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2nd International Conference on Emerging Trends in Science, Engineering and Management

ICETSEM-2021

Virtual Conference

15th - 16th July 2021

ORGANIZED BY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

GM INSTITUTE OF TECHNOLOGY

DAVANGERE, KARNATAKA, INDIA

IN ASSOCIATION WITH

INSTITUTE FOR ENGINEERING RESEARCH AND PUBLICATION (IFERP)

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Department of Electronics and Communication Engineering,
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Publisher: IFERP Explore

Preface

The "2nd International Conference on Emerging Trends in Science, Engineering and Management (ICETSEM-2021) - Virtual Conference" is being organized by Department of Electronics and Communication Engineering, GM Institute of Technology (GMIT), Davangere, Karnataka in Association with IFERP-Institute For Engineering Research and Publications on the 15th-16th July, 2021.

GM Institute of Technology (GMIT) has a sprawling student –friendly campus with modern infrastructure and facilities which complements the sanctity and serenity of the major city of Karnataka.

The "2nd International Conference on Emerging Trends in Science, Engineering and Management" was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of "Emerging Trends in Science, Engineering and Management" which were given International values by Institute for Engineering Research and Publication (IFERP).

The International Conference attracted over 320 submissions. Through rigorous peer reviews 245 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

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

Message from Chairman

Sri. G. M. Lingaraju

Chairman,
GM Institute of Technology, Davangere, Karnataka, India

Message

I am delighted in acknowledging the 2nd International Conference on "Emerging Trends in Science, Engineering and Management-2021" (ICETSEM-2021) organized by GM Institute of Technology, Davangere, Karnataka, India to provide a knowledge platform for researchers, scientists, academicians, engineers and industry professionals to discuss the problems and solutions in the area of Engineering and Science, to identify new issues and challenges to shape future directions for research. I appreciate the convener, co-convener and organizing committee for showing a keen interest in organizing a successful conference and contributing new ideas and research findings. I wish them for their endeavors to spread knowledge.

With regards
Sri. G. M. Lingaraju

Message from IFERP

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

Message

On behalf of Institute For Engineering Research and Publications (IFERP) and in association with Department of Electronics and Communication Engineering, GM Institute of Technology (GMIT), Davangere, Karnataka. I am delighted to welcome all the delegates and participants around the globe to GMIT for the "2nd International Conference on Emerging Trends in Science, Engineering and Management (ICETSEM -2021) - Virtual Conference" Which will take place from 15th-16th July, 2021.

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

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

With regards
Er. R. B. Satpathy

Message from Principal

Dr. Y Vijaya Kumar, B.E., M.Tech., PhD., FIE

Principal,
GM Institute of Technology, Davangere, Karnataka, India

Message

On behalf of GM Institute of Technology, Davangere I extend a very warm welcome to all the delegates and participants for the 2nd International Conference on "Emerging Trends in Science, Engineering and Management-2021" (ICETSEM-2021). GM Institute of Technology, Davangere has borne the mantle of excellence, committed to ensuring the students their own space to learn, grow and broaden their horizon of knowledge by indulging in diverse spheres of learning. In our endeavor to raise the standards of discourse, we continue to remain aware to meet the changing needs of our stakeholders.

We would like to thank Institute For Engineering Research and Publication (IFERP) is an online service for journal content published by Scopus Publishing for providing us with the platform for online publication.

Last but not the least; we would also like to thank the teaching, technical staff, the office staff, the organizers and the students for their contribution in successfully organizing and managing this event. This event wouldn't have been possible without their guidance and constant support.

We are also grateful to all the authors who trusted the conference with their work. Special thanks to the Keynote Speakers and all the panelists for sharing their views on current research topics.

We welcome you all to the GM Institute of Technology and hope that this conference will act as a medium for all of us present here to ponder upon the topic of discussion, challenge us to strive towards it and inspire us at the same time. Thank you!

With regards
Dr. Y Vijaya Kumar

Message from Management Representative

Sri. Y. U. Subhashchandra

Management Representative
GM Institute of Technology, Davangere, Karnataka, India

Message

It is my pleasure to invite you to the 2nd International Conference on Emerging Trends in Science, Engineering, and Management (ICETSEM-2021), which will be held on July 15th and 16th, 2021 at G M Institute of Technology, Davangere. In the current period of engineering and science & technology, technological expansion is regarded as a necessary reserve. Currently, it is very difficult to imagine our life without the use of science and technology. The International Conference on Emerging Trends in Science, Engineering and Management (ICETSEM-2021) will provide a high profile, cutting-edge technological platform for scholars and practitioners to examine important essential advances across technologies with growing interest from a large number of new ideas. I hope this conference provides a platform for all, assisting much in their next research studies.

With regards
Sri. Y. U. Subhashchandra

Message from Convener

Dr. Praveen J

Convener- ICETSEM-2021,
IQAC Director, Professor & Head
Department of Electronics and Communication Engineering,
GM Institute of Technology, Davangere, Karnataka, India

Message

Welcome, all participants to the 2nd International Conference on "Emerging Trends in Science, Engineering and Management-2021" (ICETSEM-2021) held at GM Institute of Technology, Davangere, Karnataka, India on 15th & 16th July 2021. The conference is organized with the support of the Institute For Engineering Research and Publication (IFERP), Arumbakkam, Chennai.

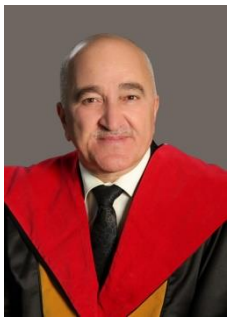
The main goal of organizing this international conference is to share and enhance the knowledge of each and every individual in this emerging science and technology world. We have given a good opportunity for those who have a thirst in knowing the present technological developments and also share their ideas.

Furthermore, this conference will also facilitate the participants to expose and share various novel ideas. The conference aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses in current technological trends. It reflects the growing importance of emerging science and technology as a field of research and practice. You will get ample opportunities to widen your knowledge and network.

Outside of the conference, I hope that you would/will enjoy some of the many attractions found in and around our beautiful campus. Such a large conference event is the culmination of many individuals. I thank the conference committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of ICETSEM-2021.

With regards
Dr. Praveen J

Keynote Speaker



Dr. Rami Hikmat Al-Hadeethi
Visiting Professor
Global Education Career Centre (GECC)
London, United Kingdom

Biography

Dr. Rami Hikmat Al-Hadeethi is an international, award winning Professor of Industrial Technology & Operations Management whose solid understanding of business administration in an engineering context, passion for learning, and consultative leadership style are the driving forces behind a progressively successful 29+ year career. He enjoys inspiring students across the EMEA to achieve their full academic and personal potential. He is also a founder of academic departments, colleges and programmes and participant in worldwide conferences.

Dr. Rami holds PhD and MSc in Industrial Technology and Operations Management both degrees from well-recognised UK universities and he is currently the Industrial Engineering Thematic Leader, Education Society Chapter, IEEE United Kingdom and Ireland Section. Moreover, he is a visiting Professor, Global Education Career Centre (GECC) in London and Director of Uruk Digital Training Centre, Iraqi Technologist Board in London, UK.

Dr. Rami has taught many undergraduate and postgraduate courses at several higher education institutions in the Middle East and has also successfully supervised and examined many postgraduate students both at Masters and PhD levels.

Dr. Rami has helped in setting up links with industry; this has added to his administrative knowledge and practical experience and has allowed him to improve his relations and links with the industrial sector. It has also allowed him to work on applied research, student graduation projects and student field training, focusing on several real-life industrial problems. Therefore, his scientific research efforts have resulted in the publication of 56 papers and 3 books.

Dr. Rami is an Internationally-recognised consultant with a unique prospective on mixing engineering knowledge and administrative abilities in the design, development, organizing and delivery of several worldwide short training courses that covers an extensive range of engineering disciplines and business-related topics.

Dr. Rami is also certified in instruction and e-learning systems and experienced in teaching e-learning, distance learning and blended-learning courses and webinars and chaired e-learning conferences in the EMEA.

Dr. Rami is a member of many unions, associations, societies and journal's editorial boards around the world.

Keynote Speaker

Mr. Dhananjay Singh

Chief business development officer – CBDO, Aviation Australia, Brisbane QLD &
Ex - Pro Vice Chancellor, International Federation University Australia

Biography

Professor Talal Yusaf recently joint Aviation Australia as a Chief Business Development Office, Professor Yusaf commenced his role as Pro Vice Chancellor, International at Federation University Australia in September 2018.

Professor Yusaf's international university career has included teaching, research and management positions in South East Asia, the Middle East, the United Kingdom and in Queensland for the last 28 years.

Member of Board of Director of (2013-current)

1. Aviation Australia Pty Ltd – Queensland Australia
2. Kingdom of Saudi Arabia KSA, Aviation Australia Riyadh College
3. International consulting board (ICB), to the president of University of Technology – Iraq
4. Advisor to the Malaysian cultural attach office in Sydney
5. Visiting Professor
   a. University Putra Malaysia
   b. University Malaysia Pahang
   c. University College London (2010-2011).
6. Adjunct Professor – University of Southern Queensland

Professor Yusaf holds PhDs in renewable energy and biotechnology, and has a strong research background and his field of specialization is Renewable Energy, alternative fuels and mechanical method for water treatment. Professor Yusaf's academic qualifications include BSc (Hons) *UoT Baghdad 1987*, MEng *National Uni UKM Malaysia 1994*, PhD *National Uni UKM Malaysia 1999* and PhD *USQ Queensland 2010*. Professor Yusaf has supervised over 50 PhD and Postgraduate students and has written and contributed to over 165 journals and 10 books.

Professor Yusaf's professional memberships and affiliations include PVCI Fed university, DVCI Forum, Executive Director, International at University of Southern Queensland (USQ), Chair of QLD international Director Forum, Director, International Sponsor Engagement and Research Partnerships (ISERP), Bio-Energy Research Group Leader, National Centre for Engineering in Agriculture and Associate Editor-in-Chief, Energies, Journal, Applied Sciences Journal, Groundwater for Sustainable Development, and International Journal of Automotive and Mechanical Engineering (IJAME).

Professor Yusaf is married with four children, including twin son and daughter, and is a huge fan of volleyball and soccer.

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ICETSEM - 2021

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- Virtual Conference

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Mrs. Pallavi. D.R., Assistant Professor, Banking and Insurance, Jain (Deemed-To-Be University), Bangalore, India
Prof. Madhav Murthy, Faculty, Mechanical Engineering, B.M.S. College Of Engineering, Bangalore, India
Raghavendra Kulkarni, Assistant Professor & Head, Computer Applications, Guru Nanak First Grade Science, Commerce & Post Graduate College, Karnataka, India
Sujeet More, Assistant Professor, CSE, Biluru Gurubasava Mahaswamiji Institute Of Technology, Bangalore, India

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ABSTRACTS

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Design and Development of Bio-Based Composites Using Sustainable Material for Residential and Industrial Application

Nandeesh D, Dept. of Mechanical Engineering, GMIT, Davangere, India

Bharath Kumar G M, Dept. of Mechanical Engineering, GMIT, Davangere, India

Manu S, Dept. of Mechanical Engineering, GMIT, Davangere, India

Karthik K R, Dept. of Mechanical Engineering, GMIT, Davangere, India

Bharath K N, Dept. of Mechanical Engineering, GMIT, Davangere, India

Abstract

In this paper, we design and development of Bio-based composites using sustainable material for residential and industrial applications. Design and fabrication of a table for domestic applications using bio-composites extracted from natural fiber such as jute fibers, coconut coir, CLS and so on. Preparation of the composite plate using compression molding technique for different size and shape were carried out. Testing of these material will be done as per the ASTM standard, for performance evaluation of mechanical and physical properties.

Development and Implementation of Sensors Based Remote Water Valve and Fertilizer Dosage Control System for Agricultural Application

Praveen J, Department of ECE, GMIT, Davangere, Karnataka, India

Aishwarya G, Department of ECE, GMIT, Davangere, Karnataka, India

Akshata R D, Department of ECE, GMIT, Davangere, Karnataka, India

Akshatha R, Department of ECE, GMIT, Davangere, Karnataka, India

Malathibai T, Department of ECE, GMIT, Davangere, Karnataka, India

Abstract

Irrigation in India to a maximum extent and mainly it's dependent on supply of water to the irrigation field. In order to provide water to the irrigation system, the electrical power is required to run electrical motor, which pump the water to the irrigation system through different water valves. But in most of the rural areas electrical power is the major concern and its available most of the time only 5 to 6 hours. Due to this farmer finding difficulty to balance the water to their agriculture field. Sometimes this electrical power is supplied during the night time to the rural areas. During such condition farmers finding difficulty to supply water to their irrigation field by travelling longer distance either by walk or their vehicles. To overcome this problem, in this paper new irrigation controller system is developed through a mobile app where it consists of several parameters (control of water valves) that can be selected according to the stage of the crop and water is supplied to the required field through mobile app control. Also in this paper, design of microcontroller based intelligent irrigation system controller which will allow irrigation to take place from remote places where manual inspection is not needed. The amount of soil moisture, Humidity and temperature are indicated through suitable sensors.

