in prefab buildings can meet the potential thermal comfort requirements. The building envelope can highly influence the energy consumption. Innovative technologies such as phase change materials can be utilized on the wall to save energy and improve thermal comfort. In this paper the thermal performance of phase change materials on prefab building is analyzed and a parametric study was conducted to reduce the indoor temperature of prefab building. A comparison is made in the thermal performance of prefab building with PCM and without PCM. Design builder software which simplifies the energy plus thermal simulation is utilized for the entire analysis.

Keywords

PCM, prefab buildings, Design builder

Study on Behaviour of CFST Column Wrapped With SFRP Sheets

Meera Mary Thomas, APJ Abdul Kalam Technological University (KTU)
Rakhi Elizabeth Thankachan, APJ Abdul Kalam Technological University (KTU)

Abstract

Concrete filled tubular columns (CFST) are composite structural members in which concrete is encompassed by steel. They offer high structural performance and hence, are used in construction of bridge piers, multi storeyed buildings etc. However, they are prone to deteriorations due to corrosion of steel, fire, ageing etc which makes their strengthening necessary. Wrapping of columns with steel fibre polymer (SFRP) sheets, made of high strength steel can be adopted. In this paper, an FEM based buckling analysis of CFST columns wrapped with SFRP strips are carried out to assess load carrying capacity, stress strain behaviour etc. Here, the outer surface of column is wrapped with SFRP strips spaced at equal intervals i.e partial wrapping is chosen. The modeling and analysis is done in Ansys Workbench. The results are compared and validated with those available in literature. A detailed parametric analysis is carried out by varying number of SFRP strips, spacing between strips and width of the strips.

Keywords

SFRP sheets, CFST column, FEM

Evaluation of Strength Characteristics of Structural Lightweight Concrete Reinforced with Micro Steel Fibers

Mithra M, Sri Krishna College of Technology
Dr .I. Padmanaban, Sri Krishna College of Technology

Abstract

Structural lightweight aggregate concrete is an alternative building material to conventional concrete, because of relatively higher compressive strength at significantly lower density. An experimental study was carried out to study the behavior of light weight aggregate concrete reinforced with micro steel fibers. The natural coarse aggregate was replaced by light expanded clay aggregates and steel fiber were added to the concrete in 0.5%, 0.75% and 1.0% by weight of concrete. The standard specimens were cast and the mechanical properties of lightweight concrete like compressive strength, split tensile strength and flexural strength were evaluated after 28 days of curing. On experimentation, it was observed that as the proportion of micro steel fibers increased, the workability was reduced but the mechanical properties of lightweight concrete were enhanced. On addition of 1.0% micro steel fiber, the mechanical properties of the concrete were enhanced. The Optimum mix of 1.0% micro steel fiber is used for testing flexure in RC beam using abaqus software.

Study on Acoustic and Volumetric Properties of Binary Liquid Mixtures of Sulfolane with N-Pentylamine, 2-Aminopentane and 3-Amino Pentane at 303.15K. - An Insight from Physicochemical Parameters

Dr.P.Muralikrishna, Department of Chemistry, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Dr.S.Shylaja, Department of Biotechnology, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Dr.M.Rama Devi, Department of Chemistry, Chaitanya Bharathi Institute of Technology, Hyderabad, India

M.Amarnath, Department of Mathematics, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract

An experimental determination of physical parameters of speed of sound propagation and density parameter for the binary mixtures of various combination of organic solvents (sulfolane + n-pentylamine), (sulfolane + 2-aminopentane), (sulfolane + 3-aminopentane) has been attempted at the temperature of 303.15 K. The thermodynamic properties of various liquids and their possible mixtures which are required for the purpose of design, storage of energy and other equipment processing have been measured. There has been a significant deviation exhibited by the various thermodynamic properties of binary mixtures which contains components that are of ability of being subjected to specific interactions. The deviations from established ideality have been in terms of fluctuations of molecular size and changes in structural shape. The data obtained in the experiment have been fitted to a polynomial equation of Redlich-Kister for estimating the coefficients along with standard deviations observed in measurements

Study of Different ECC Beam Column Joints

Parvathi Rajeev, Department of Civil Engineering, St. Josephs College of Engineering and Technology, Palai

Dalmiya Rajan, Department of Civil Engineering, St. Josephs College of Engineering and Technology, Palai

Abstract

Engineered Cementitious Composite (ECC) is distinguished from conventional fiber reinforced concrete by its ductile tensile strain-hardening behaviour and crack width control ability. This paper investigates the effects of different types of engineering cementitious composite (ECC) on the behaviour of RC exterior beam–column joint to enhance the performance of beam–column connections under reversed cyclic loading. The different types of fibers used are steel fibre, poly vinyl alcohol, polypropylene, and also tested on a normal concrete (NC) beam-column joint. The main parameters considered include the load–deflection relationship, crack propagation, moment–rotation relationship at the joint and modelled using Ansys software. The performances of the above retrofitted beams are then compared with the reinforced beam and the results were presented in this paper.

Keywords

Engineering Cementitious Composite, Beam Column Connections, Crack Pattern

Thermal Analysis of Cold-Formed Steel Column

Theertha P S, Civil Engineering, Joseph's College of Engineering And Technology, Palai
Asha Alice Kulavattom, Civil Engineering, Joseph's College of Engineering And Technology, Palai

Abstract

Cold-formed steel products have found extensive applications in the modern constructions. They are thin-walled steel sections which are formed by cold-working process at ambient temperature. They have also found applications in mechanical, structural and aeronautical engineering fields. Cold-formed steel sections have low buckling resistance due to its small thickness, since they are made up of thin steel sheet sections. Low buckling resistance of these thin sections results in relatively low strength and ductility in cold-formed steel. When the cold-formed members are exposed to elevated temperature during fire, their performance can deteriorate considerably. Load bearing capacity of the cold-formed steel compression members can also reduce when they are exposed to elevated temperature. In this paper, a study on the buckling of cold-formed steel column subjected to uniformly varying temperature is conducted using ABAQUS software. A study on the effect of providing stiffeners in the cold-formed steel column under elevated temperature to reduce buckling is also conducted.

Keywords

cold-formed steel, low buckling resistance, elevated temperature, stiffeners

Production of Bioethanol from Sugarcane Bagasse Using Saccha-Romyces Cerevisiae

Gauri Dixit, Department of Biochemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pradesh, India

Brajesh Singh, Department of Biochemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pradesh, India

Dilip kumar, Department of Biochemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pradesh, India

Abstract

Bioethanol from renewable resources has been interest in recent decades as an alternative fuel to the current fossil fuels. Bioethanol can be produced from cellulosic biomass through hydrolysis and fermentation based processes. Sugarcane bagasse is most generous agricultural wastes in the world and used as a feedstock for the large scale biological production of bioethanol. Sugarcane bagasse constitutes a lignocellulosic substrate for production of bioethanol, since it has high sugar content and is a renewable, cheap and easily available feedstock. Dilute alkali hydrolysis pretreatment of sugarcane bagasse was performed to obtain sugarcane bagasse cellulosic hydrolysate. Pretreatment releases cellulose and hemicellulose fractions and converted in to glucose and other monomeric sugars. This can be achieved by chemically or enzymatically.

Saccharomyces cerevisiae is the most employed yeast for the production of bioethanol was evaluated biochemically on six carbon sugars, molasses and sugarcane bagasse. Pure samples of sugars such as Glucose, Sucrose and sugarcane derived molasses were tested for fermentation efficiency with yeast saccharomyces cerevisiae further involving bioethanol production. The result of this study can be a better application in the large production of biofuel from sugarcane bagasse which is renewable and abundant, helps alleviate environmental problems.

Keywords

Saccharomyces cerevisiae, molasses, hemicellulosic hydrolysate, sugarcane bagasse

A Study on Pre-Timed and Vehicle Actuated Signal Control

Sadguna Nuli, Vardhaman College of Engineering, Shamshabad
Rishitha Buggaveeti, Vardhaman College of Engineering, Shamshabad

Abstract

Travel needs are rapidly increasing worldwide. However, the road infrastructure is unable to expand at the same pace, leading to a demand-supply mismatchparticularly in urban areas. This increases the gravity of congestion day by day. Intersections are the major cause for delay in any road network. Most of the intersections are provided with traffic signals. The main aim of the traffic signal is to ensure that the traffic moves smoothly through the intersection. Traffic signals, when properly designed and operated ensures many benefits like provides an orderly movement of traffic, increase the traffic-handling capacity of the intersection, reduce the frequency of right- angle type and pedestrian accidents, interrupt heavy traffic at intervals to permit other vehicular or pedestrian traffic to cross the major road.
Traffic congestion has significant social, economic and environmental costs associated with it. In particular, signalized intersectionsefficiency can beevaluated by measuring certain parameters like volume-to-capacity ratio (v/c ratio),delay, discharge and queue length.Most of the signalized intersection controllers across the world, especially in developing countries, are pre-timed. Pre- timed controllers are easy to implement and are inexpensive. But they are inefficient when the fluctuation in traffic is high, this can be addressed by designing vehicle actuated (VA) traffic signal controllers. Therefore, the objective of this paper is to evaluate operational performance of a chosen signalized intersection and design a suitable vehicle actuated signal control plan.

Production of Bio-Ethanol from Banana Peel by Simultaneous Saccharification and Fermentation Process Using Co-Cultures Saccharomyces Cerevisiae and Aspergillus Niger: A Review

Akshita Rai, Department of Bio chemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pardesh, India

Brajesh Singh, Department of Bio chemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pardesh, India

Dilip Kumar, Department of Bio chemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pardesh, India

Abstract

Bioethanol is a liquid biofuel which is produced from several different biomass feedstocks. It is an attractive alternative fuel because it is a renewable bio-based resource and it is oxygenated therefore particulate emission is reduced. *Saccharomyces cerevisiae* is the ideal microorganism for bioethanol production as it has rapid fermentative potential , improved flocculating ability , appropriate osmotolerance , enhanced ethanol tolerance and good thermo tolerance. *S.cerevisiae* and *Aspergillus niger* are used as co-cultures in the production of bioethanol in order to make it a single step system. Banana peels are used as substrate for the production of bioethanol as these are cost effective , easily available and increased bioethanol yield. This review summarizes the production of bioethanol from banana peels using *S.cerevisiae*. Fermentation was done using banana peels as substrate and the ethanol content was measured every 24 hours. With optimized pH and temperature , fermentation was carried out at different yeast concentrations. With the change in the concentration of yeast , the fermentation time decreased dramatically. The maximum ethanol production was recorded at different concentrations of yeast respectively.

Keywords

Bio-ethanol , Banana peels , Saccharification , Fermentation , *Saccharomyces cerevisiae* , *Aspergillus niger*

Commutation Torque Ripple suppression strategy for NIBFE fed BLDC Motor

Reenamol Robert, PG Scholar, Electrical and Electronics Engineering, Mar Baselios College of Engineering and Technology, Kerala, India

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Abstract

This paper is based on commutation torque ripple suppression strategy for NIBFE fed BLDC Motor. BLDC motors driven by Hall sensor are used in many applications due to high efficiency, high power density, high starting torque. The commutation torque ripple is produced in commutation period due to phase current which is not undergoing commutation. The commutation torque ripple cause vibration and noise, would limit high performance operation of BLDC motor. By maintaining noncommutation phase current constant in commutation period torque ripple can be minimized. BLDCM normally operates in two phase conduction mode and here two phase conduction region is considered as non commutation period three phase conduction region is considered as commutation Period. In this work non inductive boost front end formed using Diode, MOSFET and capacitor is used. The output of NIBFE is given to BLDC motor using an Inverter. A Closed loop feedback controller circuit is used to generate PWM gate pulse by using proper switching sequence of switching vectors in commutation and noncommutation period can reduce the commutation torque ripple. The components are simulated in MATLAB 2019b software and the simulation results are presented.

Online Signature Recognition Using Multilayer Perceptron Model

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Abstract

Biometrics plays an important role in human's daily life. It is used for unique identification of every person. There are two types of biometrics i.e. behavioral and physiological. One of the important types of behavioral biometrics is signature. Signature is used to identify or verify each individual uniquely. There are two types of signature recognition i.e. online and offline. This paper mainly focused on online signature recognition using Multilayer Perceptron Model. The proposed model contains phases preprocessing, segmentation, feature extraction, classification. In feature extraction invariant moments features calculated, for classification multilayer perceptron model used. In results, percentage of each user's original image average and mirror image average is calculated. The highest percentage for original image average is 93% and for mirror image average is 92%

Thermal Buckling of Functionally Graded Cylindrical Vaults

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Abstract

Functionally graded materials are advanced type of composite materials whose material properties vary gradually and continuously from one material phase to another along a specific direction. The continuous change in material properties eliminates stress singularity at interface between different layers and improves the bonding strength. This paper deals with the buckling behaviour of functionally graded cylindrical vaults under thermal loading. In the present model, the material properties vary smoothly from metal to ceramic phase. The material properties are assumed to be both temperature and position dependent and vary along thickness direction according to power law in terms of volume fraction. The boundary conditions considered for the analysis are simply supported (SSSS), clamped (CCCC) and curved edges clamped- straight edges free (CCFF). The model is developed in ANSYS Mechanical APDL software. Eight node shell 281 element is used. To verify the accuracy of the model, the results are compared with those available in literature. The effect of various parameters such as power-law index, thickness ratio, aspect ratio and curvature ratio on buckling strength is studied.

Keywords

Functionally graded, post buckling, power law

To Identify Neuroprotective Potential of Anti-Diabetic Drugs for Alzheimer's Disease (Type III Diabetes)

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Abstract

In the scenario of increasing burden of progressive challenging diseases such as Alzheimer's Disease (AD), drug discovery is gaining attention. AD and Diabetes share several molecular mechanisms suggesting a possible link between the pathologies of the two diseases. This is the reason why AD is sometime regarded as Type III diabetes. Given gene expression dataset for Alzheimer's Disease (AD), we aim to obtain suitable drug candidates with anti-diabetic properties based on transcriptomics data. To achieve the goal, we will extract data related to AD from Gene Expression Omnibus. We integrate information from various sources such as Protein-protein interaction network (PPI) with the available drug repositories for Diabetes. The toxicity and pharmacokinetic studies will help us to identify the best anti-diabetic drug for AD treatment. To identify differentially expressed genes for Alzheimer's disease based on transcriptomics studies. To construct gene interaction network for Alzheimer's disease and Diabetes. To repurpose and validate anti-diabetic drugs for Alzheimer's disease. Determination of toxicity and pharmacokinetic properties of the identified repurposed drugs. Differentially expressed genes for Alzheimer's Disease will be identified that can be linked to Diabetes genes by PPI construction. Identification of common genes and signaling pathways involved in crosstalk between AD and Diabetes. Validation of identified drugs by virtual screening, molecular docking and network-based approaches. ADMET analysis and BBB permeability prediction of the identified drugs will validate the efficacy of the drugs with neuroprotective properties. Repurposing of approved drugs intended to treat Alzheimer's Disease would help speed up the drug design process. The study will establish a therapeutic link between Alzheimer's disease and Diabetes. The study would help to elucidate neuroprotective properties of anti-diabetic drugs. The study would open up new possibilities for pharmaceutical groups and research workers engaged in drug development process.

ChatApp: Instant messaging Application with End to End Encryption

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Abstract

ChatApp is based on instant messaging (IM) technology which is a type of online chat. This technology offers real-time text transmission with the help of the Internet. By 2010, instant messaging over the WebApplication was in peak, in favor of messaging features on social networks. With ever increasing users of the Internet and rise of digitalization. With the rise in demand of confidentiality over the Internet there is a new need for efficient end to end encryption to secure data from any attacker, or a curious administrator or the strict government. Moreover, instances of burst traffics are now more common and pre-deciding the maximum resource requirement is no more effective, thus there is a requirement of dynamic load balancing and resource allocation. Web applications always rely on servers to store its confidential information and to process it. Nevertheless, when anyone who gets access to the servers (e.g., any smart attacker, a curious administrator, or a strict government) there they can get all the stored data. This paper introduces ChatApp, a chat messaging platform that protects data confidentiality ChatApp stores server-encrypted sensitive data and decrypts the data only in browsers for users. While making this method work ChatApp faces three challenges. First, after encryption with a key, ChatApp server stores all data on the device and uses the same key before sending it to the client. Second, in the presence of an active adversary, ChatApp shares public keys securely with the users. Finally, even if the server is malicious ChatApp ensures that client-side application code is authentic. To handle bursty traffic ChatApp uses the concept of microservices and has a special server to monitor the health and traffic of different microservices and available hardware resources. Thus, creating or shutting down the instances of various microservices depending upon the pre-decided short circuiting hook. This project's main aim is to study, and design a pilot project as a proof of stated concepts. The main aim is to design an instant messaging application solving the problem as stated in the above paragraphs. This project studies various concepts of web application and in end design an instant messaging application with end to end encryption and self-healing servers.

Fast Intra Frame Partition-Prediction Algorithm Using DTCWT for HEVC Encoding and Decoding

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Abstract

High efficiency video coding (HEVC) is significantly increasing the coding efficiency of its ancestor H.264/Advance Video Coding. Evaluation of partition-prediction algorithm proposed in this work is carried out by comparing the MSE and PSNR results with two other methods. The direct partition-prediction method and DWT based partition-prediction method results are compared with the proposed results. Four different data sets are considered for evaluation and the prediction is obtained for all 33 modes. Dual tree complex wavelet (DTCWT) based partition-prediction algorithm output is able to reconstruct all features as compared with DWT based algorithm. Thus the proposed partition-prediction algorithm is able to retrieve all the required features during decomposition and increases limited redundancies in the DTCWT coefficients, thus enhancing the coding efficiency in HEVC.

Keywords

Dual tree complex wavelet, intra frame prediction, coding efficiency, HEVC, Kingsbury filters

Affine Transform Assisted Firefly Algorithm in Image Registry to MRI and CT Brain Images

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Abstract

Medical multimodality images create an essential need of Image registration. In this work, we focused on one of the components of the methods of which is the measure of similarity used to match the images. We are particularly interested in the iconic approach, which takes into account only the information carried by the intensities of the pixels of the images to be recalibrated. This approach has the advantage of being fully automatic, since no prior segmentation is necessary. The main contribution of this research work is to propose new measures of similarity based on cumulants and the development of edge worth and for some of them they approximate the Mutual Information, which is a measure of similarity of reference in registration. Tests on these new measures show their effectiveness for registration medical images. In addition, the generosity of the proposed approach allows the use of these measures in various situations. Further we proposed and analysed a novel multimodal image registration method for medical imaging using firefly algorithm (FF). We optimized the registration parameters of affine transform with firefly algorithm to register computed tomography (CT) brain image over magnetic resonance image (MRI) to maximize mutual information. We tested our method over images of different sizes and modality.

Keywords

Affine Transform, CT, FF and MRI

An Experimental Investigation on Reactive Powder Concrete with Glass, Polypropylene and Steel fibers as Repair Material

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Abstract

Repairing of solid reinforced concrete structures is right now a significant challenge in the construction industry and is being returned into activity with a slight loss in load carrying capacity. Damage occurs because of numerous factors that reduce the strength of solid concrete structures and their durability. The aim of this paper is to study the compatibility between three types of reactive powder concrete with glass, polypropylene and steel fibers as repair materials and ordinary strength concrete as substrate concrete. Individual properties for substrate concrete were considered which are slump test, compressive strength and split tensile strength likewise, for repair material compressive strength is determine by utilizing standard ASTM techniques. The aim of this research is to examine bond strength and assess compatibility between RPC with various fibers as a repair material with ordinary strength concrete as a substrate layer and locate the best between them. Bond strength of composite cylinder for substrate concrete with various repair materials were assessed by utilizing slant shear test. From the experimental outcomes concluded, bond strength between reactive powder concrete with glass fiber as a repair material and ordinary strength concrete as a substrate layer is higher (14.26Mpa) compared to RPC with polypropylene fiber (13.43Mpa) and steel fiber (12.14Mpa). These outcomes due to RPC with glass fiber have great workability with reasonable flowability and glass fiber have higher tensile strength compared with polypropylene and steel fibers.

Keywords

Bond strength, Compatibility, Glass fibers, Polypropylene fibers, RPC, Slant shear test, Steel fibers

An Ensemble based Hybrid Feature Selection Method for Speech Emotion Recognition

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Abstract

The association between features created by the same audio source, which can yield redundant features and raise computing costs, has recently been rarely taken into account. To address this problem, we proposed a methodology for identification of speech emotions using an ensemble based hybrid feature selection. Based on the amount of acoustic parameters used and the static deviation from those parameters, the number of properties derived from acoustic analysis approaches very high values. Emotion detection is not always reliable, and differing emotions can also affect various vocal features. Therefore, to improve the performance of emotion recognition and to minimize the work load for computing devices, the feature selection plays key role in this field of human computer interaction. Established feature selection approaches do not guarantee the effectiveness of identification of emotions, some of which increase the overall workload. This paper proposes an ensemble based feature selection methods based on hybrid mode, and at the classification stage using ensemble classifier along with machine learning model trained the set of features. A smaller feature selection computer training paradigm reduces the memory and computing power of an emotional recognition device that can result in the use of medical tracking technology reducing obstacles. The experimental analysis is done for RAVDESS speech emotional dataset. The proposed method findings show that the number of attribute elements and the success of classification were significantly reduced.

Keywords

Feature engineering, Feature extraction, Hybrid features, ensemble classifier, Machine learning

Analysis of Microgrid System with Photovoltaic Array

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Abstract

As the modern power system is advancing, new challenges are coming in to picture. The microgrid concept along with renewable energy PV systems is emerging as a key factor for the long-term viable solution for future energy sector requirements. Microgrid can have distributed energy resources like PV panels, wind turbines,Geothermal Tidal energy & power generators that produce power.Controlling and protection are the main problems that need to be handled in microgrid operation. Microgrids need to provide multiple end user needs simultaneously. For example, electricity generation, heating and cooling. This paper deals with the analysis of a Microgrid system connected with a PhotoVoltaic array.

Applications of Group Theory in Molecular Systems Biology

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Abstract

Group theory has applications in material science, science, and software engineering, and even riddles like Rubik's Cube can be solved utilizing group theory. The group theory is playing a significant role in the current day of science, arithmetic and statistics. It was determined in the nineteenth century in relationship with conveying answers for arithmetical articulations. Specifically, the group was the arrangement of the relative multitude of changes of the underlying foundations of a mathematical articulation that shows the attributes that the blend of any two of these stages has a place with the set. Also, later on, the conviction was made summed up to the thought of an abstract grouping. Notwithstanding, an abstract group is the study of a set, with an activity characterized on it.

In this paper we discuss some selected mathematical points that can assist us with bettering comprehend the limit among living and non-living frameworks. In the topic molecular systems biology we discuss the abstract algebra and group theory. All through the present work we quickly portray conceivable issues. Regarding the hereditary code we recommend that it could be conceivable to utilize **perturbation** hypothesis to investigate the neighboring potential outcomes in 64-D space time complex of genome which is advancing. Concerning logarithmic chart hypothesis, there are a few minor open issues we examine. Comparable to arrange elements and groupoid formalism we recommend that the organization chart probably won't be the principle center in gaining the knowledge on aggregate yet the stage-space of the organization elements. In this paper we explain a basic instance on network of C6 and its stage-space organization. Let’s imagine that sub-atomic organization ofs cell is really an unpredictable organization of hyper cycles and input circuits that could be better spoken to in a higher-dimensional space. We guess that focusing on hubs in the atomic organization that have key parts in the stage space, as uncovered by investigation of the automorphism deterioration, may be a superior method to medicate revelation and therapy of disease

Keywords

group theory, molecular systems biology, groupoid formalism, C6 network, automorphism deterioration

A Sense Amplifier Based Modified Low Voltage Two Stage Flip-Flop with CNTFETs

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Abstract

The transformation from the development of enabling technology to the production of consumer-centric semiconductor products has empowered the designers to think about characteristics like robustness, compactness, efficiency, and scalability of the merchandise as implicit precursors. The Carbon Nanotube Field Effect Transistor (CNTFET) is the present-day technology of the day. The paper proposes a sense amplifier based two stage flip flop working in the sub-threshold region. The first stage produces full swing conditional inputs for the latch stage. The proposed circuit has been designed using 16 CNTFETs. The design has a significantly low clock load which reduces the overall power consumption. The propagation delay and power delay product have also been improved. Comparisons with other flip-flop designs manifest the robustness of the proposed circuit. All the simulations are carried out using HSPICE software.

Keywords

Carbon Nanotube Field Effect Transistors, CNFET, Sense amplifier, Latch, flip-flop

Analysis of Truss Bridge and Cost Optimization by using Hollow Sections

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Abstract

Truss bridges are the structures whose load bearing superstructures are made up of truss. A structure of connected elements usually forming triangular units. Truss usually transfer Its Load to single member to other members because of its rigid nature. Composite steel and concrete trusses are widely used in bridge structure. In this paper truss bridge is analyzed under moving and vehicular loading. ANSYS software is used for the analysis. Load values are applied on the truss bridge as per IRC: 6-2010 code. After considering the length of bridge and speed of vehicle and time taken to cover the entire span, ANSYS software calculating the deformation value of the bridge.

Keywords

Truss bridge, Vehicular load , moving load

Behaviour of Steel Beams under Localized Fire

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Abstract

Fire in buildings is developed as a result of reaction between fuel and oxygen present in the medium and it could be due to faulty cooking equipment, wiring failures, candles…etc. Fire undergoes stages like ignition, growth, flashover, full fire development, decay and extinguishment. Based on flashover conditions fires can be classified into fully developed fires and local fires. Temperature distribution of the steel structures subjected to local fires will not be uniform as compared to standard fire. Conventional fire designs do not consider this temperature gradient, which might give non-viable response of the member applied. The peak temperature at each fire event is very much important in assessing its performance.