Performance Analysis of Heat Transfer Enhancement in Heat Exchanger by using Fins

Amaresh. K, Mechanical Engineering, GMIT, Davangere, India

Amith. K.S, Mechanical Engineering, GMIT, Davangere, India

Punith. B.O, Mechanical Engineering, GMIT, Davangere, India

Rakshitkumar Gombi, Mechanical Engineering, GMIT, Davangere, India

Abstract

Heat transfer enhancement in a heat exchanger can be improved by active and passive techniques. In the present study, heat transfer rate from the hot fluid to cold fluid in a double pipe counter flow heat exchanger having fins attached to outer surface of inner pipe along its length is analyzed. The whole analysis is carried out by using commercial CFD code. The two fin configurations of rectangular and triangular fins are used and their performance is compared with plain tube heat exchanger in this study. Computational analysis was carried on counterflow double pipe heat exchanger with constant mass flow rate for hot and cold fluids for exit temperature. It is found that exit temperature of the hot fluid is low and that of cold fluid is high for the rectangular fin. Using this exit temperature, the heat transfer rate and fin effectiveness are calculated. The results show that heat transfer in a finned configuration is comparatively greater than un finned one. Among these fin configurations, the rectangular fin shows improvement over triangular fin in terms of heat transfer rate, this is due to the rectangular fin has the large surface area for a given volume and also the effectiveness of the fin show the higher value than the triangular fin.

In Certain Diseases of Crops through Remote Sensing Images

Amith Shekhar C, Department of Information Science and Engineering GMIT Davangere, India
Sinchana S, Department of Information Science and Engineering GMIT Davangere, India
Sindhu K M, Department of Information Science and Engineering GMIT Davangere, India
Subiya H S, Department of Information Science and Engineering GMIT Davangere, India
Tanushree C N, Department of Information Science and Engineering GMIT Davangere, India

Abstract

The paper describes an automatic system diseases be detected by remote sensing images. Farmers losses, on the basis of a variety of crop diseases. It will be hard for cultivators to the regular monitoring of the crop after planting the area is very large (in hectares). It is the most important part of this study it is the earliest detection of the disease, and once it begins to spread across the top layer of the leaves with the help of remote sensing images. This is the method consists of a two-stages: in the first stage, in the field of education the healthy and the sick dataset that has the thresholds of the photo, and in the second stage is concerned, the monitoring of the crops, and the identification of specific diseases with the help of the a canny edge detection algorithm and histogram analysis, and the directly, impart an early warning system for farmers.

Production of Liquid Bio-fertilizer from Parthenium Hysterophorus

Anil G B, Department of Biotechnology, GMIT, Davangere, India

Meghana L, Department of Biotechnology, GMIT, Davangere, India

Mohankumar M P, Department of Biotechnology, GMIT, Davangere, India

Prakash K K, Department of Biotechnology, GMIT, Davangere, India

Abstract

Parthenium hysterophorus is an invasive widespread weed. It is one of the worst weeds of times. In spite of being a contagiously spreading weed and causing respiratory problems Parthenium hysterophorus has high N P K content and it is rich in phosphorous. The soil is continuously being polluted by usage of hazardous chemicals. It's necessary to use biochemical fertilizers to retain the value of agricultural soil. Trials of bio compost from Parthenium hysterophorus has been achieved successfully. Indoor plants also need few nutrients for its stable growth. For this requirement instead of using chemicals alternative bio fertilizers can be used. To replace this void we will be using Parthenium hysterophorus as liquid fertilizers to meet the need. This liquid fertilizer will be studied for various indoor plants for its growth. Further this study can be modified as the requirements of the consumer. It can be in the form of granular fertilizers, slow release fertilizers, and also in the form of plant food tablets. This method will be eco-friendly, non-hazardous and also chemical free. Gomutra is a liquid by-product of cows' metabolism. It is the best alternative for chemical fertilizer as it contains nitrogen and potassium in high amount. This liquid fertilizer from Parthenium hysterophorus can be mixed with Gomutra in different ratios and will be tested for various plants.

Keywords

Indoor plants, liquid fertilizers, Gomutra

Passwordless Authentication for Secured Login

Anish K Jain, Department of Information Science and Engineering, GMIT, Davanagere, India

Simran K, Department of Information Science and Engineering, GMIT, Davanagere, India

Sowmya GS, Department of Information Science and Engineering, GMIT, Davanagere, India

Vinay HN, Department of Information Science and Engineering, GMIT, Davanagere, India

Mr.Keerthi Prasad G, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

Over the years, passwords have functioned as a safeguard for us, preventing data theft through unprompted entry. Authentication methods based on ID and password are widely used nowadays and play an important role in a wide range of information systems and services. Many passwords must be remembered by both the scheme and the user in an age when there are a number of web-based and cloud-based apps that all rely on password authentication, on the other hand, passwords have a slew of problems, including re-use, phishing, and data leaking. In this paper, we describe the overall concept of passwordless authentication that not only eliminates all of the faults of password-based techniques but also provides excellent security.

Keywords

Password spraying , Credential stuffing , Spear Phishing

Automatic Ginger Harvesting Machine

Aravind K, Student, Dept. of Mechanical Engineering, GMIT, Davangere, India

Shivakumara K, Student, Dept. of Mechanical Engineering, GMIT, Davangere, India

Shivukumar Saraganachari, Student, Dept. of Mechanical Engineering, GMIT, Davangere, India

Vijay Kumar I H, Student, Dept. of Mechanical Engineering, GMIT, Davangere, India

Abstract

Ginger is a potential agricultural commodity to be developed in India. During the harvest period, the farmers use a very simple and conventional method for harvesting ginger by using hoes, pick-axe and other farming equipments. With this conventional approach, the farmers complain the need of more manpower for harvesting which naturally increases the labor cost and also the time spent for harvesting process is too long.

There is an alternative method of harvesting ginger by using imported ginger harvesting machines. These machines are not compatible with farming environment in India and also having a high initial and maintenance cost. Hence, there is a need of developing an indigenous machine for harvesting ginger which can be used in any farming condition in India and also can be prepared at village level.

In view of the strong need of simple, economical, environmental friendly ginger harvesting machine, an attempt has been made to develop the same. This Machine is having four main parts namely, Rechargeable Battery, Electric Motor, Power Transmission System and Rake. This project is focusing on design and fabrication of Advanced Ginger Harvesting Machine. The Rake will not only separate ginger from soil but also not let the ginger get harmed

Performance of Video Quality Metrics Assessment In AVC and HEVC coded videos

Aruna Kumar B.T, Research Scholar, VTU Research Centre, UBDTCE, Davanagere & Assistant Professor, Dept. of CS&E, G M Institute of Technology, Davanagere, India

Dr. Manja Naik N, Professors, Department of E&CE, UBDT College of Engineering, Davangere, India

Abstract

In this research article, the performance of video quality metrics assessment in AVC and HEVC coded videos is presented. It is a well-known fact that the performance of the video in AVC & HEVC coded videos depends on the video quality metrics & this has to be given more weightage and such this paper gives a light into the chosen topic. Digital video systems have almost fully replaced analog ones, and quality evaluation methods have changed. The performance of a digital video processing and transmission system can vary significantly and depends, amongst others, on the characteristics of the input video signal (e.g., amount of motion or spatial details), the settings used for encoding and transmission, and the channel fidelity or network performance. In light of these concerns, the issue of primary focus in this research work is the impact of all these operations and sources of distortion on the end user's perceived quality of experience. Under the assumption that we do not have access to the decoder and we only have access to the decoded pictures, we do not have knowledge of how losses have propagated to other frames. Furthermore, for some error concealment techniques, it might be hard to measure the propagated error through the traces of temporal error concealment. Hence, in order to estimate these distortions, we can only rely on the spatial and temporal features of the decoded video. The main objectives of the proposed work is to analyze the quality of video signal from the distorted video signal, to implement the adaptive content of the quality of video signal by error detection, to design a visual perception model for video dynamics, to understanding the role of parameters namely tempo spatial power spectrum and sensitivity measure for visual perception & finally to compute the statistical features for optimal visual perception model.

Fiber-Reinforced Composite as an Implant Material for Medical Applications

Yuvaraj N, Department of Mechanical Engineering, GMIT, Davanagere, India

Thippesh S.K, Department of Mechanical Engineering, GMIT, Davanagere, India

Sachin Malagi, Department of Mechanical Engineering, GMIT, Davanagere, India

Sachin Waddar, Department of Mechanical Engineering, GMIT, Davanagere, India

Manjunatha G B, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

The research on biomaterial has been preliminarily derived by the increasing demand for hard tissue replacement/reconstruction material. Currently steel, titanium and titanium based alloys being widely used for bone replacement materials, including total hip joint replacement (THR) in India and other developing countries. However, these materials are not useful for long-term usage, because of the problems related to their durability and functioning in body environment. Fiber-reinforced composites (FRC) are durable materials having lower elastic modulus than metals. In fact, the mechanical properties and modulus of elasticity of unidirectional FRC are close to that of natural bone. There is growing interest in using FRCs in dental applications and surgical implants for orthopedic and craniofacial surgery involving some degree of structural performance under load-bearing conditions which also makes FRCs interesting materials for implants.

Implementation of Fingerprint Sensor based Vehicle Engine Ignition System

Mrs Asha T, Department of ECE, GMIT, Davanagere, India

Serina, Department of ECE, GMIT, Davanagere, India

Merina, Department of ECE, GMIT, Davanagere, India

Zaiba Muskan, Department of ECE, GMIT, Davanagere, India

Syedha Zubeda, Department of ECE, GMIT, Davanagere, India

Abstract

Vehicle security is a critical issue nowadays because of robbery and also another problem with vehicle is handling its keys. Keys have to be required to be carried and forgetting keys can cause a major issue. The system tries to find an answer to the ongoing barrier is by introducing a fingerprint vehicle starter system. The system provides security and effortless way to on/off vehicle engine. The user can scan fingerprint directly without a key, initially user has to register by scanning fingerprint into system. The system allows many users to enroll their fingerprint. Here, Arduino uno microcontroller and ESP 8266 WIFI module are used. The fingerprint module is connected to the microcontroller. A buzzer is used to beep whenever an unauthorized person tries to use the vehicle and the owner of the vehicle gets notified. The complete system makes use of IOT technology.

Alternate Fuel for Internal Combustion Engines

Mohammed Ashrafulla, Mechanical Engineering, GMIT, Davanagere, India

Rahamathulla S.K, Mechanical Engineering, GMIT, Davanagere, India

Khasim Sohail I, Mechanical Engineering, GMIT, Davanagere, India

Abstract

The search for an alternative fuel is one of the needs for sustainable development, energy conservation, efficiency, management and environmental preservation. Therefore, any attempt to reduce the consumption of petrol and diesel possible alternative fuels is mostly preferable. Many research activities were developed in order to study the Internal Combustion Engines with alternative fuels. Acetylene is one of the tested fuels. So we tried to find out more suitable way to make it safe and work.And also a way to filtration and new way to remove water or moisture. Acetylene is advocated to be a strong contender to be used as an alternative fuel in internal combustion engines.

Effect of Addition of Sugarcane Bagasse Ash as a Partial Replacement of Cement on Fresh and Hardened Properties of Cement Concrete

B K Varun, Assistant Professor, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Rachana M, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Bindu M, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Spoorthi KG, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Sushma Y Abbigeri, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

Rapid growth in the construction has been increasing the demand and consumption of cement. Cement production consumes lot of raw materials which leads to emission of carbon dioxide to the atmosphere, causes environmental problems. Significant research has been going on in search of developing alternate binders that are eco-friendly and contribute towards waste management. The sugar manufacturing industries produce lot bagasse which is disposed off in an open land i.e. fibrous waste product. With increasing awareness about the environment, utilization of waste materials and it's by product becomes attractive alternate way of disposal. Sugarcane bagasse ash has pozzolanic properties which mainly contains aluminum ion and silica. Silica present in the bagasse ash reacts with the components of cement during hydration.

In the present work, an attempt has been made to use a Bagasse ash as a partial replacement of cement. The main aim of this work is to study the fresh and hardened properties of M-30 grade control concrete and Bagasse ash has been partially replaced in the ratio of 0%, 5%, 10%, 15%, 20% and 25% by the weight of cement in concrete. To study the fresh properties slum test is conducted. To study hardened properties of concrete, compressive and split tensile strength tests are conducted and comparative study will be carried out.

Characterisation Ad Performance Comparison of Karanja Methyl Ester with CI Engine

Chetan J Chikkorde, Mechanical Engineering, GMIT, Davangere, India

Ajit Bevingidad, Mechanical Engineering, GMIT, Davangere, India

Basavaraj M Mannangi, Mechanical Engineering, GMIT, Davangere, India

Vinayak P Kodate M, Mechanical Engineering, GMIT, Davangere, India

Abstract

Biodiesel is produced from renewable resources like vegetable oils and animal fats. It can use as a fuel in diesel engine by blending with diesel or in pure form. Biodiesel blended diesel fuel emits less harmful gasses compare to diesel fuel. India is developing country where more than 70% of petroleum products are import. Biodiesel production from local resources provides energy security; reduce import bill, generate employment and reduced emissions of harmful gasses. Production of biodiesel from edible oil is not economical for India due to its higher price. Various non-edible oil seeds like Jatropha, Karanja, Mahua, Sal, Neem etc. are widely available in India. It is less costly compared to edible oils. Among them, Karanja has a potential to be used as a basic feedstock for the production of biodiesel. Karanja trees can grow on sides of roads, canal and boundary portion of agricultural lands with minimum care. Its seeds contain 27–39% of the oil. Transesterification, Pyrolysis, Microemulsion and Blending are four primary methods for the production of biodiesel. The yield of 97% of Karanja oil methyl ester (KOME) was obtained from Karanja oil (KO) by transesterification process at 65 °C using 1 wt% of KOH, 6:1 M ratio of methanol to oil in 2 h. The 20% blend of KOME with diesel (B20) is the most optimized blend for a diesel engine. The Brake thermal efficiency (BTE) and Brake specific fuel consumption (BSFC) of B20 is comparable to diesel. Emissions of CO, HC and smoke are reduced and NOx is increased with increasing blending of KOME with diesel. This paper focuses on the production methods of KOME, parameters that affect the yield, engine performance by pure KOME and its various blends with diesel, economic aspects, environmental considerations and sustainability of Karanja oil as an Indian prespective.