This paper deals with the numerical study of simply supported beam under localized fire using the software ANSYS Workbench. The verification of finite element model is achieved by comparing the results with results obtained by Chao Zhang et.al (2018). Which includes specimen 1 tested under structural loads, specimen 2 under steady state localized fire. Study on the model by varying peak temperature to 500℃ & 800℃ was performed to examine the beam strength and thermal response in both cases. The beam failed at 43 minutes after loading for case 1 and at 20 minutes for case 2. From the study the failure time of beam subjected to temperature of 800℃ shows a reduction of 25.96%, whereas it was increased up to 60% for 500℃ test. This clearly shows importance of assessing peak temperature of different fire sources and designing the member according to the possible cases of its exposure temperature.

Keywords

Steel beam, localized fire, thermo-structural behaviour, peak exposure temperature

Compressive Strength of Lattice Structures Using FEA – A Review

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Abstract

For many years, lightweight structures based on honeycombs, foams, and lattice structures have been widely used in engineering applications, as a result of their superior mechanical properties, for example, specific stiffness and specific strength. Lattice structures are topologically ordered, three dimensional open- celled structures composed of one or more repeating unit cells. Currently, there are a large number of studies that have been conducted on the analysis of the static mechanical (stiffness and strength) and dispersion properties of lattice forms. Mechanical properties of lattice structures are usually expressed as a fraction of the mechanical properties of their parent material and are dependent on the relative density of the lattice structure. In this study, several literatures pertaining to the mechanical properties of lattice structure using FEA simulation have been investigated. Specifically literatures indicating the compressive strength of lattice structure are carefully analyzed. It is found that the 3D lattice fails mainly due to rupture during compressive load whereas the diamond lattice collapses suddenly. FEM simulation and experimental results indicate that the method is highly accurate and can be used as a reference for designers. The FEM predictions using 3D solid elements agreed well with the experimental data for a wide range of strut aspect ratios.

Keywords

Compressive strength, lattice structure, FEA

Comparative Analysis of CNTFET based SRAM Cells

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Abstract

Due to the distinctive ability of retaining the data, SRAM is the most prominent memory element used in many electronic devices. The fundamental limits faced by the CMOS technology below 10nm, restricts its relevancy in terms of power consumption, size and speed. Therefore considerable concentration is focused on an alternate technology i.e CNTFET especially for low power designs. This paper mainly focuses on the comparative analysis of different CNTFET based SRAM cells like 6T, 7T, 8T, 9T and 10T. The comparison is done with respect to Power consumption, delay and Noise Margin.

Keywords

SRAM, CMOS technology, CNTFET, Noise Margin

A Generalized Study on FRP Cable Based Progressive Collapse Mitigation Technique for R.C Beam

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Abstract

The term progressive collapse is defined as the collapse of all or a large part of a structure precipitated by damage or failure of a relatively small part of it. The analysis of some collapses occurred in the last years shows that it is necessary to give sufficient robustness (i.e. ability of a structure to withstand events or consequences of human errors without being damaged to an extent disproportionate to the original cause) to every building. In this paper, a technique is presented for mitigation and evaluation of potential progressive collapse of a reinforced concrete (RC) continuous beam following removal of interior column. The procedure used for mitigating progressive collapse consists of external unbounded Fiber reinforced plastic (FRP) cables attached to the beam at anchorage locations and deviators/ saddle point(s) only, without being post tensioned. The cables will only be in effect when excessive vertical displacements and deformations occur in the mitigated beam due to removal of the interior column support of the beam. Modelling of the proposed numerical model was done using the software SeismoStruct and a push-down analysis was used to simulate the interior column removal. Parameters such as beam cross section shape, location(s) of deviator/saddle point(s), and area of the external unbounded FRP cables are varied to arrive at an optimum mitigation for the beam considered.

Keywords

FRP Cables, Mitigation, Progressive Collapse, RC Beam, SeismoStruct

Control Charts Based on the Weighted Power Lindley Distribution

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Abstract

An important role for the effective design of the control chart is whether the production system does not cause the effects of out of control. Control charts are designed by assuming that the quantitative characteristic is assumed to follows a normal distribution, which is not always the case in practice. The variable of interest may follow some non-normal distribution such as an exponential distribution or a gamma distribution or any other. Thus, the use of control charts designed for a normal distribution may not be workable in this situation and may cause an increase in the proportion of non-conforming products.
In this paper, the techniques of weighted distributions have been used to the power Lindley distribution to the applications of statistical process control to check the efficacy of the production process.
The main objective of this paper is to introduce a control chart using weighted power Lindley distribution to study the production system and monitor the same.

Keywords

Control Charts, Weighted Distributions, Power Lindley Distribution

Automatic Detection of the Corona Virus Disease (Covid-19) by Using X-Ray Images and Deep Convolutional Neural Networks

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Abstract

The 2019 corona virus (COVID-19), which is ranked first in China, has been expanded widely throughout the world and there will be only less corono testing kits are available in medical clinics because of the developing number of cases each day. Consequently, it is important to utilize the programmed discovery framework as another speedy indicative technique to forestall Coronavirus from affecting of more people. So, keeping in this mind, we proposed a three convolutional neural based (ResNet50, InceptionV3 and Origin ResNetV2) for the prediction of an infected patient with Covid or pneumonia by utilizing the x-beam chest radiographs. ROC investigation and disarray of grid on these pretrained ccn models were given and assessed for utilizing the 5-overlay approval. We observed that the prepared model(ResNet50) gives the better result with the precision of 98% while the other two pretrined models will produce 97% accuracy for InceptionV3 and 87% occuracy for ResNetV2 precision).

Hall Effect on MHD Flow of a Visco-Elastic Fluid through Porous Medium over an Infinite Vertical Porous Plate with Heat Source

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Abstract

In this article, we've studied the unsteady movement of an incompressible viscoelastic fluid (Walter's B) in conjunction with the heat transfer near an oscillating plate that incorporates a porous channel taking the current into consideration. When the governing equations are broken into small segments and the problem has a small elasticity, a perturbation procedure is applied to each segment. Main, secondary, and transverse velocity, have been analytically and computationally studied using graphs as well as with relation to the skin-friction data, and mathematical functions.

Keywords

Hydromagnetic, Viscoelastic, Hall effect, Porous medium, Slip-flow regime, heat generation

Curvelet Transform Based Denoising Of Multispectral Remote Sensing Images

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Abstract

Multispectral image (MSI) denoising has become a popular research topic in recent years and effective denoising is an important preprocessing step in image processing. Explication and ocular analysis are essential to extricate data from remote sensing images for broad realm of supplications. This paper describes curvelet transform based denoising of multispectral remote sensing images. The implementation of curvelet transform is done by using both wrapping function and unequally spaced fast Fourier transform and they differ by the selection of spatial grid which is used to construe curvelets at every orientation or angle and scale. The coefficients of curvelets are docket by a scaling factor, angle and spatial location criterion. This paper crisps on denoising of Linear Imaging Self Scanning Sensor (LISS) III images. The proposed denoising approach has also been collated with some existing schemes like wavelet transform (WT), dual tree wavelet transform (DTWT) for assessment. The picture quality indices like Peak Signal to Noise Ratio (PSNR) and Structural Similarity (SSIM) are used to validate the efficacy of the proposed approach.

Keywords

Curvelet Transform, Fourier Transform, LISS III, Multispectral image, Remote Sensing, Wavelet Transform

Micelle mediated - Kinetic study of Oxidation of Xanthine Derivatives by Ru(III) in Acetonitrile

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Abstract

Kinetics of Oxidation of Xanthine alkaloids such as Xanthine (XAN),hypoxanthine (HXAN), caffeine (CAF), theophylline (TPL), theobromine (TBR), have been studied with (Ru(III)) using micelle forming surfactants as catalysts. The reaction is too sluggish in acetonitrile media even at elevated temperatures, but significantly accelerated in presence of micelle forming surfactants such as Tx-100,SDS, and CTAB.. Reaction followed first order kinetics in both [Ru(III)] and [Xanthine alkaloid]. Rate of oxidation is accelerated with an increase in [Surfactant] linearly. The presence of micelles Ru(III) have marked effects on chemical reactions. One of important and significant Ru(III) interest is the alteration in chemical kinetics. Reaction rates Ru(III) be either accelerated or decelerated, depending on the chemical system, the type and concentration of the surfactant, and other factors. Striking features of micellar catalysis coupled with the oxidizing action of organic capability stimulated us to take up the present work to explore and understand the oxidation path of Xanthine derivatives by Ru (III) in micellar media.

Face Mask Detection using Machine Learning

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Abstract

In a context of a virus that is transmitted by sputtering, wearing masks appear necessary to protect the wearer and to limit the propagation of the disease. Currently, we are facing the corona virus pandemic. Corona virus disease 2019 (COVID-19) is an infectious disease with first symptoms similar to the flu. The COVID-19 virus was first reported in China and very quickly spreads to the rest of the world. The COVID-19 is highly contagious when compared with the flu which result in change in the lifestyle of everyone around the world. Wearing a mask has been mandatory to every individual. This project can be used at the entrance of schools, hospitals, banks, airports, railway and bus stations and etc. as a digitalized scanning tool. The aim of detecting people's faces and segregating them into two classes namely the people masks and people with no masks and it is done with the help of image processing and deep learning using machine learning techniques. Using this project, the one can monitor effectively people from the remote place and give instructions accordingly. Various libraries of python are used such as Open CV, Tensor flow, keras and MobileNetV2.

Keywords

Detecting mask, Mask or No Mask, Open CV, Tensor flow, Keras and MobileNetV2

Remote User Authentication Key Protocol for Security Establishment of a Smart home Environment

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Abstract

User authentication could be used in the wireless sensor networks accessing the period information from sensors which are directly present in the external part of the user. Many user authentications schemes area unit planned within the literature. However, most of them area unit either at risk of completely different famed and threads (or) attacks in inefficient way. In the given a biometric-based and security used for accessing the user authentication for wireless sensor networks. Though there is economical in calculation, (I) It is not flexible through capturing node attack; (ii) It is uncertain opposition of impression attack; and (iii) It is having security issues in the middle of attack networks. So, we tend say that we are giving completely unique biometric-based and security primarily based on the user authenticated theme appropriate in wireless sensor networks to resist the protection. Moreover, the output for verification of security mistreatment the foremost wide used and accepted machine-controlled Validation of secure user authenticated protocol for security for smart home. Our theme is more comport and comparable with other schemes.

Keywords

wireless sensor networks, gateway node, biometric security, login phase, NS2 stimulation, AVISPA tools, user authentication

Accident & Alcohol Detection Surveillance Robot

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Abstract

Nowadays in India many accidents are occurred due drunk and drive. So we have made a project to resolve and predict these incidents, in which we used Arduino, Alcohol sensor, GSM and GPS modules. Here the Alcohol sensor is placed inside the car which will detect whether the driver of the car has drunk or not. If the driver is drunk then the Alcohol sensor will get triggered and the car engine will not turn ON or it will OFF the engine if it is already in ON state. Here the other two modules which are GSM and GPS. If the car has met with an accident the limit switch which is present inside the car will trigger the Arduino by which an SMS will be sent to the particular contacts which are been saved in the Arduino program. The GPS will be connected to the number of satellites so that when the car met with the accident the live location of the car will be sent to the contact through the GSM module. This entire setup of GPS and GSM will be kept inside the car. This entire project can reduce the accidents which are occurred by the drunk and drive and dead corners and also predict the location of the accidents. It results in increasing the human safety and protection.

Keywords

Alcohol Detection sensor, Arduino Uno, Arduino Nano, GSM, GPS, Relay, Switch, Motor Driver

Water Budget Estimation in Water Resources Management in Drought Prone Areas in Rayalaseema Region, South India

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Abstract

Water is a precious natural national resource with almost fixed quantum of availability. With continuous growth in India's population, per capita availability of utilizable water is depleting, whereas with ever-rising standard of living of people, all around rapid industrialization and urbanization, demand of fresh water is raising high continuously. Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water not in irrigation sector alone but in other sectors of water use such as domestic, power and industrial as well. Water audit determines the amount of water lost from a distribution system due to leakage and other reasons such as theft, unauthorized or illegal withdrawals from the systems and the cost of such losses to the utility. Water budget is an accounting of all the water that flows into and out of a project area. Water budget gives the financial aspects on the distribution of quantity of water in Rayalaseema region. The study area this paper to calculate the water budget in the study area of 51 mandals of Rayalaseema region and based on the water quantity analysis to prepare water, soil conservation structures in study area, for effective water management.

Keywords

Water data, Resources, Drought, South India

Strength Analysis of Layered Sandwich Beam

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Abstract

Sandwich beams are composite systems having high stiffness, high strength and low weight characteristics. The sandwich system consists of Glass Fiber Reinforced Polymer (GFRP) skins and Phenolic cores, and several layers of sandwich panels are bonded together with epoxy polymer matrix for manufacturing beams. In Layered Sandwich Beam (LSB) four layers horizontally oriented and the other four vertically oriented, have been tested. To understand the fundamental behaviour of the Layered sandwich beam, a three-dimensional finite element model was developed using ANSYS. To explore the suitability of this novel concept for structural applications, the flexural behaviour of layered sandwich beam is validated using the data available in the literature.The numerical model can be improved by incorporating shear and fatigue behaviour could further increase the confidence of using this novel beam concept in civil construction sector,the work of which is underway.

Keywords

Layered Sandwich Beam,Finite Element Analysis,Phenolic Core,GFRP Skin,Epoxy Polymer

GSM Based Intruder Alert and Smoke Detection System

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Abstract

With increasing crime rate, home security hasbeen a major issue and proper measures must be taken to prevent intrusion. A traditional home security system alerts through an alarm signal. However, GSM (Global System for Mobile communications) based security systems provide enhanced security i.e., whenever a signal is received from a sensor, a text message is sent to a desired number to take corrective action. This project proposes a home security system which involves sending of message using GSM module (SIM900).Forthis purpose, a PIR sensor is used. A PIR sensor is a Passive Infrared Sensor, which is used to detect body heat (infrared energy) by looking for changes in temperature. It is also integrated with smoke sensor which detects gas leakage and informs the person by a message sent through GSM. It consumes less power. A PIR sensor and GSM module are configured using Arduino Nano and when an intrusion is detected, the GSM module makes an alert to the pre-programmed mobile number via serial communication and the intrusion can be detected.

Effectiveness of Composite Slim Floor Beams with Dowel Shear Connection

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Abstract

Composite Slim Floor Beams (CSFB) are floor units where steel beam is embedded in concrete slab and the structure thereby act as an integrated or a single unit. This can help in reducing the overall beam depth and save the valuable vertical space. These structures also have good fire resistance efficiency. The performance of CSFB, is governed by the shear transferring forces between the steel and concrete elements. This paper studies numerically on the effectiveness of a dowel bar shear connection in CSFB. The shear connection in this CSFB is formed between concrete passing through regularly spaced web openings in steel beam and tie bar elements within that openings. Finite element analysis of the member is carried out under flexural loading conditions using ANSYS software. The validation of a CSFB without dowel shear connector is done and then CSFB's with shear connection in circular and rectangular openings in beam web is analysed. The study helps in understanding the influence of shear connection provided by assessing their load carrying capacity and slip capacity. The nonlinearities of material, geometry and contact at interface of steel and concrete is included in the analysis. Also the influence of opening size of dowel shear connection, and the spacing of them are analysed in this paper.

Keywords

Composite slim floor beams(CSFB), Shear connection, Finite Element Analysis, Tie bar elements, Load bearing capacity, Slip capacity, Nonlinear analysis

Structural, Optical and Magnetic Properties of Fe^{3+} doped CdO/ZnS Nanocomposites

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Abstract

The composite material is synthesized by employing simple two step wet chemical method. The prepared Fe^{3+} doped CdO/ZnS nanocomposite material is characterized by XRD, FT-IR, SEM with EDS, TEM, UV-Vis, Photoluminescence, EPR, and magnetic studies. X-ray diffraction pattern exhibits peaks correspond to cubic phase of CdO and ZnS, the evaluated average crystallite size is in the order of nanoscale. Existence of the composite material is confirmed from FT-IR and XRD. EDS confirms their chemical composition. The band gap energies are calculated from the UV-Vis spectra. The photoluminescence spectrum exhibits bands in UV and visible region. CIE coordinates are calculated as (x = 0.283, y = 0.274) from this emission data. These coordinates belong to the orange-yellow colour when compared to standard CIE Plot. Both optical and EPR data confirm that Cu^{2+} ions enter as rhombically distorted octahedral site at room temperature. From the EPR and Magnetic studies it is clear that it exhibits ferromagnetic behaviour at room temperature.

Keywords

CdO/ZnS, Nanocomposite, Ferromagnetism

Automatic Classification of Cardiac Arrhythmias based on ECG Signals Using Transferred Deep Learning Convolution Neural Network

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Abstract

In the current article, an automatic classification of cardiac arrhythmias is presented using a transfer deep learning approach with the help of electrocardiography (ECG) signal analysis. Now a days, an ECG waveform serves as a powerful tool used for the analysis of cardiac arrhythmias (irregularities). The objective of the present work is to implement an algorithm based on deep learning for classification of different cardiac arrhythmias. Initially, the 1-D ECG signals are converted to 2-D scalogram images using Continuous Wavelet(CWT) .Four different categories of ECG waveform were selected from four PhysioNet databases, namely MIT-BIH arrhythmia database, MIT-BIH Normal Sinus Rhythm database, MIT-BIH Malignant Ventricular Ectopy database and BIDMC Congestive heart failure database to examine the proposed technique. The major interest of the present study is to develop a transferred deep learning technique for automatic classification of the mentioned four different cardiac conditions. Final results proved that the 2-D scalogram images trained with a transferred deep convolutional neural network (namely AlexNet) were able to achieve extremely high performance rates with an accuracy obtained is 95.67%. Hence,it is worthwhile to say transferred deep learning algorithms proved to be an effective automated cardiac arrhythmia detection tool.

Keywords

Cardiac arrhythmias, ECG classification, deep learning, convolutional neural network

Nonlinear Buckling Analysis Laminated Composite Twisted Plates

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Abstract

The twisted plates has various applications in turbine blades,fan blades and particularly in gas turbines. Many of these plates are subjected to in-plane load due to fluid or aerodynamic pressures. Buckling of such plates is special importance especially if the plates are thin. In these days, composite materials are increasingly used as load bearing structural components in aerospace and naval structures, automobiles,pressure vessels , turbine blades and many other engineering applications because of their high specific strength and stiffness. The composite structures may sometimes be provided with voids for the purpose of assembling the components and units inside the structure. At the level of porosity, the mechanical behaviour of composite materials change significantly. The analysis is carried out using ANSYS software for modelling and analysis of buckling of twisted plates. In this paper an FEM – based non-linear buckling analysis of laminated composite twisted plates with porosity effects in which different porosity models are studied. The material properties of laminas are considered as orthotropic property. Influences of the porosity models, the fibre orientation angles on the critical buckling loads are studying the work of which is underway.

Keywords

laminated twisted plates, FEM, nonlinear buckling analysis, composite

Behaviour of RC Beam with the Combination of NSE FRCM & EB FRCM

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Abstract

FRCM or fabric reinforced cementitious matrix consists of a fibre embedded in a cementitious matrix which is used for the structural strengthening of both concrete and masonry members. FRCM is used as a solution to overcome the disadvantages caused by FRP composite or fibre reinforced polymer composites such as poor fire resistance, inapplicability on wet surfaces or at low temperatures, lack of vapour permeability, poor thermal compatibility with the base concrete etc. Normally beams are wrapped with FRCM sheets either in case of NSE FRCM or with EB FRCM. In this study the RC beams wrapped with FRCM with the combination of both Near surface embedded FRCM - (NSE FRCM) and externally bounded FRCM - (EB FRCM) on RC beam. It is done in order to reduce the number of layers given to FRCM sheets. The analysis is carried out using Ansys software. The main aim is to find out the axial strength of carbon FRCM of different combination cases. A parametric study on different combination cases of Carbon FRCM is done on different beam models.

Keywords

FRCM, near surface embedded, externally bounded

Web Crippling Behaviour of Lipped Channel Beam Under One Flange Loading

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Abstract

Web crippling is a common mode of failure in web elements of thin walled beams under concentrated loads or reactions. Lipped Channel Beams (LCB'S) are commonly used as floor joists and bearers in the construction industry. This paper studies numerically on web crippling behavior of cold formed lipped channel beam subjected to end one flange loading (EOF) and Interior one flange loading (IOF) condition. Finite element models were developed by using ANSYS software to understand the web crippling behavior of LCB's id validated using the data available in the literature. Numerical studies are done in order to provide web stiffners in lipped channel beam investigate more about the web crippling behavior of lipped channel beam. The numerical model can be further improved by incorporating with web stiffeners in lipped channel beam.

Keywords

Lipped channel beam, End One flange loading, Web crippling, finite element analysis

Effect of Co Content on Corrosion Behavior of CoCrFeMnNi High Entropy Alloy

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Abstract

High Entropy Alloys (HEAs), since their inception have been extensively studied and found to exhibit better mechanical and corrosion properties as compared to the conventional alloys. The unique corrosion-resistant properties in HEAs is a result of locally disordered chemical environment occurring due to presence of multiple elements in the alloy. Over the last decade, the corrosion resistance of HEAs have been studied with alloys containing elements like Cr, Ni, Mo etc possessing superior corrosion-resistant properties than conventional alloys. At some instances, these alloys have been found to show better corrosion resistance than stainless steels. Amongst the HEAs, the equi-atomic single phased FCC structured CoCrMnFeNi alloy, called as Cantor Alloy is the most studied one and has been reported for good mechanical properties at room temperature as well as elevated temperatures. Also, the corrosion resistance of CoCrFeMnNi HEAs has been studied by various researchers in acidic, basic and saline environments and also with different processing techniques. There have been instances where the cantor alloy has shown better corrosion characteristics than some of the well-known corrosion resistant steels.
The present study evaluates the corrosion behavior of CoCrFeMnNi HEA system which consisted set of six HEAs with varying Cr/Ni and Co/Mn content. Electrochemical tests were conducted for assessing the corrosion resistance of the alloys which included EIS and polarization tests in 3.5 wt% NaCl solution and comparison of results with that of SS 316. The results indicated slightly inferior corrosion resistance of the HEAs than that of SS 316. The significance of Co content in corrosion behavior of the HEAs was also demonstrated from the tests. Comparison of all alloys revealed that the alloy having lower Cobalt content had severe corrosion. It is concluded that the corrosion resistance increases with increase in Cobalt content. This is ascribed to the formation of thick rust layer on the surface which protects the material from further corrosion

Power Quality Enhancement on Distribution Systems using UPQC

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Abstract

conventionally, electrical energy has been extracted from fossil fuel-based power plants. The fossil fuel-based power plants are polluting environments and so the availability of fossil fuel is going to running out. Therefore, renewable energy resources are a vital role in generating electrical energy. The renewable energy resources are namely wind, solar PV, hydro, etc. Among them, the electrical energy extraction rate is significantly increased every year. However, the energy yield potential of renewable energy-based power plants strongly depends on the environmental conditions. The solar PV output depends on the cell temperature, irradiations, and ecological condition. Therefore, these renewable energy-based power plants are interconnected with the utility grid causes power quality issues. Apart from, power electronics components are used in power system for controlling, switching, or changing voltage level. During this process, power electronics components are cause the voltage sag and voltage swell, added to that harmonics are introduced on power systems. These power quality issues are caused by the malfunctioning of the electrical apparatus, overheating the electrical machinery, insulation damage, and low-quality product. Therefore, it is necessary to incorporate, compensating the power quality is necessary. The paper proposes the Unified power quality conditioner (UPQC) for power quality improvement. By using MATLAB/Simulink, a power system has been modeled with UPQ has harmonics filter. The voltage sag, swell is simulated corresponding response with and without UPQC was measured. In addition, current harmonics have been injected into the power system at a certain time interval. The simulation results show that UPQC compensating the voltage sag, swell and so current harmonics. Hence, the load received desired output without any power quality issues.

Keywords

Power Quality, Voltage Sag/Swell, Total Harmonics Distortion, UPQC, Harmonics filter.

Parametric Analysis and Optimization for Proton Exchange Membrane (PEM) Fuel Cell using Design of Experiments Technique

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Abstract

The fuel cells especially Proton Exchange Membrane (PEM) based fuel cells are plays major role for energy generation in various applications such as portable and transport applications. As "clean and eco-friendly" device, PEM fuel cells have been received a lot of attention due to high power density and low as well as high temperature of operation. In the present work, a PEM fuel cell has been developed with an active surface area of 25 cm2 close-fitted with different Membrane Electrode Assemblies (MEAs) with platinum supported multi-walled carbon nanotubes (10% Pt/MWCNT) as a nanocatalyst. MEAs were developed with variable 10% Pt/MWCNT nanocatalyst loadings. In experimental works, the primary fuel as a pure Hydrogen (H2) and Oxygen (O2) gas used as a oxidant. The experimental studies for single PEM fuel cell were carried out to find out the effect of various operating parameters such as cell temperature (CT), anode and cathode gas humidification temperatures (AHT & CHT), and nanocatalyst loading (CL) on the PEM fuel cell performance. Experimental studies were conducted using the parameter values obtained by the full-factorial design matrix. To achieve optimization, various effects plots such as factorial plots, contour and surface plots were drawn to understand the effects of operating parameters and interactions on the fuel cell output. An optimization plot was also drawn to find the best optimum parameters that would maximize the output power.