Cloud Based Air and Sound Pollution Monitoring System with Temperature and Humidity Sensing

Mr. Chetan B V, Department of ECE, GMIT, Davangere, India

Mr. Mohammad Aftab Y H, Department of ECE, GMIT, Davangere, India

Mr. Dheeraj Kumar S, Department of ECE, GMIT, Davangere, India

Mr. Chandan Patil R V, Department of ECE, GMIT, Davangere, India

Mr. Pavankumar I Dodawad, Department of ECE, GMIT, Davangere, India

Abstract

In recent day situation, the continuous increase in air and sound pollution prove to be an disturbing problem. It has become compulsory to control and appropriately monitor the situation. In this work, an Internet of Things (IoT) based methodology to monitor the Air Quality Index, Noise Intensity, Temperature and Humidity of a region has been proposed. The evaluation of methodology is performed on Raspberry Pi implementation with interfacing of a web server ThingSpeak that has an API for posting and reviewing the data to the channel. Python is used for programming and interfacing the Raspberry Pi with various sensors viz. temperature/humidity sensor, sound sensor and gas sensor for collecting the data. The proposed system incorporates four segments, namely, the Air Quality Index Monitoring Module, the Sound Intensity Detection Module, the Cloud based Monitoring Module and the Anomaly Notification Module. Firstly, the Air Quality Index is measured studying the presence of the five critical air pollutants. Then the sound intensity is detected using relevant sensor. The Cloud based Monitoring Module ensures the process of obtaining the data with the help of Wi-fi-module present in Raspberry Pi which fulfils the objective of analysis of information on periodical basis. Lastly, the Anomaly Notification Module alerts the user in case of an undesired condition.

Smart Surveillance and Watchman Alerting System

Mr. Chetan B V, Department of ECE, GMIT, Davangere

Mr. Bharath P Kalmani, Department of ECE, GMIT, Davangere

Mr. Akarsh S A, Department of ECE, GMIT, Davangere

Mr. Mayur R Vernekar, Department of ECE, GMIT, Davangere

Mr. Nikhil Swamy B K, Department of ECE, GMIT, Davangere

Abstract

In this modern era, surveillance security camera system plays a vital role in day-to-day life, as it full-fills the safety aspects against burglary, theft related problems and reduces the need of the watchman. This work proposes a smart surveillance system that would act as a solution for security issues. The proposed system for smart surveillance involves a security camera with the night vision capabilities interfaced with raspberry pi. OpenCV is used to perform real-time image processing. This system proves to be a cost-effective way of surveillance, as it uses a credit card-sized chip Raspberry Pi (RPI). The methodology of the proposed system involves breaking down a video, captured by the camera in real-time, into separate frames. Each frame is processed using image processing tools in python. The preprocessed images (frames) are compared for change in pixel values, to detect the movement of an object. Then, an object detection algorithm like Tensor Flow is used to detect the object and classify it. Later, a buzzer is actuated to cognize the security system and personnel. Also, an alert notification is sent to the owner.

IOT Based Coal Mine Safety Monitoring and Control Automation using Raspberry Pi

Dr. Santosh M Herur, Assistant Professor, Department of E&CE, GMIT, Davangere, Karnataka, India

Clinton Leema, Department of E&CE, GMIT, Davangere, Karnataka, India

Chandana R M, Department of E&CE, GMIT, Davangere, Karnataka, India

Gowri M G, Department of E&CE, GMIT, Davangere, Karnataka, India

Lingaraju S V, Department of E&CE, GMIT, Davangere, Karnataka, India

Abstract

Today safety of miners is a major challenge. Miner's health and life is vulnerable to several critical issues, which includes not only the working environment, but also the after effect of it. Mining activities release harmful and toxic gases in turn exposing the associated workers into the danger of survival. This puts a lot of pressure on the mining industry. To increase the productivity and reduce the cost of mining along with consideration of the safety of workers, an innovative approach is required. Miner's health is in danger mainly because of the toxic gases which are very often released in underground mines. These gases cannot be detected easily by human senses. This work investigates the presence of toxic gases in critical regions and their effects on miners. A real time monitoring system using wireless sensor network, which includes multiple sensors, is developed. This system monitors surrounding environmental parameters such as temperature, humidity and multiple toxic gases. This system also provides an early warning, which will be helpful to all miners present inside the mine to save their life before any casualty occurs. The system uses Things speak technology to establish wireless sensor network.

GO Online -A Business Platform to Fight Against Covid-19

Darshan VK, Department of Information Science and Engineering, GMIT, Davanagere, India

Rakshith M, Department of Information Science and Engineering, GMIT, Davanagere, India

Eshwar Reddy S, Department of Information Science and Engineering, GMIT, Davanagere, India

Priyanka CG, Department of Information Science and Engineering, GMIT, Davanagere, India

Mr.Keerthi Prasad G, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

The process of conducting business using computer networks is known as electronic commerce. A user who is seated in front of a computer can use all of the Internet's features to buy or sell things. Unlike traditional commerce, which requires a person to go out and get items, ecommerce has made it easier for humans to eliminate physical labour and save time. E-commerce, which began in the early 1990s, has made significant progress in the computer world. The fundamental advantage of e-commerce over traditional commerce is that users can browse online businesses, compare prices, and place orders from the comfort of their own homes using their computers or mobile phones. B2B e-commerce is used to increase the use of e-commerce in underdeveloped countries by boosting access to global markets for firms in developing countries.

Lung Segmentation and Pneumonia Detection From X-Rays

Meka Gayathri, Department of ECE, VNR VJIET, Hyderabad, Telangana, India

Datta Sai Raipally, Department of ECE, VNR VJIET, Hyderabad, Telangana, India

Dileep Naik, Department of ECE, VNR VJIET, Hyderabad, Telangana, India

Vipparthi Vamshi, Department of ECE, VNR VJIET, Hyderabad, Telangana, India

Dr.Y.Chalapathi Rao, Associate Professor, Department of ECE, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana, India

Abstract

Lung segmentation outlines, image processing algorithms for accurate lung segmentation in chest radio graphs of critically ill children and adults. These computer aided systems help in the diagnosis of acute respiratory distress syndrome, Tuberculosis, Pneumonia, Lung cancer, several other respiratory diseases and ongoing research to detect Covid. Among manys, one of the most used method for diagnosis is Chest X-rays, due to its low cost. The main drawback of chest x-ray is that it cannot detect all problems in the chest. Thus, implementing neural networks to perform lung segmentation and to obtain correct results. The “lost” regions of lungs are reconstructed by an automatic segmentation method from chest X-ray images. The pneumonia detection from lung segmentation has been discussed in the paper.

Keywords

Lung segmentation, U-NET, CNN, CAD systems

A Novel Scheme for Unified Streamlined Traffic Management in 5G Backhaul Network

Deepa T, Research Scholar, Visvesvaraya Technological University, Belagavi, Karnataka, India

Dr. Praveen J, Professor and Head, Department of Electronics & Communication Engineering, GMIT, Davanagere, Karnataka, India

Abstract

With an increasing evolution of 5G technologies, there is also a rising concern for its operational demands. The issues associated with the 5G backhaul network act as an underlying reason of concern. After reviewing the existing literature towards the 5G backhaul network, it is noticed that various ranges of the sophisticated scheme have evolved up to improve the 5g backhaul network. However, there are yet open-end issues that are required to be attended. Therefore, the proposed study introduces a novel scheme of effective traffic management of the 5G backhaul network. The scheme hypothesizes that if an efficient gateway node is selected, it can better bridge the Macro-base station and the core network. The study contributes to developing a sophisticated system design meant for identifying the blockage region and a Macro-base station and small base station. These attributes incorporate the capability of a gateway node to identify the bottleneck condition during peak traffic situations in the 5G backhaul network. The study outcome shows better communication performance in contrast to the existing system.

Keywords

5G, Backhaul Network, Core Network, Gateway Node, Traffic Management

Probiotics for Cholesterol Assimilation

Mohammed Ali, Department of Biotechnology, GMIT, Davangere, India

Harshitha B S, Department of Biotechnology, GMIT, Davangere, India

Spandana M S, Department of Biotechnology, GMIT, Davangere, India

Chetan S, Department of Biotechnology, GMIT, Davangere, India

Deepti Palleda, Department of Biotechnology, GMIT, Davangere, India

Abstract

Probiotics are microorganism that gives health care when consumed. Currently, the term probiotics is applied to ingested microorganisms associated with beneficial effects on humans and animals. Probiotic drinks are commonly milk-based drinks that are milk-like in consistency. They are eaten for gastrointestinal wellbeing. The addition of soymilk probiotics will improve the characteristics and benefits of multiple folds. The addition of apple extract offers improved sensory properties and primarily increases the shelf life of the beverage or drink. The overall motive of this research work is to develop a probiotic drink from soy milk and apple extract, to enhance the digestive properties among humans. The probiotic drink was prepared by blending soy milk, apple extract and digestive microbes. The different blends were inoculated by Lactobacillus, acetic acid bacteria, saccharomyces yeast and the apple extract fermentation time was optimized for 48 hours. For overall acceptability, the 65:35 mixing ratios of soy milk and fermented apple extract produced desirable results with the highest sensory ratings.

Molecular Characterization of Plant Growth Promoting Bacteria Isolated from the Rhizosphere of *Areca catechu L.* Plantation

Meghana .M, Department of Biotechnology, GMIT, Davanagere, India

Ranjitha H, Department of Biotechnology, GMIT, Davanagere, India

Shubham Revankar, Department of Biotechnology, GMIT, Davanagere, India

Suhas S.V, Department of Biotechnology, GMIT, Davanagere, India

Pavan K. J, Department of Biotechnology, GMIT, Davanagere, India

Abstract

Areca is a medium-sized, straight growing tree up to 20m tall, with trunk 10-15cm in diameter. The leaves are long pinnate 1.5-2m, with numerous, crowded leaflets. It is a species of palm which grows in wide areas of the tropical Pacific, Asia, and parts of east Africa. Areca seeds contains alkaloids such as acecainide and arecoline. When chewed they are intoxicating and less addictive. Areca plants contain seeds contain condensed tannins called areca tannins which are carcinogenic in nature.

Chemical fertilizers excessive usage for plant growth, it reduces the soil fertility by acidification of the soil and mineral depletion, creates water pollution and chemicals burns to crops. To overcome these problems, we have to approach usage of biofertilizers. In this article we are aiming at Plant Growth Promoting Bacteria (PGPB) which is isolated from the rhizosphere. Rhizosphere is the volume of soil under the influence of plants root, where the important interactions of the plants and microbes take place. They colonize all ecological niches of root at all stage of plant development, even in the presence of a competing microflora. Plant's inoculation studies shows that these plant growth-promoting rhizobacteria (PGPR) strains provide a significant increase in length of shoot and root, and shoot and root biomass.

The present study reveals the significant increase in shoot and root nitrogen content up to 76% and 32% simultaneously was observed over the un-inoculated control. Further studies also indicate the potential of these PGPR for inoculums production of biofertilizers for enhancing growth and nutrient content crops under field conditions. PGPB are the main determinants of the plant's health, productivity and soil fertility. Hence, we isolate PBPB from the soil sample and perform some biochemical test on the isolated bacteria for their molecular characterization. Biochemical tests include gram staining, acid fast staining, IAA test, ammonia test, catalase test, amylase test, salt tolerance test, temperature tolerance test and seed germination test. After the pure culturing of the PGPB it can be used as biofertilizer with carrier materials.

Keywords

Areca, PGPB, Biofertilizer, IAA

Face Mask Detection Using Semantic Segmentation

Firoz Khan, Assistant Professor, Dept.of IS &E, GMIT Davangere, India

Harshitha S, Dept.of IS &E, GMIT Davangere, India

Manikya B V, Dept.of IS &E, GMIT Davangere, India

Ramya B V, Dept.of IS &E, GMIT Davangere, India

Abstract

The unprecedented outbreak of the 2019 novel coronavirus, termed as COVID-19 by the World Health Organization (WHO), has placed numerous governments around the world in a precarious position. The impact of the COVID-19 outbreak, earlier witnessed by the citizens of China alone, has now become a matter of grave concern for virtually every country in the world. The scarcity of resources to endure the COVID-19 outbreak combined with the fear of overburdened healthcare systems has forced a majority of these countries into a state of partial or complete lockdown. The number of laboratoryconfirmed coronavirus cases has been increasing at an alarming rate throughout the world, with reportedly more than 2.2 million confirmed cases as on 20 April 2020. So wearing face mask is very important,Face Detection has evolved as a very popular problem in Image processing and Computer Vision. Many new algorithms are being devised using convolutional architectures to make the algorithm as accurate as possible. These convolutional architectures have made it possible to extract even the pixel details. We aim to design a binary face classifier which can detect any face present in the frame irrespective of its alignment. We present a method to generate accurate face segmentation masks from any arbitrary size input image. Beginning from the RGB image of any size, the method uses Predefined Training Weights of VGG – 16 Architecture for feature extraction.Experiments were performed on Multi Parsing Human Dataset obtaining mean pixel level accuracy of 93.884 % for the segmented face masks.

Synthesis of Chitosan Nanoparticles and Its Antimicrobial Application in Medical Protective Wears

Tejas M M, Department of Biotechnology, GMIT, Davangere, India

Nehan Anjum M H, Department of Biotechnology, GMIT, Davangere, India

Pramod Bhavanoor, Department of Biotechnology, GMIT, Davangere, India

Sinchana H, Department of Biotechnology, GMIT, Davangere, India

Ganesh G. Tilve, Department of Biotechnology, GMIT, Davangere, India

Abstract

In recent years nanotechnology has grabbed attention in many fields, because of its vast applications. As of that an attempt was made to synthesize the nano chitosan particles by ionic gelation technique where they have many applications like antimicrobial activity, waste water treatment, food packaging and also successfully used in plant protection and promotes the growth of plant. Size of individual particles synthesized varies from 5nm to 180nm and this is verified using TEM (transmission electron microscope) and DLS (dynamic light scattering). Nanochitosan particles synthesized are embedded on cotton polyesters cloth to verify the antibacterial activity and embedded nanoparticle analysis is done using FTIR(fourier transform infrared microscope) and SEM(scanning electron microscope).The antibacterial activity of nanochitosan is more efficient in gram negative bacteria.