Keywords

Design of Experiments, Nanocatalyst, Full-factorial method, Proton Exchange Membrane, Optimization

A New Approach to Single Chambered Microbial Fuel Cell for Procreation of Bioenergy in the Treatment of Sugar and Dairy Wastewater

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Abstract

Pollution of water, waste disposal and their management is big problem faced by the world today. Industrial waste ,Agricultural waste and Household waste are best substrates/source for energy production as they are rich in organic contents . India is one of the leading producers of sugar and dairy products in the world. These industries discharge a bulk amount of wastewater per day without proper treatment during working seasons. Sugar and Dairy industry wastewater has high COD and BOD, which is hazardous for aquatic life and human use also. MFC have gained importance in the last few decades due to their ability to produce bioelectricity from renewable sources, MFCs have been used to treat different kinds of wastewater such as sugar, dairy, brewery, domestic sewage, distillery, rice mill, paper and pulp, swine wastewater etc. MFC in which Graphite rods (pencil leads) were incorporated as electrode in both the reactor and Candle wax salt bridge is used as proton exchange membrane, In this research work, different concentration of sugar and Dairy wastewater has been performed. The maximum power output, BOD, COD ,pH and TDS obtained with respect to time. MFC of sugar mill wastewater showed COD removal efficiency of 73% and BOD removal efficiency of 68% with different feed concentration. The power generation in the reactor is 23.7 µW. MFC of Dairy wastewater showed COD removal efficiency of 85% and BOD removal efficiency of 88% with different feed concentration. The maximum power output in the reactor was 35.67 µW. By abserving above results MFC with dairy wastewater has more economical as they produce more electricity as well as COD/BOD removal efficiency is also good.

Keywords

Single Chambered Microbial Fuel, Treatment of Sugar and Dairy wastewater, Cow dung, Electricity, Biogas, Electrode configuration,Candlewaxsaltbridge.

An Experimental Investigation on Combustion Behavior of Moringa Oleifera Biodiesel-Diesel-Carbon Black Water Emulsion Blends in Agricultural Diesel Engine

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Abstract

The impact of moringa oleifera biodiesel-diesel-carbon black water emulsion blends on diesel engine performance, combustion, and emission characteristics was investigated in this research work. Under different load conditions, the test was conducted in a single-cylinder air-cooled diesel engine operating at 1500 rpm. B20, B60, B20-D75-CBWE5, B60-D35- CBWE5, and B95- CBWE5 were chosen for further engine research based on their fuel properties and the remaining blends were eliminated. B20-D75-CBWE5 was found to be the lowest BSFC and maximum BTE of 0.381 kg/kWh and 25.9% respectively compare to other blends. B20-D75-CBWE5 blend has maximum HRR of 37 kJ/ °CA, which is 1.7 kJ/ °CA lesser than the conventional diesel, and have maximum cylinder peak pressure of 67 bar, which is 1.6 bar higher than the biodiesel. At the full load, B100 and B95-CBWE5 blends acquired the highest CD of 132° CA and 127° CA respectively. Results reveals that the use of biodiesel-diesel-carbon emulsion blends in diesel engine results in slight different in combustion characteristics including ignition delay, heat release rate, rate of pressure rise, peak pressure as noticed from experimental results. As a result of the research, it is clear that a biodiesel-diesel-carbon black emulsion blend improves engine efficiency and combustion characteristics when compared to conventional diesel. Hence, it can be a viable substitute for diesel fuel.

Keywords

Moringa oleifera oil; Carbon black water emulsion; Sodium methoxide; Performance; Emission.

An MOORA and WASPAS Methods Application for Optimal Material Selection from Aluminium Graphene Nano platelets Composites

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Abstract

Manufacturing and selecting the right material for different properties can be difficult and unpredictable. A lack of materials can result in segment malfunction and dissatisfaction at any point during their administration. Material selection in the designing plan stage is difficult and subtle due to the wide availability of specific materials. Centered on different material properties, this paper proposes MOORA and WASPAS strategies for proficient material (pure aluminium reinforced with GNPs composites) determination for aviation applications. In this paper, the Al-GNPs composites were ranked using the entropy-based weight technique for MOORA and WASPAS. According to the MOORA and WASPAS techniques, the best combination of physical and mechanical properties is 0.5 weight percent GNPs reinforced in pure aluminium. The stir casting technique was used to create the composites. Pure Al–0.5 wt. percent GNPs composites outperformed other composites in terms of tensile strength, stiffness, and other mechanical properties. MATLAB R2020a is used to analyse and compare the composite materials.

Keywords

Pure Aluminium; multi attribute decision making; Graphene Nano platelets; MOORA; WASPAS; MATLAB R2020a

Experimental Investigation on Greenhouse Emissions Reduction in Diesel Engine Fuelled with Moringa Oleifera Biodiesel-Diesel-Carbon Black Water Emulsion Blends

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Abstract

This study investigate the effects of moringa oleifera biodiesel-diesel-carbon black water emulsion blends on diesel engine emission characteristics. The research was carried out in a single-cylinder air-cooled diesel engine running at 1500 rpm under various load conditions. Based on their fuel properties, B20, B60, B20-D75-CBWE5, B60-D35- CBWE5, and B95- CBWE5 were chosen for further engine testing, while the remaining blends were discarded. The B20-D75-CBWE5 blend recorded the highest CO emission of 0.41% vol. On the other hand, the B100 blend generated the lowest CO emissions of 0.30% vol. at 100 percent load, which is 0.17% vol. less than traditional diesel. At full load, the B20-D75-CBWE5 fuel generated the highest CO2 emissions of 9.3% vol., which is 0.8% and 0.5% vol. higher than traditional diesel and biodiesel, respectively. The NO emission of pure biodiesel at 100% load is 1158 ppm, which is 5.6% higher than that of neat diesel. In addition, the B95-CBWE5 blend emits 965 ppm of NO emission. B100 blend had the lowest smoke opacity of 34%, which is 37% less than diesel at 100% load. Moringa oleifera biodiesel-diesel-carbon black water emulsion can be used as a replacement for traditional diesel in diesel engines, according to studies.

Keywords

Moringa oleifera oil; Carbon black water emulsion; Sodium methoxide; Emission

Optimization of Wind Turbine

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Abstract

Wind turbines are power tools to tap nonconventional wind energy. Onshore wind turbine needs plenty of land area for power generation. Thus it was a natural step to take Offshore Wind Turbine (OWT). The wind resources are even more abundant and of better quality at sea as compared to onshore. The major components of the offshore turbine are turbine blades, Rotor- Nacelle Assembly (RNA), tower transition piece and the foundation. By accounting for almost 25% of the capital cost of an OWT (offshore wind turbine), optimization of support structures provides an efficient way to reduce the currently high cost of offshore wind energy. In this paper, a structural optimization model for OWT support structures has been developed based on FEA (Finite Element Analysis) .

Keywords

FEA, Wind Turbine, Optimization

Performance of Slab - Column Joint under Lateral Cyclic Loading

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Abstract

Earthquake is one of the most dreadful natural calamity in the rare regions of Indian sub-continent. The vast extent of damage and the consequent loss of life associated with earthquakes reflects the poor construction practice in India. In order to build earthquake resistant structures, considerable research and dissemination of information is necessary in the design and detailing of structural elements. In the present research work, numerical investigations were carried out to study the behavior of exterior slab-column connection under lateral cyclic loading. Six types of specimens were analysed, conventional specimen (SC - NS), specimen with stud shear reinforcement (SC - SSRC) (Critical pattern), specimen with stud shear reinforcement (SC - SSRL) (Linear pattern), specimen with stud shear reinforcement (SC - SSRR) (Radial pattern), specimen with single - loop stirrups (SC - SLS) (linear pattern) and specimen with closed - hoop stirrups (SC - CHS) (linear pattern). The scaled model (1/4th scale) was tested under axial loading at the top of the column stub and cyclic loading given at the slab end. All the models with slab shear reinforcements (SC – SSRC, SC – SSRR, SC – SSRL, SC - SLS and SC - CHS) proved to be effective in resisting punching shear failure under axial and cyclic loading. The presence of shear reinforcements (SC – SSRC, SC – SSRR, SC – SSRL, SC - SLS and SC - CHS) significantly increased ductility compared to that of conventional specimen (SC - NS). The energy dissipation of the specimens are compared with shear reinforcements.

Keywords

Flat plate; punching shear; slab-column connection; shear reinforcement;

Production of Recombinant Protein in Mammalian Cell Culture: Process Monitoring and Media Optimization

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Abstract

Recombinant protein production (RPP) had an intense impact in many research areas, especially in healthcare. The recombinant mammalian host has been used to produce successful therapeutic proteins such as vaccines, growth factors, hormones, monoclonal antibodies (mAbs), and many more. For RPP, the active protein has to go through proper folding, assembly, and post-translation modifications. Plasma, serum, and tissue extracts were previously used in the medium for mammalian protein production. However, this raises the risk of contamination and product variability. A chemically defined medium (CDM) is the most preferred medium nowadays to mitigate these challenges. The CDM facilitates recombinant protein production using the specific mammalian cells quite efficiently, and production > 2 g/L RPP has already been reported. Critical process parameters (CPPs) such as pH, dissolved oxygen, dissolved carbon dioxide, and temperature must be monitored and controlled for optimal cellular growth. However, each medium manufacturer uses different cell media components with varying ratios, resulting in a trace metal imbalance. Trace metal is supplemented to the media, which affects the RPP critical quality attributes. Furthermore, the cell culture media also contains amino acids, salts, and many more components, affecting mammalian cell growth. Amino acids play a crucial role in mammalian cell culture media, especially CDM. Monitoring of these components in real time is highly desirable as the data can be in turn used to control the CPPs in real time for achieving optimal growth and protein production. Process Analytical Technology (PAT) tool plays a significant role to monitor essential substrates and metabolites in the cell culture process. Consequently, use of spectroscopy for substrate and amino acid quantification could prove very useful in quality-based process design. In this work, we carried out a case study using media composition and PAT tool for enhancing the RPP production.

Keywords

Chemically-defined media (CDM), Trace metals, amino acids, Process Analytical Technology (PAT).

Regression Analysis on Compaction Characteristics of Sand Clay Soils

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Abstract

soil compaction is one of the major geo technical engineering application in infrastrructure development of the nation. large volumes of soil are used in the construction of flyovers, earth dams and railways. There is a need to understand comprehensively in a unified and coherent manner. Thus the knowledge of compaction behavior and its characteristics of fine grained soils at different compaction energies assume great importance from they viewpoint of practical significant. In the present work, compaction parameters such as maximum dry density(max)and optimum moisture content (OMC)are determined at various compaction engies by conducting the laboratory compaction tests. In the field, the compaction of soils usually involves using different compaction energies. A limited experimental investigation has been taken up in the present study. The cardinal aim of the present study is to focus on effect of compaction energy on the behavior and compaction characteristics and unconfined compressive strength (q_u) of soils. Six soil samples have been selected whose properties area within range of values that are normally encounted in the resigon of tirupathi. Four different energies viz; 2/3 of astanderd proctor (393.4kj/m^3) standard proctor (1321.7kj/m^3) (i.e.Energy imported in between standard proctor and modified proctor) and 4.5 of standard proctor(2673.3 kj/m^3) have been imported to soils to determine compaction characteristics. The soil specimens are prepared over a range of 2% on either side of optimum moisture content (OMC) at respective compaction energies. these specimen shasben subjected to uni- axial compression to evaluate strength . possibility of developing functional relationships between compaction and strength characteristics is examined. The study indicates that the strength characteristics can be accessed from compaction test results.The study also indicates that there exists a good correlation between energy imparted to proctor's energy (EI/EP) and theoretical degree of compaction (TDC), defined as maximum dry density to theoretical maximum dry density for all soils and for all four compaction energy levels.

Keywords

Free swell index, UCC ,Liquied limit and plastic limit, proctor compaction.

Study on Behaviour of CFST Column Wrapped With SFRP Sheets

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Abstract

Concrete filled tubular columns (CFST) are composite structural members in which concrete is encompassed by steel. They offer high structural performance and hence, are used in construction of bridge piers, multi storeyed buildings etc. However, they are prone to deteriorations due to corrosion of steel, fire, ageing etc. which makes their strengthening necessary. Wrapping of columns with steel fibre polymer (SFRP) sheets, made of high strength steel can be adopted. In this paper, an FEM based buckling analysis of CFST columns wrapped with SFRP strips are carried out to assess load carrying capacity, stress strain behaviour etc. Here, the outer surface of column is wrapped with SFRP strips spaced at equal intervals i.e partial wrapping is chosen. The modeling and analysis was done by using Ansys Workbench. The results are compared and validated with those available in literature. A detailed parametric analysis is carried out by varying number of SFRP strips, spacing between strips and D/t ratio.

Keywords

SFRP sheets, CFST column, FEM

Cyanobacteria: A Primary Source of Bio-fertilizer for Crops in Agriculture

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Abstract

Cyanobacteria are the most successful and sustained prokaryotic organism during the course of evolution. They are considered as one of the primitive life forms found on our earth. These photosynthetic prokaryotes fix the atmospheric nitrogen into utilizable form and make it available to the plants. The stressful environmental conditions including the stress, soil fertility issues, presence of pathogens etc. can hamper the growth and development of the plants and affect the crop productivity. Cyanobacteria are used in ecofriendly sustainable agricultural practice for production of biomass of very high value and decreasing the level of CO2. Biofertilizer using in agriculture replace 50% chemical fertilizer in agriculture, and saving 89.99% carbon dioxide equivalent (CO2 eq.) gas emission leading to environmental protection. This is mainly because the current technology of crop inoculation with live microorganisms is often constrained by the inoculant's survival and propagation in the agricultural environment.