Use of Sugarcane Bagasse Ash as Cement Replacement Materials in Concrete

Sateesh Bankanal, Civil Engineering, GMIT, Davanagere, Karnataka, India

Sadhik SR, Civil Engineering, GMIT, Davanagere, Karnataka, India

G.Dileep Kumar, Civil Engineering, GMIT, Davanagere, Karnataka, India

Bhaskar Reddy, Civil Engineering, GMIT, Davanagere, Karnataka, India

Swamy L.V, Assistant Professor, Civil Engineering, GMIT, Davanagere, Karnataka, India

Dr.H.S.Govardhana Swamy, Professor, Civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

Nowadays, a number of researchers are using either industrial or agriculture products as alternative source of raw materials for the construction industry. These waste products are economical in producing a sustainable in reducing environmental pollution. It is proposed to study that cement is partially replaced the material of 0%, 5%, 10%, 15% and 20% of Sugarcane Bagasse Ash (SCBA). In this experimental work, total 15 concrete samples cubes were made having water/cement ratio of 0.5 with 1:1:2 mix ratio of concrete and cured after 7, and 28 days. The main purpose of this experimental research work is to observe the compressive strength of concrete blended with various proportions of sugar cane bagasse ash. In this experimental work, for each curing days of 03 cubes s were cast and finally taken as an average value of three as a final result. The result showed that the compressive strength of concrete made with 10% SCBA increased by 15.40% and 8.50% respectively at 28 days. The workability of concrete is reduced with increases in the amount of SCBA in concrete.

Keywords

Sugar Cane Bagasse Ash, Waste Product, Reducing Environmental Pollution, Increasing Strength of concrete

Optimization of Ethyl Levulinate extraction from Sugarcane Bagasse

Bommanputri Gangdhar Prerana, Department of Biotechnology, GMIT, Davangere, India

Ashwini Santhosh, Department of Biotechnology, GMIT, Davangere, India

Afifa Arfain, Department of Biotechnology, GMIT, Davangere, India

Mathada Shanmukiah Renukardaya, Department of Biotechnology, GMIT, Davangere, India

Dummi Mahadevan Gurumurthy, Department of Biotechnology, GMIT, Davangere, India

Abstract

Fuel additives improve fuel stability, protects engines and fuel systems, and influences the Combustion Process. For example, ethyl levulinate (EL) is obtained by esterification of levulinic acid (LA) with alcohol. Levulinic acid contains carboxylic acid and keto functional groups obtained from hydrolytic decomposition of hexose waste. Esters of biomass-derived levulinic acid, used as oxygenated additives in fuels, flavoring and fragrance. Ethyl levulinate (EL) currently used as an oxygenating fuel additive, raw material for the manufacture of γ-valerolactone (GVL), or as a solvent to absorb carbon dioxide due to the non-corrosive properties, high thermal stability, and low melting points of ionic liquid, both solvent and catalyst have created an excellent deal of interest. The present direct conversion of sugarcane bagasse to ethyl levulinate by the acid hydrolysis and ethanol treatment methods. Currently, together with EL and levulinic acid, it is being evaluated as substitutes for typical catalysts and is employed in biomass dissolution and within the formation of assorted chemicals. This approach has the benefits of limited reaction time, less side reaction and high concentration of the product.

Smart Virtual Assistance for Visually Impaired People

Gururaj E, Department of Electronics & Communication Engineering, GMIT, Davangere, India

Pooja B, Department of Electronics & Communication Engineering, GMIT, Davangere, India

Varshini S B, Department of Electronics & Communication Engineering, GMIT, Davangere, India

Sheetal S, Department of Electronics & Communication Engineering, GMIT, Davangere, India

Vismitha T R., Department of Electronics & Communication Engineering, GMIT, Davangere, India

Abstract

The project aims to bring the beautiful world as a narrative to the Visually Impaired People. The retro fitted camera on cap captures the image and process the image using deep learning techniques of Microsoft Cognitive services, cloud services provide fast image processing than regular system processing and ALEXA Voice Services are used to narrate the scene. The system is portable and easy to use and it serves better than the present system as it not only detects the obstacle but also describes the object.

Design of Gyroscope for Stabilizing Two-Wheeler

M S Mallikarjuna, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

B R Gurushree Karthik Prasad, Department of Mechanical Engineering, GMIT, Davanagere, India

Raju B R, Department of Mechanical Engineering, GMIT, Davanagere, India

R Ayisha Sidviqua, Department of Mechanical Engineering, GMIT, Davanagere, India

Priyanka H K, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Stabilizing plays a major role to help in avoiding the majority of an accident in two-wheelers. Gyroscope thus helps to develop the counteracting forces against the tilting force. The safety aspects of the vehicle are increased by incorporating a gyroscope mechanism in the two-wheeler. The torque generated by the gyroscope must be equal to the imbalance torque acting on the vehicle for the dynamic stabilization of the vehicle. The main principle is about generating the counteracting torque to help stabilize the tilting vehicle. The design for the gyroscope was thus finalized, and then designing, modelling and fabrication were done to successfully experiment. The stabilizing effect is thus generated by the rotating gyroscope mounted on the vehicle.

The Mechanical Properties of Polypropylene Fibre Reinforced Concrete with Silica Fume as a Partial Replacement of Cement

Hanumesh B M, Assistant Professor, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Raghavendra G, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Ramkumar H, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Vamshi Chowdary, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Amith D A, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

Concrete is the most important engineering material and the addition of some other materials may change the properties of concrete. Mineral additions which are also known as mineral admixtures have been used with cements for many years. Its handling and disposal is a point of concern because of the environment concerns. Silica fume is usually categorized as a supplementary cementitious material. These materials exhibit pozzolanic properties, cementitious properties and a combination of both properties. Plain concrete possesses a very low tensile strength, limited ductility and little resistance to cracking. Internal micro cracks are inherently present in the concrete and its poor tensile strength is due to the propagation of such micro cracks, eventually leading to brittle fracture of the concrete in the past. Although fibres provide tensile strength to the concrete members, they however, do not increase the inherent tensile strength of concrete itself. In plain concrete and similar brittle materials, structural cracks (micro-cracks) develop even before loading, particularly due to drying shrinkage or other causes of volume change.

In the present work, an attempt has been made to use a silica fume as a partial replacement of cement and polypropylene fibres in concrete. The main aim of this work is to study the fresh and hardened properties of M-25 grade control concrete and silica fume has been partially replaced in the ratio of 0%, 5%, 10%, 15% by the weight of cement in concrete and with polypropylene fibres by 0%, 1% and 2% by volume of the mould. To study the fresh properties slump and compaction factor tests also to study hardened properties of concrete, compressive and split tensile strength tests are conducted.

Effect of Size of Coarse Aggregate on Self Compacting Concrete

Harish B A, Assistant Professor, Department, of civil Engineering, GMIT, Davanagere, Karnataka, India

Sudeep Goud K S, Department, of civil Engineering, GMIT, Davanagere, Karnataka, India

Shashank R, Department, of civil Engineering, GMIT, Davanagere, Karnataka, India

Manoj J A, Department, of civil Engineering, GMIT, Davanagere, Karnataka, India

Vibha K S, Department, of civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

Aggregates play important role in concrete; it serves as Structural fillers which are used in concrete production. Aggregate sizes, types and gradation are the most important factor when selecting aggregate. This study examines incorporating different sizes and types of coarse aggregate. Testing workability and strength of self-compacting concrete mixes at varying sizes of coarse aggregate. The various aggregate sizes used in the various mixes are 10, 12.5mm, the types of aggregate used are natural coarse aggregate, superplasticizer used is Armix Plast 111 with water cement ratio of 0.5. Slump flow test, J-Ring, L-box, U-box and V-funnel test were carried out on the various mixes to determine the fresh properties of the concrete mix. The mechanical properties (compressive, flexural and split tensile strength test) were conducted on the mixes at different curing age (3, 7, and 28 days).

IoT Based Anti- Poaching Alarm System for Trees in Forest

Dr. Manjula G M, Assistant Professor, Department of ECE, GMIT, Davangere, India

Harshitha K M, Department of ECE, GMIT, Davangere, India

Suchithra. N. K, Department of ECE, GMIT, Davangere, India

Sneha T, Department of ECE, GMIT, Davangere, India

Niveditha S, Department of ECE, GMIT, Davangere, India

Abstract

Nowadays there are many incidents about smuggling of trees like Sandal, Sagwan etc. These trees are very costly and meagre. They are used in the medical science and cosmetics. To restrict their smuggling and to save forests around the globe some preventive measures need to be deployed. We have developed a system which can be used to restrict smuggling. The design system uses three sensors tilt sensor, temperature sensor, and sound sensor. Data generated from these sensors is continuously monitored with the aid of Blynk App. With respect to the sensors, their output devices are activated through relay switch. For tilt sensor and sound sensor, a buzzer is activated and for temperature sensor a water pump is activated. Generated data is stored in Blynk Server over the Wi-Fi module. Forest officials are notified when any event occurs so that appropriate action can be taken.

Disinfected Hand Sanitizer with Temperature Sensor and Voice Notification

Mr. Harisha G C, Assistant Professor, Electronics & Communication Engineering, GMIT, Davangere, India

Rakshitha A, Electronics & Communication Engineering, GMIT, Davangere, India

Pramod J, Electronics & Communication Engineering, GMIT, Davangere, India

Ramya M H, Electronics & Communication Engineering, GMIT, Davangere, India

Chetan Kolur, Electronics & Communication Engineering, GMIT, Davangere, India

Abstract

This paper aim to plan and carry out a minimal expense smart hand sanitizer dispenser with declaration framework based on Microcontroller, that can assist with settling the difficulties looked by security guards at clinic entryways and so on in upholding this hand sanitizing activity prior to giving individuals access to any place they expect to enter as certain individuals are not able to collaborate, some look at it as a wastage of their time and also sometimes these security guards can let some people in without sanitizing just because they are their friends or family relatives which is very risky. Consequently, the smart hand sanitizer is positioned at the passageway entryway and the obstacle sensor associated with the entryway. In other words, when a person(s) needs to get to the passage entryway, they should first sanitizer their hands that will be announced automatically.

Mixed Type Solar Dryer Integrated with Phase Change Material (PCM) for Drying Agricultural Products

Monisha G, Department of Biotechnology, GMIT, Davangere, India

Ghazala Masood, Department of Biotechnology, GMIT, Davangere, India

Naveen K H, Department of Biotechnology, GMIT, Davangere, India

Mallikarjuna A C, Department of Biotechnology, GMIT, Davangere, India

Keerthi S, Department of Biotechnology, GMIT, Davangere, India

Shalini Billa, Assistant Professor, Department of Biotechnology, GMIT, Davangere, India

Abstract

Drying crop is an old conventional process for preservation and additional processing. This work presents the study and development of a Phase Change Material (PCM) based solar dryer for drying some commercial crops in rural areas. Since the conventional method of drying crops is time-consuming and inefficient, crops are contaminated for drying in an open environment. Few farmers use commercial dryers which utilize fossil fuels/electricity as an energy source for drying crops in a closed environment which creates operating cost hence, to overcome these limitations PCM based solar dryers are developed where it uses renewable solar energy as an energy source, crops are dried in a closed environment and the dryer is integrated with PCM. Phase Change Materials (PCMs) are the materials/substances which absorb or release heat during a change in their physical state therefore, PCM is integrated with the dryer so that it absorbs and even stores heat from the sun later and the heat released from this material is used for drying crops. PCM selected for this study is paraffin wax. The primary aim of this work is to study the different methods followed by farmers for drying crops around few rural areas and to design a mixed mode PCM based solar dryer so that it can be used by farmers for drying specific crops.

Keywords

Phase Change Material (PCM), paraffin wax, solar dryer, drying

Study and Evaluation of Plasma Sprayed Coating on A Metal Substrate

Kiran Naik.V, Department of Mechanical Engineering, GMIT, Davanagere, India

Mallikarjun.G.J, Department of Mechanical Engineering, GMIT, Davanagere, India

Manojkumar.T, Department of Mechanical Engineering, GMIT, Davanagere, India

Praveenkumar.A.Malladad, Department of Mechanical Engineering, GMIT, Davanagere, India

Dileepkumar S G, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Super alloys are widely used in manufacturing of Turbine blades, Heat Exchanger tubing, Jet engines, Marine industry and Aerospace industry. Although these materials have acceptable mechanical and tribological properties at high temperatures. But these can be exposed to some aggressive environment degradation may takes place in the form of wear. This work focuses on the study of wear behavior of the super alloys substrates at high temperature condition by applying a coating using plasma spray method. The experimentation is conducted by using Pin-on-Disc setup for different samples of base metal and different coating thickness.