Keywords

nitrogen fixation, BGA, Cyanobacteria Carrier Crop, Biofertilizer

A Lightweight Stemmer for Telugu of Indian Language

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Abstract

In semantic morphology and data recovery, stemming is the way and the process of reducing inflected words to their word stem, base or root structure. It delivers the best capitulate when contrasted with different stemmers and it has less error rate. But as per the research, till now there are no proper Telugu language tools for stemmer. Telugu is a language belongs to the Dravidian. The resources for this language are also low. So we have used rule based stemmer for the implementation of Telugu. In this paper we have given rules for creation of stemming and prosperity for Telugu language maintains.

Keywords

Sequence Stripping, Stem, Law base stem, Telugu.

CDK Inhibition as a Key Regulator of Aberrant Cell Cycle Re-Entry for Targeting Alzheimer's Disease

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Abstract

Evidence advocates the involvement of cell cycle activation in the pathophysiology of neurodegenerative disorders. Alzheimer's disease is an irreversible, chronic neurodegenerative disease that causes memory and other essential mental functions to deteriorate over time. It is marked by intracellular deposition of Tau protein, a hyperphosphorylated form of a microtubule-associated protein, and extracellular aggregation of Amyloid β-protein, which manifests as neurofibrillary tangles (NFT) and senile plaques, respectively. However, in recent years, a number of studies have concluded that cell cycle re-entry is one of the primary causal phenomena of neuronal death in Alzheimer's disease pathogenesis. The eukaryotic cell cycle is a well-coordinated machinery that performs important functions in cell replenishment including DNA replication, cell formation, repair, and the birth of new daughter cells from the mother cell. The synchronization of the cell cycle requires a complex interplay between the levels of various cyclins and cyclin dependent kinases (CDKs) at different checkpoints. Cyclin dependent kinase inhibitors (CDKIs) prevent the degradation of cyclins and inactivation of CDKs. They are regulated differentially through various external and internal factors, have different tissue expression, and play different developmental roles. The checkpoints ensure the correct completion of the previous phase before the beginning of new cell cycle phase, and provide protection against the transmission of defects to the daughter cells. CDK inhibitors appear to be on the verge of making a clinical effect due to the advent of more selective and potent ATP-competitive CDK inhibitors. New and useful drugs for the treatment of cancer and other neurodegenerative disorders are likely to emerge from this avenue. These new methods for identifying CDK inhibitors could be used to develop non-ATP-competitive agents that target CDK4, CDK5 and other CDKs that have been identified as important therapeutic targets in the treatment of Alzheimer's disease.

Sub-Threshold Voltage Operated High Speed Domino Logic OR and AND Gates

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Abstract

This paper illustrates a novel design technique for the implementation of sub-threshold voltage range domino logic gates using MOSFETs. The paper shows the implementation of the sub-threshold voltage domino logic for OR, and AND gates. These circuits work in the sub- threshold voltage range, hence, drastically reducing power consumption. This is achieved by adding a voltage boosting block that is introduced with the value of a capacitor of 1 pF which creates a faster and power- efficient pull-down network. These proposed circuits are operated at sub-threshold voltages. These circuits are simulated with +0.3 V supply voltage to yield results with good driving capability and good noise margins. The proposed circuits are designed in a gpdk 180 nm CMOS process using an LTspice tool.

Keywords

Domino Logic, AND Gate, OR Gate, Sub- threshold Voltage Range, Voltage Boosting

Synthesis of Novel Phosphorylated Derivatives of (R)-1-(6-amino-9H-purin-9-yl) Propan-2-ol and their Antiviral Activity

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Abstract

Synthesis of novel phosphorylated derivatives of (R)-1-(6-amino-9*H*-purin-9-yl) propan-2-ol (**5a-j)** was accomplished by the reaction of (R)-1-(6-amino-9*H*-purin-9-yl) propan-2-ol (Tenofovir intermediate) **(1)** with 4-chlorophenyl phosphorodichloridate **(2)** to form (R)-1-(6-amino-9*H*-purin-9-yl)propan-2-yl-4-chlorophenylphosphorochloridate **(3)**. The intermediate **3** on subsequent reaction with various amino acid esters (**4)** in the presence of *N,N*- dimethyl piperazine as a base in dry tetrahydrofuran and pyridine (2:1) gave title compounds **5a-j**. Their structures were characterized by IR, ^{1}H, ^{13}C, ^{31}P NMR, mass spectra and elemental analyses. The title compounds exhibited good anti-viral activities against BTV and NDV in *in vitro* and *in vivo* methods.

Keywords

(R)-1-(6-amino-9*H*-purin-9-yl) propan-2-ol, amino acid esters, 4-chlorophenyl phosphorodichloridate, Antiviral activity, BTV, NDV

Power Rail ESD Protection Design Methodology Using Voltage-Gain Inverter Based Feedback Technology

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Abstract

In power rail, electrostatic discharge (ESD) is one of the assured issues to be faced. This paper intended to have a voltage gain inverter based response technology for power rail ESD protection. This paper proposes a Power MOSFET to discharge ESD current with 10 ns RC time constant for triggering and Transmission gate based clamp is to keep it on till ESD event; which is 28% more efficient over conventional clamp. The proposed clamp can endure 4500V of HBM (Human Body Model) pulse and also suitable for Charged Device Model (CDM) protection. Here, LTspice software is used to check out the ESD performance of Transmission Gate based clamp.

Keywords

Electrostatic Discharge, Power MOSFET, RC Constant, Transmission Gate Based Clamp

Stress Analysis of Buried Damaged P.E Gas Pipe

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Abstract

Underground natural gas pipelines may experience extreme stresses due to soil- structure interaction , column weight of soil and internal pressure of the gas. In this project, the finite element method is utilised to assess the behaviour of buried Medium Density Polyethylene (MDPE) pipe that have been subjected to damage at the pipe crown. The pipe damage is modelled in the form of small circular cracks to a larger circular hole to simulate circular shaped defects (7mm to 15mm). The simulations and stress analyses were performed using the ANSYS software. The stress distribution around the defect was determined under the aforementioned conditions. Then, the maximum values of Von Mises stresses in the damaged buried PE pipes were compared with their corresponding reduced strength for safe operation with a life expectancy of fifty years. Based on the results, we can see that the maximum Von Mises stress values in the defective buried polyethylene gas pipeline are significantly above the pipe strength limit at 35 °C. Additionally, these finite element models and stress plots in combination with the pipe material's allowable strength may be used to investigate the correct repair method for the damaged pipe.

Keywords

MDPE pipe ,Ansys , circular cracks , repair method

Intelligent System for Fault Diagnosis of Auto Mobile Engine by using off-board Digital Analyzer

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Abstract

An Automobile vehicle has a various faults due to more complex integration of electro-mechanical components. Due to the increasing stringency of emission norms improved and advanced electronic systems have been widely used. When different faults occur it is very difficult for a technician who does not have sufficient knowledge to detect and repair the electronic control system. However, such services in the after sales network are crucial to the brand value of automotive manufacturer and client satisfaction. Development of a fast, reliable and accurate intelligent system for fault diagnosis of automotive engine is greatly urged. In this paper a new approach to Off- Board diagnostic system for automotive engine, and more particularly, to an off-board digital analyzer for diagnosing the fault in vehicle systems is presented. A diagnostic tool was designed It is an automated method and system for vehicle diagnostics and health evaluation by a service Technician. The invention will clearly identify and display the faulty component by means of measuring electrical parameters automatically, without the assistance or intervention of a tool or a technician.

Keywords

Electronic; In-vehicle; Diagnostics; Intelligent; Control; Analyzer;

Utilization of Agri-Residue Corncob for the Production of Xylitol

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Abstract

Metric tons of agriculture residual wastes are produced every year in India. Utilization of these agricultural waste can be employed for the production of some value-added products, xylitol production is best example for this. Xylose, a pentose sugar, is used for the production of xylitol from agri-residues. Xylitol is considered to be an explicit substitute for sugar. It is a crystalline chemical compound having the chemical formula as C5H12O5. Xylitol can be mainly extracted from lignocellulosic biomass. It serves several medicinal purposes such as treating ear infections, dental caries, diabetes, upper respiratory tract infection. There are many species of fungi and bacteria that aid to the fermentation of xylose into xylitol, namely Candida tropicalis, Mucor, Acetobacter. Among these species, Candida tropicalis is considered to give the highest productivity of xylitol. Xylose reductase enzyme is used for metabolizing xylose into xylitol, with NADPH as a co-factor. In India, lignocellulosic biomass like corncob is produced in huge quantity every year. Corncob is considered as the most abundant renewable carbon source. Composition of corncob is 33-35% arabinose, 3-6% galactose, 6-16% glucuronic acid and 48-53% xylose. Since corncob has high percentage of xylose, hence it is most accepted agricultural waste for production of xylitol. For the xylose fermentation corncob is first pre-treated to hydrolyze the lignocellulosic material. Methods of pre-treatment such as acidic, enzymatic, biological can be employed for corncob hydrolysis, among which acidic pre- treatment method is most widely utilized.

Keywords

Corncob, xylose reductase, xylitol, lignocellulosic biomass, xylose.

Performance of Strength and Modulii Characteristics of Ceramic Waste Aggregate Concrete (CWAC)

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Abstract

Rapid industrialization in the twenty-first century has resulted in significant changes in Civil Engineering sector and other all other fields also. As a result, emissions of by products and wastes are producing at an alarming rate in India. Development cannot be ceased by referring to pollution and waste as justification; instead of it is essential to be decided how to reduce and manage the waste generated near by the industries. Development cannot be frozen by referring to pollution and waste as justification; instead, it must be decided how to reduce and manage the waste generated. One of the solvable solution is this waste may be recycled or substituted to replace traditional ingredients in new concrete compositions and benefit to reduce their toxic effects on the environment. The Ceramic Industry is one of the largest industry to manufacture ceramic components. In Ceramic Industries, nearly 30% of the waste will be produced on a daily basis because of its unique characteristics of brittle nature and its clay composition. As a result of this, incorporating industrial waste into the concrete mix would help to minimize the usage of natural aggregates into the composition but due to the usage of ingredients are rapidly depleting, as well as help to reduce greenhouse gas emissions. The impact of replacing traditional coarse aggregates with ceramic waste aggregates in the composition of Ceramic Waste Aggregate Concrete (CWAC) is investigated in this paper. The study's parameters included replacing coarse aggregate (CA) with ceramic waste aggregates (CWA) at a rate of 0 to 100% with a regular incremental interval of 20%. Flexural strength and stress-strain behavior of CWAC are examined. Based on the results of experiments, it is concluded that as the amount of CWA in the composition increases, the intensity of CWAC decreases and that this study would help to ensure that the quantity availability of CWA near ceramic industries.

An Experimental Analysis of Degradation of Cellulosic Insulating Material Immersed in Natural Ester Oil for Transformer

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Abstract

conventionally, mineral oil is used as a liquid dielectric for the transformer. Because of, the physical, chemical and electrical prosperities of matched as an insulating material for transformer. Whereas, mineral oil is extracted from fossil fuels. Due to vast consumption of fossil fuels, the availability of fossil fuel is going to run out near future. In addition, mineral oil is doesn't meet the new environmental regulation due to it has less biodegradable and low fire resistance characteristics. Therefore, this research proposed new natural ester-based insulating oil for transformer. The natural ester-based insulating oil is renewable that of mineral oil. Initially, a critical review has been made on recent development on alternate liquid dielectrics for transformer. Subsequently, critical characteristics of insulating oil have been measured according to the standard. Added to that, the critical characteristics of natural ester oil are estimated at different temperature ranges from 50°C, 70°C, 90°C, 110°C,130°C,150°C, respectively. The experimental results are compared with the mineral oil. The experimental analysis found that the critical characteristics of the proposed natural ester oil are comparable to that of mineral oil. From accelerated thermal aging, the test found that the thermal withstand ability of natural ester insulating oil is better than mineral oil.

Keywords

Insulating materials, transformer, mineral oil, natural ester oil, nano-materials.

Crime Analysis and Prediction against Women using Logistic Regression and ROC Methods

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Abstract

Data analytics is an area that consists of many methods for predicting design or sample in a huge set of data. It consists of machine Learning and some statistical methods. Data analytics can be applied to many research fields like medical, crime, economics, sales, and marketing, etc. Among these research areas crime analysis is curiosity and the predicted results will be helpful for well living in society. Machine Learning logistic regression techniques and Receiver Operating Characteristic (ROC) are implemented for crime prediction against women in this paper. The model was evaluated by using a confusion matrix using python. This Prediction may be supportive for make a new approach for analysis and prediction of crime rate against women and will be helpful to the police departments for control the crimes.