Keywords

Super alloys, Wear, Plasma Spray Coating,

Treatment of Dairy Wastewater by Using Natural Coagulants

Dr. Kiran Kumar H S, Assistant Professor, Civil Engineering, GM IT, Davanagere, India

Pooja S, Civil Engineering, GM IT, Davanagere, India

Ramya K A, Civil Engineering, GM IT, Davanagere, India

Shilpa Raikar M, Civil Engineering, GM IT, Davanagere, India

Sushma N H, Civil Engineering, GM IT, Davanagere, India

Abstract

The aim of the project is to investigation on treating of Dairy wastewater using natural coagulants. The diaries are one of the vast sources of food processing industries. These industries uses massive amount of water to produce dairy products from raw milk and generate roughly 3 liters of wastewater per 1 liter of processed milk. The wastewater discharge from diary industry contains a high concentration of organic materials such as fat, carbohydrates, grease etc. due to these organic materials it contains high amount of COD, BOD, turbidity and pH etc. such wastewater is to be treated by using naturally and easily available coagulants and then tests are to be carried out are turbidity, pH, chloride etc. The natural coagulants used in the experimentation were moringa oleifera, neem leaf powder, saw dust and carica papaya powder. The natural coagulants are used with different dosages like 0.2, 0.4, 0.6 and 0.8, and then the wastewater is tested for different parameters before and after experimentation. The coagulation process is done by using Jar test apparatus with different dosages. The efficiency of reducing turbidity by moringa, neem, papaya and sawdust are 78.8%, 79.37%, 53.7%, 79.6 % respectively. The efficiency of reducing chloride by moringa, neem, papaya and saw dust are 60.24%, 63.15%, 63.73%, 66.34% respectively. Present study also aimed to get maximum efficiency out of the selected four natural coagulants and prove natural coagulants has the potential of absorption and removal of higher concentration of chemical constituents from the diary industrial wastewater.

Causes, Effects and Remedial Measures for Eutrophication of Bathi Lake - A Case Study

Dr. Kiran Kumar H S, Assistant Professor, Civil Engineering, GM IT, Davanagere, India

Kishor Kumar G N, Civil Engineering, GM IT, Davanagere, India

Kanadala Lingaraja, Civil Engineering, GM IT, Davanagere, India

Pavan B N, Civil Engineering, GM IT, Davanagere, India

Girisha S D, Civil Engineering, GM IT, Davanagere, India

Abstract

The study was conducted from January 18, 2021 to April 6, 2021 at Bathi Lake, Davanagere District of Karnataka. During the study period, a total 7 parameters of lake water have been recorded. The present concern for eutrophication relates to the rapidly increasing quantities of nitrogen and phosphorus which are otherwise present at fairly low concentrations in unmodified natural waters to limit the algal growth and biomass.

In the present study an attempt has been made to measure the level of eutrophication in Davanagere town lakes. Bathi lake is selected for the study. The samples were collected at 5 different points of lake and analyzed pH, Electrical conductivity, Acidity, Alkalinity, Hardness, Turbidity, total phosphorus, Nitrogen and dissolved oxygen, etc. The onsite study like transparency and impairment of lake etc. was also conducted. The level of eutrophication in the lake was calculated by comparison of test results with IS standards of lake water.

The results revealed that the Dissolved Oxygen level in lake water is below IS standards. It concludes that the eutrophication level in the lake is high. This may be due to the entry of sewage from residential layouts of town, agriculture runoff and seepage of water from the surrounding irrigation activities. Hence, restoration of the lake is highly essential.

The rapid increase of populace alongside urbanization has resulted in the deterioration of lake water ecosystems particularly in developing town like Davanagere and human beings are blamable for lakes to death. Excess nutrients, specifically phosphorus and nitrogen are the primary pollutants that contribute to the cultural eutrophication of lakes. In addition to eutrophication warming has also extensively influenced harmful algal blooms communities in lake ecosystems. Therefore, powerful control, management and priorities are needed relating to lake water management.

Robot Based Patient Data Monitoring System

Kotreshi S N, Computer Science and Engineering, GM IT, Davanagere, India

Anusha M H, Computer Science and Engineering, GM IT, Davanagere, India

Revathi K R, Computer Science and Engineering, GM IT, Davanagere, India

Amulya C J, Computer Science and Engineering, GM IT, Davanagere, India

Rashmi M C, Computer Science and Engineering, GM IT, Davanagere, India

Abstract

IoT and Robotics plays an important role in Modern era. In this situation of pandemic of Covid-19, treating the patience is a great challenge. Covid-19 virus transmits very easily. Breaking the chain is very important. To do this it is very necessary to maintain social distancing. Hence in this paper we have designed a IoT based Robot that will help the Covid worriers to maintain social distance and monitor the patients. The robot is designed with low cost and can be controlled via smartphone. Bluetooth and temperature sensors and other sensors are used to collect the data from the patient. This designed robot will collect data from the patient such as body temperature, Pulse rate and live streaming of the patient condition is done through droidcam. The collected information will be sent to the cloud database. This robot can be controlled remotely using android mobile phone with installed Blynk app with the help of Wi-Fi Communication. We can also supply medicines, food and instruct patients to follow the instructions. The prototype is successfully working and shows better results.

Protecting Crops from Birds and Animals Using Sound Technology in Agriculture

Dr. Latha B M, Associate Professor, Department of ECE, GMIT, Davanagere, India

Nidhi H P, Department of ECE, GMIT, Davanagere, India

Bindu B Pawar, Department of ECE, GMIT, Davanagere, India

Bindu Shree V T, Department of ECE, GMIT, Davanagere, India

Aishwarya Bondade, Department of ECE, GMIT, Davanagere, India

Abstract

Food is an essential element of living organisms. The main products of our food are coming directly or indirectly from agriculture. Now the security of the day is very agricultural it is important. Industrial injury to birds is a major problem in many parts of India. Field studies have shown that on average 36% of the plant is damaged by wildlife and birds. The magnitude of the damage is very high in orchards near forest areas; this led to direct conflict between humans and animals, birds. In everyday life farmers are faced with different types of various animal problems, as they invade fields and damage crops even damaging human settlements. The proposed system uses a different type of strategy to perform reducing those types of problems. All animals / birds produce certain sounds and they are having a certain range of hearing times, this method is used to preview the file animals / the presence of birds and certain annoying noises are made to scare the animals / birds by system. By using this proposed system plant losses in animals / birds can be reduced very effective and human and wild habitats can be protected.

Automatic Number Plate Detection

Latha B M, Associate Professor, Department of ECE, GMIT, Davanagere, India

Abhishek G L, Department of ECE, GMIT, Davanagere, India

Atreya Upadhya K V, Department of ECE, GMIT, Davanagere, India

Manoj Kumar M, Department of ECE, GMIT, Davanagere, India

Manoj N Raikar, Department of ECE, GMIT, Davanagere, India

Abstract

Vehicle recognition is very important for monitoring and surveillance systems. Cars can be recognized by a license plate containing a unique combination of letters and numbers, but it is difficult for people to manually recognize all parked or passing cars. In the last few years, Automatic Number Plate Recognition (ANPR) systems have become widely used in the safety, the security, and the commercial aspects. Forethought, several methods and techniques are computing to achieve the better levels in terms of accuracy and real time execution. In this project, we approach a training-based pathway for vehicle number plate recognition by using computer vision algorithm of Number Plate Localization (NPL) and Characters Segmentation (CS). In addition, it proposed an improved method in Optical Character Recognition (OCR) based on Deep Learning (DL) techniques. In order to identify the number of detected plates after NPL and CS steps, the Convolutional Neural Network (CNN) algorithm is proposed. A DL model is developed to detect number plate, further after detection useful information like due date of necessary documents will also be provided.

Design of Indoor Air Purifier Using Used Ro Membranes

Dr Mohammed Yaseen, Department of Civil Engineering, Visvesvaraya Technological University, GMIT, Davanagere, India

Rajendra Kumar B K, Department of Civil Engineering, Visvesvaraya Technological University, GMIT, Davanagere, India

Wasiq maqbool Peer, Department of Civil Engineering, Visvesvaraya Technological University, GMIT, Davanagere, India

Shashank G R, Department of Civil Engineering, Visvesvaraya Technological University, GMIT, Davanagere, India

Yonous Ahmad Shah, Department of Civil Engineering, Visvesvaraya Technological University, GMIT, Davanagere, India

Abstract

Air contributes a prime role in recycling earth's most essential substances like carbon, since carbon sources encompass fossil fuel combustion and decayed matter of dead animals. Outdoor air pollution has become panic in India, because Indian cities are some of the highest polluted cities in the world. Particulate pollution has significant worsen effects on human health. Diseases like asthma, chronic obstructive pulmonary disease (COPD), allergies and insomnia are caused or triggered by rising levels of air pollution. Sometimes the poor air quality leads to long-term health effects. air filtration is frequently recommended as a component of environmental control measures for patients with allergic respiratory disease. Air purifiers occupy as prime factor to clean the air. It promotes our health against allergies, obnoxious odor and snoring. This paper discuss the causes of air pollution, need for air purifier and mechanism and working of indoor air purifier using used RO membranes and construction of prototype. Indoor air purifier unit which will be designed using used RO membranes ,activated carbon filter media embedded inside the filter unit along with filter papers and the motor inside the unit to draw the indoor and purify it.

Swarm Robotics

Mr.Siddaraju S B, Mechanical Engineering, GMIT, Davanagere, India

Lokesh N, Mechanical Engineering, GMIT, Davanagere, India

Hariprasada J A, Mechanical Engineering, GMIT, Davanagere, India

Mohammed Faraz R, Mechanical Engineering, GMIT, Davanagere, India

Mohammed Zeeshan K M, Mechanical Engineering, GMIT, Davanagere, India

Abstract

Nowadays India is facing the challenge of COVID-19 (CORONA) everywhere. Survive to the mankind is more difficult without mask & sanitizer. This makes imbalance in their lifecycle & daily routine. Hence we are planned to make our project on this issue to prevent spreading of Corona virus among people. Our project

"Swarm Robotics" is nothing but combination of two robots which are dependent on each other by means of sensors. It is a field of multi-robotics in which large number of robots are coordinated in a distributed & decentralized way. It is based on local rules & simple robots compared to the complexity of the task to achieve & inspired by social insects.

Large number of simple robots can perform complex tasks in a more efficient way than a single robot, giving robustness & flexibility to the group. It basically consist of 2 robots where first robot is dedicated for sensing the temperature of human within the range set by user/programmer. Second robot is dedicated for sanitizing the human hand who is already checked the temperature by first robot. If the human is found to be having greater temperature will not allowed to go further steps by providing loud sound through alarm. This helps in preventing the spread of virus between human. This working principle can be apply in many other field as per their requirements i.e, Agriculture, Industries, etc.

Fast and Accurate Detection and Classification of Sandalwood Plant Diseases

Manjula B K, Assistant Professor, Department of E&CE, GMIT, Davangere, India

Chaitra H V, Department of E&CE, GMIT, Davangere, India

Chandana G L, Department of E&CE, GMIT, Davangere, India

Kishan P M, Department of E&CE, GMIT, Davangere, India

Ramachandra J P, Department of E&CE, GMIT, Davangere, India

Abstract

Identification of plant leaf disease is one of the important things to reduce the loss in the yields and quantity of the agriculture product as many of them is concentrating on fruits (like apple, mango, etc) and leaf (Orchid leaves, etc). So in this paper, we introduce a method to identify the disease in sandalwood plant leaf and stem. To overcome these challenges of the eye observing method, we employ a digital image processing method for fast and accurate detection of sandalwood leaf and stem. Now a day's growers are spraying pesticides on the plants but it affects directly or indirectly the health of plants as well as economically, this proposal is used to achieve our goals towards increasing the yields of trees in the forest. In this method, we follow multistep i.e., image acquisition, image preprocessing, image segmentation, feature extraction, statistical analysis, and classification based on classifier using MATLAB.

Student attendance System using Face Detection and Recognition

Mrs. Manjula B K, Assistant Professor, Department of ECE, GMIT, Davangere, India

Kavyashree M Kalal, Department of ECE, GMIT, Davangere, India

Ananya H Doddagoudar, Department of ECE, GMIT, Davangere, India

Anusha K S, Department of ECE, GMIT, Davangere, India

Bindu S P, Department of ECE, GMIT, Davangere, India

Abstract

Attendance Monitoring System is essential in all organizations for checking the performance of students. In many of the organizations, attendance is taken manually by calling their register numbers or names and noted in attendance registers issued by the department heads as a proof and in some organizations the students have to sign in these sheets which are stored for future references. This technique is repetitive, complex work and leads to errors as few students regularly sign for their absent students or telling proxy attendance of the absent students. In this project, we are using the technique of face detection and recognition framework to continuously recognize students. Human face owing to its uniqueness has become a more viable method of distinguishing one person from another. Hence it has emerged to be one of the most popular and preferred system for security and commercial applications. This work proposes a new methodology in which attendance of each individual student in a class room is automatically updated in a database by analyzing their faces and comparing them with the predefined images by means of face recognition module. The proposed system engages the concept of neural network and is predicted to achieve an accuracy of 90% to 95% for face recognition.

Keywords

Face Recognition, Attendance Monitoring System, Neural Network and Convolutional Neural Network

Numerical Evaluation of Heat Transfer Performance in Shell and Helically Coiled Tube Heat Exchanger at Different Orientations and Reynolds Numbers

Manjunatha M N, Department of Mechanical Engineering, GMIT, Davangere, India

H S Manoj, Department of Mechanical Engineering, GMIT, Davangere, India

Dinesh U, Department of Mechanical Engineering, GMIT, Davangere, India

Mallikarjuna Veerabhadrappa Bidari, Department of Mechanical Engineering, GMIT, Davangere, India

Abstract

Heat exchangers are extensively used in many process industries and refrigeration systems. In this study, the impact of geometric and flow parameters of shell and helically coiled tube heat exchanger (SHCTHE) is studied numerically. The numerical model of geometrical parameters includes external coil diameter, external coil pitch, and tube length for different arrangements of SHCTHE. The water is used as working fluid on shell side (cold water) at constant flow and on coil side (hot water) at different flow rates respectively. In the present work, the effect of different boundary conditions on thermal properties of fluid flow and Reynolds Number. The outer wall of the shell is adiabatic. It is noticed that Nusselt Number varies directly with the pitch, number of turns and Reynolds number in helically coiled tube. The optimum value of Nusselt number and Dean Number is obtained in SHCTHE at different Reynolds numbers. The results have been shown that overall heat transfer coefficient (Uo) for SHCTHE in vertical direction is higher than that of horizontal direction. The Correlation equations are used to compare the numerical results with experimental results.

Keywords

SHCTHE, Nusselt number, Dean Number, Reynolds number, Overall heat transfer coefficient

Fracture Properties of Natural Fiber Reinforced Composite for Environmental Conditions

Suresh Babu, Department of Mechanical Engineering, GMIT, Davangere, India

Maruthi R, Department of Mechanical Engineering, GMIT, Davangere, India

Darshan KU, Department of Mechanical Engineering, GMIT, Davangere, India

Manoj HH, Department of Mechanical Engineering, GMIT, Davangere, India

Manjunath SR, Department of Mechanical Engineering, GMIT, Davangere, India

Abstract

The use of natural fibers as reinforcement in composites is a new field of research, which has been growing in the last decades and has been given a great interest by the automative industry. The culmination of effort has resulted in development of new **"Fracture properties of natural fiber reinforced composite for environmental Conditions".**

However, the lack of good interfacial adhesive is a restriction for the use of natural fiber reinforced composite for environmental conditions in high performance applications. This problem can be overcome by treating the fibers with suitable chemicals. The results have shown that the best treatment conditions for sisal fibers were mercerization (5% NaOH, 48H). The mechanical properties of natural fiber reinforced composite, as a result of optimization of the properties of sisal fibers by the use of NaOH treatment process. By this process shrinkage of the fibers during treatment had significant effects on fiber structure and, as a result , on the mechanical properties of the fibers. The composites with treated fibers were approximately 40%,50%,and 60% respectively, lower than for comparable fiber epoxy composites. A good correlation was found between composite bending for the sisal and epoxy composites investigation.

Environmental awareness and an increasing concern with the greenhouse effect have stimulated the construction, automative, and packing industries to look for sustainable materials that can replace conventional synthetic polymeric fibers seen to be a good altenative since they are readily available in fibrous form and can be extracted from plant leaves at very low costs.Several fibre surface modification methods are reported and their effects on composite properties are analysed. These properties constitute the prime area of research in developing green fibre polymer composite technologies.

Campus Connect – A Digital Notice Board

Mr. Maruthi S T, Assistant Professor, Department of CSE, GMIT, Davangere, India

Akash M, Department of CSE, GMIT, Davangere, India

Manjanagouda M P, Department of CSE, GMIT, Davangere, India

Pooja Walishettar, Department of CSE, GMIT, Davangere, India

Sumaiya Fatima, Department of CSE, GMIT, Davangere, India

Abstract

In the manual notice board system the students might miss out the notices if they fail to check the notice board but that's not the problem here, you have to just login and you've access to all the notifications at your fingertips. Campus connect is a web based Android application can also be called as a Digital Notice Board. The user interface is elementary and can be easily used and operated. This project consists of three main modules - Admin, Lecturer and Student. To develop website part of this project we have used HTML, CSS, JavaScript, and Java Server Pages (JSP) and for the Android application programming we have used Android Studio, JAVA language. The motivation behind developing this project is to eliminate use of papers in campuses and other organizations. The admin is responsible for adding new lecturers and students, lectures can upload and view the notifications, whereas students can view notifications by logging in using University registration number and unique assigned id as the password.

Identification of Blackspots in Major Roads of Davanagere

Dr.Mohammed Yaseen, Assistant Professor, Department Of Civil Engineering, GMIT, Davangere, India

Afnankhan A Badagi, Department Of Civil Engineering, GMIT, Davangere, India

Pooja B M, Department Of Civil Engineering, GMIT, Davangere, India

Pooja S Somanahalli, Department Of Civil Engineering, GMIT, Davangere, India

Vijay C B, Department Of Civil Engineering, GMIT, Davangere, India

Abstract

Davangere is one of the smart city in Karnataka State, India. Major roads plays an important role in development of nation's progress. As roads are the veins of transportation system within the country so they have to be safe against accidents. Increase in number of vehicles on roads has increase the possibility of accidents. So, this paper is aimed to (i)Identify the major roads of davanagere. (ii)Study the traffic characteristics and vulnerable segments with blackspots. (iii)Evaluate existing geometry and design along identified roads.(v)Suggest counter measures to mitigate and minimize accident due to blackspots. For the analysis of accidental blackspots primary and secondary data was collected. Primary data was collected through responses from google form and secondary data was collected from RTO office for 3years. Then primary and secondary data was analyzed by **Ranking, Weight Severity & Accidental Density method** and accidental blackspots were detected on **P.B ROAD (**GMIT To JIT-9.196km) **& HADADI ROAD(**Service road to P.B Road- 4.123km**).**Then the remedial measures can be suggested at respective accident prone zone from different results. Accidental prone areas are thus to be checked for absence of the safety norms and thus carrying out corrections in the existing road design to fulfill safety aspects.

Keywords

accidental black spots, P.B Road & Hadadi Road, Ranking, severity, index, accidental density method.

IoT based Bots for Vertical Agriculture

Dr. Mouneshachari S, Associate Professor, Department of Computer Science and Engineering, GMIT, Davangere, India

Anusha E M, Department of Computer Science and Engineering, GMIT, Davangere, India

T Shruthi, Department of Computer Science and Engineering, GMIT, Davangere, India

Uma S G, Department of Computer Science and Engineering, GMIT, Davangere, India

Bhavya S, Department of Computer Science and Engineering, GMIT, Davangere, India

Abstract

Agriculture is the process of growing the crops necessary for human existence. Agriculture has to provide the food and shelter for the survival of the mankind. The rise in population sometimes creates the huge demand of the basic needs which is the outcome of agriculture. This clearly indicates that, as the population increases the process of agriculture also needs to increase to balance the basic needs of the society. As population increases the scarcity of the agricultural land becomes one of the main resources to satisfy overall requirement. In this connection the proposed paper would like to introduce a new and revolutionary concept called as ***Vertical Agriculture***.

Vertical Agriculture is defined as "a method of growing crops in the presence of sunlight with less amount of soil in vertically stacked layers and less human intervention with increase of crop yields". To make Vertical Agriculture easier the proposal develops the BOTS, which can do work in vertical layer tracks also automatically monitor the crops growth status. This paper focuses on designing algorithms to enable BOTS for effective agriculture operations namely Ploughing, Sowing and Cutting. These robots are embedded with Arduino and NodeMCU microcontrollers, Sensors to study and actuate the bots based on environment parameters.

E-Smart Watch for Early Detection of Covid-19

Murugendrappa N, Associate Professor, ECE, GMIT, Davangere, India

Sushma G R, ECE, GMIT, Davangere, India

Vidyashree N T, ECE, GMIT, Davangere, India

Nikhil S M, ECE, GMIT, Davangere, India

Shrinath S Devdas, ECE, GMIT, Davangere, India

Abstract

Smart watches have the potential to support health in everyday living by: enabling self-monitoring of personal activity; obtaining feedback based on activity measures; allowing for in-situ surveys to identify patterns of behavior; and supporting bi-directional communication with health care providers and family members. However, smart watches are an emerging technology and research with these devices is at a nascent stage. Seventy-three studies were returned in the search. Seventeen studies published were included. Included studies were published from 2014 to 2016, with the exception of one published in 2011. Most studies employed the use of consumer-grade smart watches (14/17, 82%). Patient-related studies focused on activity monitoring, heart rate monitoring, speech therapy adherence, diabetes self-management, and detection of seizures, tremors, scratching, eating, and medication-taking behaviors. Most patient-related studies enrolled participants with few exclusion criteria to validate smart watch function (10/17, 58%). Smart watch technical function, acceptability, and effectiveness in supporting health must be validated in larger field studies that enroll actual participants living with the conditions these devices target.

Alzheimer Disease Identification Using Machine Learning

Murugendrappa N, Associate Professor, Dept. of ECE GMIT, Davangere, India

Srinivas S Byadagi, Dept. of ECE GMIT, Davangere, India

Samanwitha R, Dept. of ECE GMIT, Davangere, India

Rithik R, Dept. of ECE GMIT, Davangere, India

Spoorthy Shekappa Hadimani, Dept. of ECE GMIT, Davangere, India

Abstract

Alzheimer is a common disease which affects mainly old people and if not diagnosed early can result in total memory loss. It is clear from various studies that advanced Machine Learning methods can be used to identify Alzheimer risk from neuroimaging. Thus, we propose to implement an application to identify Alzheimer disease through MRI scan images of brain using machine learning techniques. We also propose to compare accuracy of popular machine learning algorithms for the same. The proposed application can be of use for robotic diagnosis purposes and also to assist doctors with the same. We propose to implement the project using Python.

IoT based Smart Hand Glove for Differently-Abled People

Nagaveni S A, Assistant Professor, Dept., of ECE, GMIT, Davanagere, India

Anusha M S, Dept., of ECE, GMIT, Davanagere, India

Chandana B M, Dept., of ECE, GMIT, Davanagere, India

Chandana H, Dept., of ECE, GMIT, Davanagere, India

Nayana M C, Dept., of ECE, GMIT, Davanagere, India

Abstract

The ability to see, hear, and communicate with others is natural by birth, but unfortunately, some people have a different disability and are unable to use their senses. Here IoT plays an important role in helping them achieve these things. By using sign language, people with communication disabilities can communicate with others, but most people will not know sign language to facilitate this proposed system convert sign language into text or voice message. Blind people cannot see around them, so they face problems in their home environment. To make things easier for them, the proposed system uses IoT home automation. To stabilize a smart glove, it is very helpful and with the use of wearable technology, it is possible to use a variety of and extremely creative ideas to use it. Here Smart Glove serves as a source of communication between ordinary people with different disabilities. Home appliances can be easily controlled using sensors, actuators, etc., where the flex sensors are used to record hand gesture, the LCD is used to display the corresponding sign language into text. The smart glove not only helps the deaf, dumb, and blind people and can also be used by paralyzed and old people who can at least move their fingers.

Lung Cancer Detection and Prediction by using Machine Learnings

Imran Khan, Assistant Professor, Dept.of IS&E, GMIT, Davanagere, India

Hanumanth S G, Dept.of IS&E, GMIT, Davanagere, India

Aishwarya B K, Dept.of IS&E, GMIT, Davanagere, India

Kavya V Madieval, Dept.of IS&E, GMIT, Davanagere, India

Priyanka B S, Dept.of IS&E, GMIT, Davanagere, India

Abstract

The main aim here is to build the good health status of a patient. The main goal here is to classify the tissues into the 3 classes of normal, benign, and malignant. When the lung cancer accuracy detection increase there will be decrease in the diagnosis time. the diagnosis method 4 stages in it, they are pre-processing of CT images, feature, extraction and classification features are extracted based on DTCKIT and PNN .as you studied earlier this disease's is burden for people, they are mentally depressed .so there is a need of new technology to detect the lung cancer as earlier as possible. During the recent years lung cancer detection in CT has becoming an outgoing research area in the field of medical imaging system. in the final stage, PNN is used to classify the Normal and Abnormal. The main causes of lung cancer is Smoking, so many algorithms are implement to detect this disease, they are K-Nearest Neighbor, Decision Tree, Logistic Regression etc. The Datasets are collected from UCI Machine Raspatory for the lung cancer detection, this disease not only occurs in males but also in female, occurs due to rapid growth of grow cells.

Aspect Based Sentiment Analysis on Restaurant Reviews

Nasreen Taj M B, Information Science Engineering, GMIT, Davanagere, India

Nisha B S, Information Science Engineering, GMIT, Davanagere, India

Rachana G M, Information Science Engineering, GMIT, Davanagere, India

Sahana Rani T R, Information Science Engineering, GMIT, Davanagere, India

Shanthala M M, Information Science Engineering, GMIT, Davanagere, India

Abstract

The most of the modern hotel websites consists of both the star rating system and also below that customers can express their feelings or opinions towards that hotel by writing a review. By considering the star rating we can easily identify the counts of the stars given by the customers but it is difficult to understand read all the reviews given by the customers and identify the count of positive, negative and neutral reviews manually. So Sentiment analysis must be done automotive by using the Natural language processing concepts and Machine learning classifiers. Sentiment analysis is the study of people's opinion, sentiment and emotions expressed in written language. When most of the users are in confusion to choose the best choice, the solution for this confusion is the recommendation system. In this paper we are boosting the recommendation process by applying sentiment analysis techniques on input data. Aspect based Sentiment analysis is the process of identifying the Aspect terms and classifying the sentiments expressed towards each aspects into positive, negative and neutral opinions.

Social IoT Information Delivery by SWARM

Dr. Neelambike S, Assistant Professor, Department of Information Science and Engineering GMIT Davangere, India

Saibharath L U, Department of Information Science and Engineering GMIT Davangere, India

Vinanthi, Harshitha P V, Department of Information Science and Engineering GMIT Davangere, India

Chethan Doddmani, Department of Information Science and Engineering GMIT Davangere, India

Abstract

Social Internet of Things (SIoTs) refers to the rapidly growing network of connected objects and people that are able to collect and exchange data using embedded sensors. To guarantee the connectivity among these objects and people, fault tolerance routing has to be significantly considered. In this paper, we propose a bio-inspired particle multi-swarm optimization (PMSO) routing algorithm to construct, recover and select k-disjoint paths that tolerates the failure while satisfying quality of service (QoS) parameters. Multi-swarm strategy enables determining the optimal directions in selecting the multipath routing while exchanging messages from all positions in the network. The validity of the proposed algorithm is assessed and results demonstrate high-quality solutions compared with the canonical particle swarm optimization (CPSO), and fully particle multiswarm optimization (FPMSO).