Keywords

Crime Prediction, ROC, Machine Learning, Logistic Regression, Feature Selection

Application of Bio Oil and Biochar Obtained From Biomass Pyrolysis in Composite

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Abstract

Owing to the enhanced depletion of fossil fuels, the search for alternate energy sources is the prime focus of researchers across the world. India, which is predominantly depends on agriculture for its economy, the abundantly available agricultural residues (biomass) can be effectively exploited for energy harvesting as well as other applications such as chemical feed stocks, etc. The biomass waste can be converted into useful products by adopting different techniques namely thermochemical conversion and biochemical conversion techniques. Pyrolysis one of the thermochemical conversion techniques is being used by researchers for effective conversion of different types of biomass. In this work, ground nut shell wastes obtained from the local industries is subjected to pyrolysis under different operating temperatures namely 400˚C, 450˚C, 500˚C and 550˚C, with a residence time of 15 minutes for each temperature. The products obtained during pyrolysis namely solid char and bio oil is collected and stored separately. The difference in mass is accounted for the gaseous constituents produced during the distillation process. The bio oil obtained during pyrolysis can effectively supplemented with epoxy resin for fabrication of composite plates. Here the epoxy resin was admixed with the groundnut shell bio oil and natural fiber to make environmentally friendly bio composites material and compared with those prepared without the addition of bio oil. The mechanical properties such as tensile strength and flexural strength has been evaluated for the prepared composite plate and possibility of using bio oil along with epoxy resin in engineering application is explored.

Keywords

Energy; Biomass; Pyrolysis; Bio oil; Bio char; Composite

A Novel Reference Current Extraction Technique with Two-Step Horizon Optimal Switching Vector - Model Predictive Control for Shunt Active Filter

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Abstract

Shunt Active Filters (SAFs) were being used for harmonic mitigation, reactive power compensation and unity power factor under highly electrical polluted distribution networks. The Model Predictive Controller (PMC) gives an optimized performance for SAF due to its inherent cost function optimization. Reference current extraction in Finite Control Set-Model Predictive Controller (FCS-MPC) plays a vital role for effective SAF operation. The advantage of FCS-MPC is that, it perfectly tracks the reference and compensating currents by optimizing the SAF switching vector and it does not require an external emulator for pulse generation. FCS-MPC is classified into Optimal Switching Vector MPC (OSV-MPC) and Optimal Switching Sequence MPC (OSS-MPC). OSV-MPC technique is simple and efficient for SAF applications. In this paper, a novel reference current extraction technique i.e Inverse Matrix Average pq-SRF (IMApq-SRF) technique is proposed along with the OSV-MPC technique. Practically, a two-step delay compensation is essential to operate the SAF in an effective way. Hence, in this paper, a two-step horizon OSV-MPC technique is proposed along with IMApq-SRF reference current extraction technique for the SAF to improve power quality in distribution networks. The MATLAB simulation results reveal that, proposed methodology gives the optimum SAF performance under all supply and load conditions.

Keywords

Model predictive controller, Finite control set, optimal switching vector, two step horizon, IMApq-SRF technique, Shunt active filter

Behavior Change of Diesel Engine Fueled With Calophyllum Oil Biodiesel Blend Under 150 Hours Endurance Test

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Abstract

This experimental investigation was carried out for 150 hours endurance test with test fuel neat diesel, Calophyllum oil biodiesel blend B25 and water in Calophyllum (WIC) 10 vol. % to blend B25-WIC in a single-cylinder diesel engine. The impact of endurance test engine run on injector nozzle deposition and engine parameters like Brake specific fuel consumption, brake thermal efficiency, exhaust gas temperature, Carbon dioxide, Carbon monoxide, Hydrocarbon, Oxides of nitrogen were investigated. The findings revealed that water inclusion (10 vol. %) in Calophyllum oil biodiesel blend has a positive impact on diesel engine performance and emission characteristics as compared to biodiesel blend without water inclusion. Gummy and heavy deposition accumulation were observed with biodiesel blend B25 which was higher by 12% than B25-WIC with thin and dry deposition. Exhaust emissions parameter like CO2, CO, HC, NOx shows reduction for B25-WIC in comparison with neat diesel by 52.36%, 27.19%, 18.14%, and 4.56% respectively.

Keywords

Calophyllum oil biodiesel B25 blend, Performance and Emission Characteristics, VCR Diesel engine, 10% Water inclusion in B25, 150 hours Endurance Test

Identifying and Differentiating Pseudo Reviewer Groups in Online Product Reviews

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Abstract

Online advancement puts frequently witness assessment spam as pseudo audits. Individuals are frequently utilized to check explicit brands for advancing or block them by composing profoundly sure or negative audits. This frequently is done unitedly in gatherings. Albeit some prior explores put forth an attempt to perceive and recognize such assessment spam gatherings, little has been overviewed to detect those networks who focus on a brand in general, rather than just item things. In this examination , we gathered the assessment surveys from the Yelp item audit site and physically marked a bunch of competitor analyst gatherings. All the gatherings are catrectorised on the basis of brands .We accept that the idea of the commentator bunches is subject to eight highlights explicit to a couple. We built up a highlights based ignoring model to order applicant bunches as pseudo elements. We several classifiers for crafted by separating a set dependent on the surveys composed by the clients of that gathering to decide if the gathering gives indications of limit.

Analysis of Heavy metals in two fish species (in-vivo) of Dal Lake-Kashmir (India)

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Abstract

The present study gives a brief idea of the heavy metal accumulation in different fish species of Dal lake, Kashmir. The experiment was carried in-vivo and 10 tanks were set up with one control for each test. The experiment was carried out for 6 months and then analyzed for heavy metal accumulation. Lead was found beyond prescribed limits by WHO and rest heavy metals Zinc, Copper and mercury were found within prescribed limits. The heavy metals followed the order Pb>Zn >Cu>Hg. The present study analyzed the heavy metal accumulation in fish muscles as muscle is the only edible part consumed by humans. From the human health point of view it was concluded that the high lead levels can cause lead toxicity in humans as well as the fishes.

Index-terms

Toxicity; heavy metals; bio-accumulation; Dal lake; contamination.

Intelligent Road Lightning Design Using Wireless Sensor Network

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Abstract

Customary lighting frameworks are out dated and have lost parcel of energy. These frameworks should be supplanted with clever frameworks and can detect their current circumstance for example sense light and temperature and dampness. To acknowledge necessities of such a framework abstract examinations should be directed to a useful proving ground. From the start, the cutting edge arrangements of various streetlamp frameworks in the writing are depicted then the plan of a shrewd light framework is proposed which hubs can speak with different hubs. These hubs can work alone or together in the organization. Likewise they are adaptable to utilize. Everything hubs can show voltage and current and their own force utilization and have capacity to drive both sodium light of high pressing factor and high force LEDs. These hubs can identify passer-by from sensor exhibit (PIR, US, IR).

Keywords

ARM, GSM, PLC, WSN, ZIGBEE

A Real-time Implementation for the Speech Steganography using Short-Time Fourier Transformfor Secured Mobile Communication

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Abstract

Steganography can be described as approach of masking an undisclosed message with a normal message which is known as the Carrier message signal. DSP techniques, such as LSB encoding, have historically been implemented for secret information hiding. Utilization of deep neural networks as functions of steganography for speech data is something that the paper will present. This paper also demonstrate that the steganography techniques suggested for vision are less suitable for speech signals this paper present a implementation technique that involves the use of ISTFT and STFT as differentiable layers in the network. Empirically, the efficacy of the proposed methods relative to deep learning based on multiple speech datasets should be demonstrated and the results are examined quantitatively and qualitatively. Moreover, using of multiple decoders or a single conditional decoder helps to hide multiple signals in a single carrier signal. Finally, under various channel distortion situations, this model Qualitative studies indicate that human listeners cannot detect changes made to the carrier and hence the decoded messages are highly intelligible.

Keywords

Speech Steganography, Digital Signal Processing, Fourier Transform, short-time Fourier transform.

Pitting Corrosion in Steel Plate

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Abstract

Pitting corrosion damage is of crucial importance in structural steel plates.Pitting happenswhen the protective passive layer of the metal surface is mechanically or chemically damaged as it comes in contact with salt solutions containing halides, chlorides etc. Pitting damage induces insidious cavities or holes that cause reduction of strength in plates. In this paper, an FEM – based nonlinear analysis of steel plate subjected to pitting corrosion is attempted so as to assess the residual strength. The popular ABAQUS package is employed for the modeling and analysis of steel plates affected by corrosion. An elastic-perfectly plastic material model is exercised in development of the numerical model, which is validated using the data available in the literature. The effect of degree of pitting(DOP) on the strength of plate is reckoned with assumed circular pits running full thickness of the plate. As the DOP increases a considerable reduction in the strength of the plate is observed. The numerical model can be further improved by incorporating random pitting effect, the work of which is underway.

Keywords

Pitting corrosion, FEM, nonlinear anlaysis, elastic-perfectly plastic, degree of pitting.

Strengthening of Reinforced Concrete Flat Slabs

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Abstract

Flat slab system has become a popular form of construction in many parts of the world. Flat concrete slabs are a typical form of flooring systems used in a wide range of buildings such as offices, warehouses and parking garages. Flat slabs are reinforced concrete slabs which transfers load directly to the supporting columns without the use of beams. Hence they provide more vertical clear space. The connection between the slab and the column in this system is generally the most critical part due to its vulnerability to punching shear failure. This paper studies numerically on the effectiveness of externally bonded carbon fiber-reinforced polymer (CFRP) strips on the punching shear of interior slab-column connections. Carbon fibre reinforced polymer (CFRP) sheets of width 50mm and thickness 0.8mm are ties around the corner columns. The performance of the flat slabs under uniform gradual loading is investigated. Finite element analysis of the member is carried out in ANSYS software. This Study helps in understanding the effectiveness of strengthening flat slabs using CFRP. Parametric studies are done on different configurations of CFRP strips on the flat slabs.

Keywords

flat slab, CFRP strips, finite element analysis

Identifying Parkinson's disease using XGClassifier on Gait Analysis

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Abstract

Parkinson's disease is a neurodegenerative disease. The daily life, quality of life and living conditions of the person are challenged and deteriorated because of cognitive impairment which further leads to motor and non-motor depreciation, as it is affects the central nervous system (CNS). Generally, it is the missing of a dopamine transfer agent and important parts of brain like basal ganglia are damaged. Identifying Parkinson's disease (PD) in the initial stages is a crucial task because it cannot be treated at later stages and it might need a surgery in the very initial stages itself. It is also a challenging task because the early symptoms are similar to Progressive Supranuclear Palsy (PSP), Essential Tumor and few other similar diseases. With the advent of Machine Learning (ML) and Deep Learning (DL) techniques, disease identification using various algorithms with high accuracy is coming forth. PD can be potentially identified by training various Machine Learning algorithms with gait patterns, acoustic patterns, handwriting patterns or drawing patterns.

Keywords

Ensemble Learning, Gait Analysis , Parkinson's Disease, XGBoost

Kinetic and Thermodynamic Studies of Sorption for Toxic Heavy Metal Cr (VI) Ion on Bentonite Clay from Wastewater

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Abstract

The present study removal of Cr (VI) ion on Bentonite clay from aqueous solution under different experimental conditions. Lagergren's first-order, pseudo-second-order kinetic equation and Langmuir's and Freundlich adsorption isotherm has been used to discuss the adsorption capacity of Bentonite clay to removal of Cr (VI) Ion. Thermodynamic parameter such as free energy change, enthalpy change and change entropy have been evaluated and discussed and an idea process are spontaneity and feasibility of the adsorption process and also study adsorption capacities are effect different pH, different concentration, different temperature and contact time of shaking.This study was focused on the use of Bentonite clay as an alternative adsorbent for the removal of Cr (VI) from wastewater. As Cr (VI) above permissible limit is toxic for biological systems and carcinogenic for both animals and plants, therefore it is a matter of great interest to remove it from aqueous systems. Batch experiments were conducted to determine the potential of Bentonite clay. The maximum adsorption 66.64% was found at pH 2 with initial metal ion concentration 50 mg/L. Adsorption of Cr (VI) ions depend upon the initial concentration of metal ions. 2.0 g of Bentonite clay was able to remove 68.96% of Cr (VI) of conc. 25 mg/L and remove 53.94% of Cr (VI) of conc. 250 mg/L. The value of R2 ≈ 0.994 and R2 ≈ 0.990 for Freundlich and Langmuir plots respectively suggested that adsorption of Cr (VI) by Bentonite clay obey Freundlich model more appropriately than Langmuir model. Kinetic models plotted for the obtained results showed that the adsorption of Cr (VI) by Bentonite clay is of second order reaction. Kinetic studies showed that experimental data was best described by pseudo second order model.