Experimental and Numerical Analysis of Epoxy Based Fiber Reinforced Composite

Harsha H M, Assistant Professor, Mechanical Engineering, GMIT, Davanagere, India

Nikhil A U, Mechanical Engineering, GMIT, Davanagere, India

Sharath P S, Mechanical Engineering, GMIT, Davanagere, India

Anil B R, Mechanical Engineering, GMIT, Davanagere, India

Poornachandra N Sappali, Mechanical Engineering, GMIT, Davanagere, India

Abstract

The Natural fibers have the potential to replace the synthetic fibers in the composite manufacturing world as they show similar or better physical and mechanical properties in a wide variety of cases. Also hybridization of fibers leads to improvement of Mechanical properties. These composites make them suitable for low load applications such as window panels, decorative items, internal parts of aeroplane, lampshades & interior paneling etc. This work is focused on the development of hybrid glass/jute reinforced epoxy composite using hand layup method. Laminated composite specimens are prepared by calculating the required number of fiber layers and quantity of matrix based on different volume fraction. Bending and Tensile test specimens are prepared as per ASTM standards. Tests are conducted in Universal testing machine and the results are tabulated. Numerical Analysis of composites is conducted using analysis package. The Experimental results are compared with the Numerical results and finally correlated.

Survey Advancement in Agriculture Field to Monitor Nutrients Level in Arecanut

Niranjan Murthy C, Research Scholar, VTU Belgaum & Assistant Professor, Department Of CSE, GMIT, Davanagere, India

Samatha A, Department Of CSE, GMIT, Davanagere, India

Prerana L S, Department Of CSE, GMIT, Davanagere, India

Nikshitha S, Department Of CSE, GMIT, Davanagere, India

Prakruthi Pande, Department Of CSE, GMIT, Davanagere, India

Abstract

This article presents the use of IOT in agriculture to observe crop growth. This is new emerging technology for the field of agricultural observation in remote locations. Changes in climate, irrigation and also information on fertilizers. Advancement in agriculture in the field of efficient use of available resources. Mainly nutrient concentration and soil moisture sensor, humidity and temperature are used to measure the data by means of a sensor.NPK water measurement sensor followed by a sprinkler for effective water use. Various technologies have adopted Raspberry pi for storage temperature, humidity, soil moisture and cloud used to store data for analysis and fuzzy logic applied to nutrient level monitoring. The survey shows that it is very useful to improve the level of production, nutrients and correct use of water in monitoring agriculture.

Keywords

NPK, nutrients, fertilizer

Acid Hydrolysis Mediated Synthesis, Characterization and Properties of Nanocellulose From Corn Cob

Onkarappa H S, Department of chemistry, G M Institute of Technology, Davangere, Karnataka, India

Usha G V, Department of chemistry, G M Institute of Technology, Davangere, Karnataka, India

Radha V, Department of chemistry, G M Institute of Technology, Davangere, Karnataka, India

Rakshitha R Kamath, Department of Biotechnology, G M Institute of Technology, Davangere, Karnataka, India

Aishwarya P V, Department of Biotechnology, G M Institute of Technology, Davangere, Karnataka, India

Virupaxappa S Betageri, Department of chemistry, G M Institute of Technology, Davangere, Karnataka, India

Abstract

Agriculture residues are viable for many industrial products for the replacement of polymeric materials. In the present work, Corn cob is quantitatively converted into cellulose by alkali and bleaching treatment through NaOH (5%) and $NaclO_2$ (5%). The obtained cellulose is converted into Nanocellulose by acid hydrolysis through homogenization followed by ultrasonication. The obtained nanocellulose was carefully characterized by Fourier transform infrared spectroscopy [FTIR], X-ray diffraction [XRD] respectively using these methods crystallinity and functional group analysis was studied. Thermal properties have been studied using thermogravimetric and differential thermal analysis [TGA/DTA]. The surface morphological investigation of prepared corn cob nanocellulose was carried out using [SEM] Scanning electron microscopy and Transmission electron microscope [TEM]. The obtained results revealed good thermal stability, semi-crystalline and fibrous nature. The size of the nanocellulose is in the nanoscale dimension. This work provides a way to utilize the corncob as a more useful raw material for industrial applications.

Keywords

Corn Cob, Nanocellulose, Acid hydrolysis, Agricultural residues, Thermal Stability

Radio Frequency Controlled Solar Energy Beach Cleaning Robotic Vehicle

Pavankumara K V, Mechanical Engineering, GMIT, Davanagere, India

Santhosh Markatti, Mechanical Engineering, GMIT, Davanagere, India

Sanjay Kumar N S, Mechanical Engineering, GMIT, Davanagere, India

Salman E, Mechanical Engineering, GMIT, Davanagere, India

Abstract

India has large coastal area, due to the difficulties to clean the beach manually, we have not sufficient equipment to collect the solid wastage like plastics, electrical wastage, metal wastage etc. Trash and litter left on beaches can endanger the life of coastal animals, like turtles and birds, and damage tourism industries by diminishing the natural beauty of beaches. To solve this problem, most coastal areas employ manual labor, volunteer work, or large Zambonini-like machines to pick of trash. However, these operations are very expensive and time-consuming. To efficiently stop the increasingly negative impact of trash debris on coastal ecosystems, forms of mechanized, autonomous trash collection and disposal need to be utilized. Developing a robot that can transverse sandy terrain, pick up small trash debris, dispose of contained trash debris, and avoid large objects and the ocean all while functioning autonomously presents a variety of technical challenges. The invention is predicated upon the later developed concept of raking or combing the sand to a degree of continuity and thoroughness that will assure removal of not only larger sized debris, but also the bulk of smaller pieces such as broken glass, nails and the like, without necessitating or involving the removal or displacement with the debris, of any consequential quantities of the beach sand itself. This works the controlling and monitoring of the device capable to picking the solid waste in coastal area by using the solar power to charge the battery to operates the device.

Optical Character Recognition using Convolutional Neural Network

Asha K, VTU/ GMIT, Davanagere, India

Prajwal R Athrey, VTU/ GMIT, Davanagere, India

Arushi S Agadi, VTU/ GMIT, Davanagere, India

Rajesha H, VTU/ GMIT, Davanagere, India

Sahana S Patil, VTU/ GMIT, Davanagere, India

Channabasavarajan V, VTU/ GMIT, Davanagere, India

Abstract

OCR is a technique that translates handwritten words into a digitally editable version that a machine can read. In this work, the OCR process is detailed. We start with a scanned copy of the handwritten document, and then use a threshold segmentation technique for grayscale conversion and a normalization technique for preprocessing. A Convolutional Neural Network is used to retrieve and recognize the characters, and the recovered data is displayed as machine editable text. We have obtained an accuracy of 83.01 % on testing data.

Chitinolytic Enzymes: Properties and Applications in Seafood Waste Treatment

Preetham H R, Department of Biotechnology, GMIT, Davangere, India
R Dhanyashree, Department of Biotechnology, GMIT, Davangere, India
Sheezan M H, Department of Biotechnology, GMIT, Davangere, India
Vinayaka R N, Department of Biotechnology, GMIT, Davangere, India
Gurumurthy H, Department of Biotechnology, GMIT, Davangere, India

Abstract

Chitinase is an enzyme that cleaves the glycosidic bonds in chitin, thereby breaking down the polysaccharide structural component of the hard outer covering of many animals and cell wall of fungi. Also known as chitinolytic enzymes, these are a group of enzymes that degrade chitin directly into low molecular weight products. Chitinases are generally found in organisms that either need to reshape their own chitin or dissolve and digest the chitin of fungi or animals. Through biotechnology, this nature of chitinases can be exploited for solving some of the problems to meet industry demands for green, energy-efficient, pollution-free, and economically profitable chitin use. Based on their mode of action, Chitinases can be classified as endo- and exo-chitinases. Endochitinases cleave chitin at internal sites to generate multimers of N-acetyl-D-glucosamine (NAG) whereas exochitinases catalyze chitin progressively from the reducing end of the polymer to produce NAG, chitobiose or chitotriose. Chitinolytic enzymes have wide-range of applications such as preparation of pharmaceutically important chito-oligosaccharides and NAG, preparation of single-cell protein, isolation of protoplasts from fungi and yeast, control of pathogenic fungi and insects, treatment of chitinous waste, control of malaria transmission etc. This article reviews on various chitinolytic enzymes available and their properties for the treatment of chitinous wastes, hugely generated across globe.

Possible Outcomes of Replacing Potable Water with Secondary Treated Waste Water in Concrete in M25 Grade Concrete

Punith C G, Department of Civil Engineering, GMIT, Davanagere, India

Akshatha M, Department of Civil Engineering, GMIT, Davanagere, India

Meghana C, Department of Civil Engineering, GMIT, Davanagere, India

Rakesh H Y, Department of Civil Engineering, GMIT, Davanagere, India

Hemanth Kumar Y K, Department of Civil Engineering, GMIT, Davanagere, India

Abstract

Water, the word itself sends chills down the spine. Such is the situation today. Almost all over the globe all kind of living beings are facing water scarcity. But clause 5.4 of IS 456-2000 states that "potable water is satisfactory for mixing and curing of concrete". This work tries to deviate from this particular norm and secondary treated waste water (STWW) was used instead of potable water in production of M25 grade concrete both for mixing and curing to study the effects. All the necessary preliminary tests on STWW were conducted and found that all properties were well within the BIS limits. Further compressive strength tests and splitting tensile strength tests were conducted and results were slightly lower than results of control concrete and also lower than target mean strength. Cost analysis was also done and STWW was found to be cheaper than potable water. It was inferred that STWW cannot be used instead of potable water in production of M25 grade concrete. Further, compressive strength of STWW concrete needs to be tested at prolonged curing periods like 56 days and 90 days etc.

Keywords

Secondary Treated Waste Water (STWW), Potable Water, BIS limits

Development of Concrete Mix Design App as Per Is 10262-2019 Code Book

Mr. Puttaraj M.H, Assistant Professor, Civil Engineering, GMIT, Davanagere, Karnataka, India

Darshan.C, Civil Engineering, GMIT, Davanagere, Karnataka, India

Rakesh.D, Civil Engineering, GMIT, Davanagere, Karnataka, India

Malatesha.L, Civil Engineering, GMIT, Davanagere, Karnataka, India

Madhusudhan.B.R, Civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

Concrete mix design is the determination of proportion of the concrete ingredients i.e., cement, water, Fine aggregate, Coarse aggregate and some amount of admixtures which produce concrete specified properties such as workability, strength, and durability with economy. In the recent years, peoples are being advance in technology which has brought exorbitant change in daily lifestyle of individual like smart mobile, and other smart devices are uncontrolled in all aspects of human life. This as led to an extreme demand for a developing software in mobile device. Nowadays, time is precious. So, hence we can save time by adopting technology in construction field.

Major difference between IS 10262-2009 & 2019 codal A new section for Mix proportioning procedure for High strength concrete for M65 and above (up to target strength of M80) was included. A graph of W/C vs.28 day's strength of concrete introduced for different grades and types of cements for an alternatives to initial water-cement ratio assumption. In the design of normal concrete mix proportion, the consideration of air content was reintroduced.

The main objective of this project is to develop an App is to know the basic Properties of the materials such as Cement, Fine aggregate and Coarse Aggregate. To Develop an App as per code IS 10262-2019 Codal Practice with Accuracy and easy for onsite calculation. Develop the app in a user-friendly way.

To verify the mix design calculation results and conduction of trials according to obtained results from the app.

We have done a concrete Mix design based on IS10262-2019 code book and prepared the Mix design app according to IS10262-2019 codal, the app was developed using the "Hypertext Pre-processor"(PHP) MYSQL(Database service) and Android version 4.0 and Higher Version Standard Development Kit (SDK) Eclipse, JDK software's with the help of IS branch students for software requirements , Trial data is done by casting concrete blocks as per the proportions and tested the strength and compared the values.

We have found that the Mix design app can be used for the Design calculations of concrete based on the IS 10262-2019 code book in the field of collage level, Education purpose and for Mini projects, it can be further developed in the upcoming days

Experimental Study on Fly Ash Bricks

Puttaraj MH, Assistant Professor, GMIT, Davanagere, India

Sanjay Kumar N, GMIT, Davanagere, India

Karthik K Rathod, GMIT, Davanagere, India

Abilash BA, GMIT, Davanagere, India

Moin Ahamed HM, GMIT, Davanagere, India

Abstract

Cement is the most often used building material and its production is increasing over the world cement produces more carbon dioxide CO2 ,Geopolymer concrete utilize an alternative material including flyash as binding material in cement. Flyash reacts with alkaline solution NaOH or bleaching powder and sodium silicate Na2SiO3 to form a gel which binds to the aggregate. An attempt has to be made to fing out an optimum mix for the geopolymer concrete.

The concrete cube of size 190x90x90mm mould were prepared and cured under oven curing for 24 hours, we have to achieve compressive strength of over 3.5Mpa. the optimum mix of flyash combined aggregate with solution NaOH & Na2SiO3 combined together to flyash ratio of 0.35. high and early strength was obtained in the geopolymer concrete mix.

Keywords

Geopolymer Concrete, Flyash, Alkali Solution, Concrete Brick

Facial Expression Recognition Using CNN Algorithm

Firoz Khan, Assistant Professor, Department of Information science and Engineering, GMIT, Davanagere, India

Raghavendra A, Department of Information science and Engineering, GMIT, Davanagere, India

Nemitha N G, Department of Information science and Engineering, GMIT, Davanagere, India

Harshitha G E, Department of Information science and Engineering, GMIT, Davanagere, India

Vinay B K, Department of Information science and Engineering, GMIT, Davanagere, India

Abstract

Psychology, forensics, and social media all rely on facial expression identification. A high level of categorization reliability is required in all of these sectors. In these sectors, human judgement is now used, however humans are not always accurate. As a result, a reliable and rapid method of detecting human emotions is required. Several algorithms for recognising human emotions have been developed as a result of recent developments in machine learning and pattern recognition. The Convolutional Neural Network is an example of such an algorithm (CNN). The CNN is capable of processing images at fast speeds while maintaining great dependability. One such CNN is utilised in this study to recognise face emotions. With adequate training, this approach can produce high classification accuracy.