Keywords

Effect of pH, Adsorption Capacity of Bentonite Clay, Removal of Toxic Heavy Metal ion, Kinetic, Equilibrium and Thermodynamic Study

Nonlinear Buckling Analysis of Double Skin Composite Column with Different Frp Wrapping Scheme

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Abstract

The composite columns are one of the most important structural members that are the combination of structural steel and concrete. Double skin composite column which consists of two concentric steel tubes, an outer and an inner tube with concrete sandwiched between them. The observed double skin composite column failure mode was the steel tubes local buckling associated with shearing failure of the filled concrete. This paper investigates an FEM based nonlinear buckling analysis of double skin composite column with different cross section shapes such as circular, square and rectangular tubes using ANSYS software. This study presents Carbon FRP provides excellent confining effect are wrapped in different way such as full wrapping, ring wrapping, helical wrapping and cross helical wrapping to reduce the buckling failure of double skin composite column. The main parameters considered include the buckling failure modes, load-deflection relationship and ultimate buckling load of double skin column. The performance of the above strengthened column are then compared with the unstrengthened double skin column and the results were presented in this paper.

Keywords

Buckling failure, Composite column, Carbon FRP

Shear Bond Behaviour of Composite Slab with Profiled Steel Deck and ECC

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Abstract

Composite construction is widely accepted as an efficient way of enhancing the structural performance of steel work by ensuring a better bonding between steel and concrete element. In a composite slab system, steel deck serves as a permanent formwork for supporting the concrete and also acts as tensile reinforcement. The strength and performance of the composite slab depends on various factors like geometry of steel profile, thickness of steel sheeting, type of concrete used, embossments or shear connectors provided etc. Sufficient resistance against steel-concrete vertical separation and horizontal slippage can be achieved by adopting suitable profile geometry with or without embossments. This paper presents non-linear finite element analysis of composite slab system consisting of profiled steel deck and high performance concrete namely, Engineered Cementitious Concrete [ECC] which provides high tensile ductility and strain capacity with tight micro-crack widths as compared to normal concrete. Studies are conducted to investigate the effect of various numeric and geometric parameters based on load-displacement response and shear bond strength.

Keywords

Composite slab, Engineered Cementitious Composite, Steel deck

Response Spectrum Analysis of G+5 Story Building With Different Types of Stair Cases

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Abstract

Stairs is a set of steps which give access from floor to floor. Stair is an important functional element of a building. Presently, Stairs are gaining popularity because of their attractive appearance. The dog-legged staircase is one of the simplest forms of stairs in which a flight of stairs goes up to a half step before turning 180 degrees and continuing upwards. It is also called Dog Legged Staircase, because of its appearance in sectional elevation. Open well is similar to the dog legged, stair except that in this case the two flights are separated by an open well. The open newel stair is a convenient type of stair and is generally used in public buildings.

In the present study a G+5 model building is analyzed by using Response spectrum analysis. The results like story drift, story shear, story bending, building Torsion, model frequency and model stiffness are compared between dog legged and open well stair cases in zone V seismic condition by using ETABS Software.

Keywords

About Stair case, Response Spectrum analysis, ETABS Software.

Correlation of Pico-Capacitance, Nano-Inductance and Frequency of Advanced materials with Emerging Pico Technology

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Abstract

The significance of Electric Vehicle (EV) is unmistakably apparent as a feature of the drive towards better utilization of perfect and sustainable power and the decrease of hurtful outflows and particulates. EV is presently talked about so broadly, and the interest in expanding EV sending is extraordinary to the point that each workshop must know about the expanded need to deal with EVs. Pico is working with our accomplices and clients to guarantee that workshops can be as protected, proficient and compelling working with EV as they are with Internal Combustion Engines (ICE). In this Research paper, we can discover data about our PicoScope 4425A Electric Vehicle (EV) unit. It is intended to cover all vehicle types and powertrains and to give workshops a future-verification framework that covers vehicles with high-voltage batteries and engine frameworks.

An Optimization of Image Enhancement and Segmentation Using PSO on Pap smear Images

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Abstract

Particle Swarm Optimization (PSO) techniques gives new form for optimization. In this article PSO algorithm is used to enhance the image quality and segment the portion of the image. This optimization technique is precise useful for detection of cervical cancer on pap smear images. The quality of the image is processed to increase the pixels values. Transformation function is applied on the updating particle position of four variables and also fitness function is calculated to evaluate the fitness value of pbest, gbest values of the each particle. Segmentation is done using K-means PSO algorithm on the pap smear images to detect the nucleus and cytoplasm. Euclidean distance is calculated for all the centroid in PSO-Kmeans algorithm

Keywords

Digital image processing, Particle swarm optimization, Enhancement, segmentation

Seismic Performance of Fire Exposed Steel Box-Column to H-Beam Connection

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Abstract

Steel buildings are constructed all over the world due to high strength, fast erection and high ductility. In many cases steel buildings with heavy beam and column sections show small deformation after fire accident. The general rule followed after post fire investigation is that if the steel structural members do no deform severely, they are reused. But the performance of such a steel building during a future earthquake is unknown. In this study the seismic performance of fire exposed steel beam column connection is investigated using non-linear finite element analysis method. The model considered for analysis consists of box column section (BOX 550x550x28 representing width depth and thickness in mm) and H-beam section (H 700x300x13x24 representing the depth, width web thickness and flange thickness). ANSYS software is used for modelling and analysis of connection. Seismic analysis is done by displacement controlled cyclic loading. Seismic performance of the connection before and after fire exposure is investigated. Fire exposure of connection was simulated by incorporating thermal properties of steel in transient thermal analysis. Seismic performance of the fire exposed connection is done by coupling transient thermal analysis and static structural analysis. Moment-rotation curve obtained shows considerable decrease in moment capacity for fire exposed connection. Fire exposed connection also shows higher values in plastic strain and column stresses. From the results obtained we can understand the vulnerability of fire exposed steel connection during a future seismic event.

Keywords

Steel beam-column connection, Finite element analysis, Fire exposed connection, Seismic response, Moment capacity

Decolorization Potential of Laccase Derived From Pleurotus Ostreatus

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Abstract

Laccases (EC 1.10.3.2), under class group of oxidoreductases, are glycoproteins containing multiple copper atoms which help in catalyzing the single-electron oxidation of phenolic compounds in process with the reduction of oxygen to water. It is a broadly-studied enzyme among oxidoreductases for its specific action on lignin and other compounds like methoxy-substituted phenols, polyphenols, hydroxyindols, aryldiamines and benzenethiols. Laccases are widespread in nature and reported to be found in many plants, bacteria and fungi. The white-rot fungi are the only microorganisms which are able to degrade the whole wood components on commercial level with the help of purposeful laccase. P. ostreatus (commonly reffered to as oyster mushrooms), is the edible white rot basidiomycete fungus which produces ligninolytic enzymes and is the second most cultivated edible mushroom at global level. Considering the broad range of substrate specificity and unique characteristics, fungal laccases have been widely used in textile industry, pharmaceutical industry, wood processing industry, food industry, and chemical industry. Generally textile industry effluents are highly colored due to the presence of dyes which are hard to degrade and decolorize by conventional methods. Decolourization of these dyes using various biological methods, especially using laccase producing fungi, has gained a huge importance during the past few years due to its cost effective strategy and its ability to act on wide range of dyes. Laccase are being used in industry nowadays because of being efficient in degrading dye and resulting in constitution of several laccase-based processes which embody synthetic dyes. Bromophenol blue, methylene blue, methyl red, crystal violet and brilliant blue were the five dyes principally utilized on the commercial scale and therefore were studied on potato dextrose agar (solid medium) at different concentrations. In case of P. ostreatus, laccase activity increased with increase in incubation periods. P. ostreatus (96%) proved to be best for decolorization of bromophenol blue on solid medium. Laccases act as a biological agent to degrade synthetic dyes and for its better commercial uses.

Keywords

Laccase, oxidoreductases, P. ostreatus, ligninolytic enzymes, textile dye decolorization.

Recent Trends in Smart Materials - An Overview

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Abstract

The paper depicts the significance of smart materials in various fields and the merits and demerits of smart materials over conventional materials. Smart materials are such which respond to environmental conditions. These changes are not permanent and can be reversed. Such materials have major advantages over conventional materials such as higher strength, higher flexibility, recyclability etc. The extensive reviewing of literature showed the advancements made in the field of smart materials, the way of manufacturing and all the applications of such materials. These materials are majorly used in medical and surgical applications. The current work helps in understanding smart materials and for improving the work for researchers.

Keywords

Smart materials, Nano Composites, Advantages, Applications, Review

SPC Using the Length Biased Weighted Shanker Distribution

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Abstract

The control chart is one of the most useful tools for controlling the quality of the products in the production process. Although the product is manufactured with a defined nominal value and a defined variance, but random impacts can occur and change the production process. The control chart must quickly detect the process change and minimize false alarms when the process is actually in control mode. In this paper, the use of a new distribution method, namely the length biased weighted Shanker distribution has been used to monitor the process due to its flexibility and better fitting with real life data compared to Shanker, Lindley and exponential distributions.

Keywords

Manufacturing Process, Control Charts, Weighted Distribution, Shanker distribution, Length Biased Distribution.

State -of -art on Materials for 3D Concrete Printing

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Abstract

3D Concrete Printing (3DCP) is a mordern technique that mixes digital tech with material science to permit free-form structures without the utilization of formwork. 3DCP is a type of additive manufacturing technique in which fabric is added as layer one over the other to create a final product. The main advantage of 3D concrete printing (3DCP) is that it can produce complex structures, without the use of any form work with high speed extrusion which indeed saves time and reduces human error but its still in its development face and also possess a fabric control of high level during the printing procedure.

In this work, literature survey is carried on 3D concrete printing material. According to the literature research, the following are the primary important properties of fresh concrete that are significant to 3DCP: (1) Pumpability: How easily and consistently fluid moves through the extruding system. (2) Printability: the ease with which content can be deposited using a extruding unit and the consistency with which it can be deposited. (3) Buildability: The ability of a wet-deposited material to withstand deformation when subjected to a load. (4) Open time: period of time during which these properties are compatible within reasonable limits.

Based on the literature survey the main difference between conventional and 3D concrete printing material is no coarse aggregate, very finer fine aggregate and cementitious materials. The mainly identified materials are Nano Clay, silica fume, fly ash, Quartz powder, Quartz sand, SP and VMA.

Keywords

3DCP, Pumpability, Buildability, Open time, Nano Clay, silica fume, fly ash, Quartz powder, Quartz sand, SP and VMA

Enhancement in the Quality of Power of a Grid Tied Solar PV System Using Recursive Digital Filter Based Control

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Abstract

The primitive intent of this project is to establish a governing strategy for transmission of active power between a solar photo-voltaic (PV) array and the load or the grid, simultaneously to improve power efficiency by abolishing harmonics and compensation of reactive-power needed by the attached load in the network of distribution. Due to the integration of renewable energy sources, low Power-Quality (PQ) issues at the Point-Of-Intersection (PIC) are becoming more prominent in terms of voltage and current harmonics. The controlling by Recursive-Digital- Filter is incorporated here for Pv-grid connected device upgrades indices of PQ by running around clock and maintaining transmission of power between the grid of utility and loads which are associated. The strength of governing algorithm relies in its ability to switch VSC efficiently by generating currents of grids as reference using an indirect_current_ontrol_technique. The currents of load are processed using a Recursive-Digital-Filter, which extracts active power portion. In this method, the components of load current's active power are used to generate currentsreference of grid. The output of system is noted for changing loads, altering insolation of solar, and Voltage-Swell, Voltage-Sag, and distortion situations of voltage in a laboratory prototype.

Keywords

Power_Quality (PQ), Recursive_Digital_Filter (RDF), Solar PV Generation, Distribution-static-compensator (DSTATCOM)

Weather Prediction using Advanced Machine Learning Techniques

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Abstract

Prediction of weather condition is important to take efficient decisions. In general, the relationship between the input weather parameters and the output weather condition is non linear and predicting the weather conditions in non linear relationship posses challenging task. The traditional methods of weather prediction sometimes deviate in predicting the weather conditions due to non linear relationship between the input features and output condition. Motivated with this factor, we propose a neural networks based model for weather prediction. The superiority of the proposed model over similar type of models is tested with the weather data collected from Indian metrological Department (IMD). The metrics like User's accuracy (UA), Producer's accuracy (PA), Overall accuracy (OA), Kappa Coefficient (KC) and Dispersion score (DS) are used to evaluate the performance of proposed model.

Keywords

Indian Metrological dataset, Weather Prediction, Neural networks, Pattern Classification

Synthesis of Bulk and Nano sized $NbTiP_3O_{12}$ at Low Temperature using Sol-Gel Technique

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Abstract

Bulk and nano sized $NbTiP_3O_{12}$ has been prepared by citrate gel pyrolysis using peroxo titanium complex as one of the reactant and ethylene glycol as gelating reagent. The compound was characterized by powder XRD and infrared techniques. The phase formation of $NbTP_3O_{12}$ started at 750 °C and It is found to crystallize in rhombohedral lattice with space group $R\bar{3}C$. The infrared spectra of samples prepared at different temperatures consist of mainly bands due to phosphate (PO_4) group. The morphological characterization was carried out by transmission electron microscopy. The crystallite size was estimated from the line width of intense powder diffraction line using Scherrer's formula and TEM images. The average particle size calculated from the TEM images is found to be in the range 17-45 nm for all samples sintered at different temperatures.

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