Smart Mobile Charging Station for Rural Electrification Driven By Solar Energy

Dr. Rajakumar D.G, Department of Mechanical Engineering, GMIT, Davanagere, India

Bushra Firdhose B, Department of Mechanical Engineering, GMIT, Davanagere, India

Keerthi P, Department of Mechanical Engineering, GMIT, Davanagere, India

Pallavi N, Department of Mechanical Engineering, GMIT, Davanagere, India

MD Fazil, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Charging stations are an attractive solution to provide access to electricity to low income populations with low energy consumption in remote and off-grid areas. Results show that most stations are run in Sub urban areas, are powered by solar energy and although there are many different energy services sectors targeted, the most popular services are charging batteries, mobile phones and lamps. This recent growth has been enabled by the falling cost of photovoltaic modules, learning effect, economies of scale, financial innovation, private sector involvement and worldwide dissemination of mobile phones. As expected, the technical challenges are mostly related to the use of batteries not only because they represent the component with shortest lifetime but also because if the battery is not for individual use, social questions arise due to poor definition of rights and duties of the customers. Furthermore, the development of a sustainable business model is also a challenge since this requires technical skills and system monitoring that are not usually available locally. This paper reviews the state of the art of charging stations, with special focus on the technical options based on academic publications, reports, online search and surveys. Finally, it is also suggested that the minimum technical quality standard for charging stations should be defined and implemented in this study.

Microstrip Patch Antenna Design for 5G Communication

Mr. Rajappa H S, Dept. of ECE, GMIT, Davangere, India

Ms. Durga H, Dept. of ECE, GMIT, Davangere, India

Ms. Arunarekha C M, Dept. of ECE, GMIT, Davangere, India

Ms. Usha K, Dept. of ECE, GMIT, Davangere, India

Ms. Sharada S, Dept. of ECE, GMIT, Davangere, India

Abstract

Microstrip patch antenna has a vital role in the field of wireless communication. It has a dielectric substrate, ground plane and thin metallic patch of copper or gold. A microstrip antenna usually means an antenna fabricated using microstrip techniques on a printed circuit board.An antenna acts as a transitional structure between the guiding device (e.g. waveguide, transmission line) and the free space. The rectangular microstrip patch antenna has the best configuration among all geometry of patches available and therefore it is widely used. Designed a microstrip patch antenna of rectangular shape which gives high bandwidth, high gain, good reflection coefficient and excellent antenna radiation efficiency at resonating frequency of 26 GHz offers high performance. Our proposed microstrip rectangular patch antenna is designed and successfully implemented at the resonance frequency of 26 GHz which is best suited for 5G application using CST software which is more reliable to design and viewing high-quality results especially 3D radiation pattern than other antenna design software.

Development of Artificial Intelligence Based ECG System

Rajashekar Kunabeva, Assistant Professor, Dept. of ECE, GMIT, Davangere, India

Pramod S G, Dept. of ECE, GMIT, Davangere, India

Rahul M R, Dept. of ECE, GMIT, Davangere, India

Shivakumar R, Dept. of ECE, GMIT, Davangere, India

Kalavida D N, Dept. of ECE, GMIT, Davangere, India

Abstract

The ECG machines used by the doctors are expensive and restricted to hospitals. Due to unprecedented pandemic and epidemics it is much necessary to monitor patient remotely and facilitate mobility for the patient. Biosensor based devices are pioneering in the modern biomedical applications and will be the future of cardiac health care. Present bio-sensors are not able to diagnose data at point of care (POC). This paper attempts to reports current status of Artificial Intelligence (AI) based biosensors and simulate AI based ECG Sensor. The acquired data is stored in the cloud and then the person can detect his current condition in the smart phone. The data is monitored continuously and if the problem still persists, it will notify the person with the alert message.

Keywords

Artificial Intelligence, ECG sensor

Compressive Transmission of EEG Signal

Rajashekar Kunabeva, Assistant Professor, Dept. of ECE, GMIT, Davangere, India

Vinayak L H, Dept. of ECE, GMIT, Davangere, India

Veeresh S, Dept. of ECE, GMIT, Davangere, India

Maruthi K, Dept. of ECE, GMIT, Davangere, India

Priyanka V C, Dept. of ECE, GMIT, Davangere, India

Abstract

This work proposes a generalized approach for energy efficient compression technique for transmission of EEG signal over Wireless Sensor Network. On device data compression enables battery conservation of the WSN node and extends the life time of the network. Initially Electro encelphalogram (EEG) node is modelled and signal compressed during acquisition phase only. This results in energy saving at every node. The compressed EEG is transmitted over WSN routing protocol to remote location for diagnostic purposes.

Keywords

EEG, Compressive Sensing

Development of Photonic based Handheld POC Device for Detection of Bacterial and Viral Pathogens

Dr.Rajashekhar Somasagar, Associate Professor, Dept. of ECE, GMIT, Davanagere, India

Rakesh S G, Dept. of ECE, GMIT, Davanagere, India

Vivek S V, Dept. of ECE, GMIT, Davanagere, India

Pakeeresh S R, Dept. of ECE, GMIT, Davanagere, India

Venkatesh G T, Dept. of ECE, GMIT, Davanagere, India

Abstract

Probiotics are microorganism that gives health care when consumed. Currently, the term probiotics is applied to ingested microorganisms associated with beneficial effects on humans and animals. Probiotic drinks are commonly milk-based drinks that are milk-like in consistency. They are eaten for gastrointestinal wellbeing. The addition of soymilk probiotics will improve the characteristics and benefits of multiple folds. The addition of apple extract offers improved sensory properties and primarily increases the shelf life of the beverage or drink. The overall motive of this research work is to develop a probiotic drink from soy milk and apple extract, to enhance the digestive properties among humans. The probiotic drink was prepared by blending soy milk, apple extract and digestive microbes. The different blends were inoculated by Lactobacillus, acetic acid bacteria, saccharomyces yeast and the apple extract fermentation time was optimized for 48 hours. For overall acceptability, the 65:35 mixing ratios of soy milk and fermented apple extract produced desirable results with the highest sensory ratings.

Keywords

Probiotics, Cholesterol Assimilation, Soymilk, Fermented Apple

IoT Controlled Disinfection Spraying Robot

Rajendra Soloni, Dept. of ECE, GMIT, Davanagere, India

Vijaykumar M, Dept. of ECE, GMIT, Davanagere, India

Pooja T S, Dept. of ECE, GMIT, Davanagere, India

Karibasappa R, Dept. of ECE, GMIT, Davanagere, India

Naveen O, Dept. of ECE, GMIT, Davanagere, India

Abstract

This article discusses the increasing role of robots in healthcare and related fields, with a focus on the treatment and control of the new coronavirus illness. The primary purpose of robots in health care system that to in pandemic situation is to reduce human-to-human interaction while also ensuring cleanliness, sanitation, and assistance in hospitals and other comparable institutions like quarantine. As a consequence, the risk of death to medical personnel and doctors who are actively involved in the COVID-19 pandemic management will be reduced. The major goal of the project is to create a robot that can clean rooms, walkways, and roadways, among other things. It can be operated via a web application and a wi-fi controller. The robot has the ability to move to any area. A reservoir is filled with sanitizer or sanitizing liquid and a pump is put within. The pump may be turned on from the mobile when the robot starts moving, and it will begin sanitizing the room.

A Survey on Reconfigurable Microstrip Antennas

Rajendra Soloni, Assistant Professor, Dept. of ECE, GMIT, Davanagere, India

Pooja P Hebber, Dept. of ECE, GMIT, Davanagere, India

Preethi I B, Dept. of ECE, GMIT, Davanagere, India

Soundarya D H, Dept. of ECE, GMIT, Davanagere, India

Ummerumana A B, Dept. of ECE, GMIT, Davanagere, India

Abstract

Over the last few years, wireless communication technology has grown at an exponential rate. The advancement of technology has boosted demand for antennas that may be used for a variety of wireless applications. Many studies have been conducted on reconfigurable antennas because they play an essential role in smart and adaptive systems in wireless networks. The advantage of a reconfigurable antenna is that it may combine different functionalities into a single antenna. Antennas that may be reconfigured can change their frequency and radiation characteristics. To change the characteristics of an antenna, several reconfiguration approaches are utilized. They are popular because of their inexpensive cost, small size, and lightweight. A comparative examination of several works on frequency reconfigurable antenna is given.

Chitosan and Banana Pseudostem Composite in Antimicrobial Food Packaging Applications

Agasthya H U, Department of Biotechnology, GMIT, Davanagere, India

Akshatha B A, Department of Biotechnology, GMIT, Davanagere, India

Nitin Kumar, Department of Biotechnology, GMIT, Davanagere, India

N K Muskan, Department of Biotechnology, GMIT, Davanagere, India

Rakesh N R, Assistant Professor, Department of Biotechnology, GMIT, Davanagere, India

Abstract

Role of food packaging system is continuing to evolve as a response to the changing customer needs and market trends. Demand for healthier, safe and high quality foods has led to the development of various new packaging technologies like bioactive packaging. These packaging are intended to increase the shelf-life or maintain the packaged foods condition. Bioactive packaging uses antioxidants, antimicrobials and many other synthetic molecules to achieve the goal of extended shelf-life. Method of incorporation of these can be in the form of food pads, sachet incorporations, coatings and so on. Among them, antimicrobial packaging system is one of the most promising and efficient method for controlling the spread of pathogens via food stuffs. This project is meant for obtaining an eco-friendly, sustainable and low cost antimicrobial packaging material using banana pseudo stem and chitosan. Cinnamon essential oil rich in cinnamaldehyde and eugenol is used to promote the antimicrobial property. Chitosan, a biocompatible polymer provides antimicrobial properties along with cinnamon essential oil in the packaging material. Packaging material Solutions with different ratios of Chitosan, CEO and Cellulose fibers were prepared along with corn starch. Further, solvent casting method was used and packing material in the form of thin sheet was obtained. Solubility, Heat stability and antmicrobial properties were tested. The packaging applications can be in the form of transparent cling wraps, sachets and punnets.

Hybrid Water Pump

Rakshith S N, Department of Mechanical Engineering, GMIT Davangere, India

Swamy V R, Department of Mechanical Engineering, GMIT Davangere, India

Manu B S, Department of Mechanical Engineering, GMIT Davangere, India

Amith V, Department of Mechanical Engineering, GMIT Davangere, India

Doddeshi B C, Assistant Professor, Department of Mechanical Engineering, GMIT Davangere, India

Abstract

In day today life, the water is needed as the major source and the source to pump the water from low to high region need extra investment like motor pump and also when the there is need of water is high the investment will also go high. In rural areas such investment is not possible due to economic conditions some time their will be need of the man power and also as well as the time-consuming factors. Pumping and storing water whenever required in certain rural areas is also typical due to power shortage, and the village people or farmers will suffer the losses. This work has been attempting to develop a self-starting motor which is operating on both wind and solar power technology.

Smart System for Monitoring Grain Stock

Mr. Raviteja Balekai, Assistant Professor, Department of ECE, GMIT, Davangere, India

Harshitha C, Department of ECE, GMIT, Davangere, India

Lavanya C J, Department of ECE, GMIT, Davangere, India

Kadakollada Tejashwini, Department of ECE, GMIT, Davangere, India

Priya K M P, Department of ECE, GMIT, Davangere, India

Abstract

Nowadays IoT has wide applications. Every year farmers face a huge loss due to the problem of storage requirements in warehouses. Maintenance of atmosphere at the warehouses and godowns is essential. In India, due to atmosphere, insects and rodent up to 30% grain waste is going on at conventional storage houses. Food grain wastage cripples a country's economy to a great extent. Food grain wastage is also associated with wastage of water, manpower during agricultural activities and electricity power used in food processing industries. It even causes deforestation. Adequate measures have to be taken to properly store the food grains so that they remain edible. The proposed storage management system uses the sensors to measure the levels of humidity, temperature, light intensity and methane gas which will help us monitor the quality of the food grains. The desired system could be more energy efficient, low cost, lightweight and portable. The main idea presented in this project is to design an IoT based smart system for efficient monitoring of grain storage in villages. The Quality of the food grain is measured using the factors like humidity, temperature, light intensity and methane gas sensors and sent through wireless communication to the server and the server makes the decision and alarms about the quality of the food grain to the maintenance people.

Keywords

Sensors, Node MCU, Adafruit IO, Arduino IDE, MQTT protocol

Deciphering Groundwater Potential Zones in Haridra River Basin of Harihara Taluk, Davangere District Using Remote Sensing and GIS

S.L.Arun Kumar, Associate Professor, Dept. of Civil Engineering, GMIT, Davanagere, India

Roopa G R, Dept. of Civil Engineering, GMIT, Davanagere, India

Aaron Joyson D, Dept. of Civil Engineering, GMIT, Davanagere, India

Tanmayi M R, Dept. of Civil Engineering, GMIT, Davanagere, India

Harsha G H, Dept. of Civil Engineering, GMIT, Davanagere, India

Abstract

Water is a vital resource for sustenance of life and economic development of a region. Increase in population, trade and industry have resulted in increased demand for fresh water and more than 90% of the people depend on ground water resources. Hence, delineation of groundwater potential zones in need of the hour. The occurrence of groundwater is dependent on various interrelated geo-environmental parameters, viz., lithology, slope, soil, lineament, land use and land cover, rainfall, drainage density and hydrogeomorphology. Suitable weightage factors were assigned for each category of these parameters. For the various geomorphic units, weightage factors were assigned based on their capability to store groundwater. GIS is the powerful tool for the generation and integration of the thematic maps. The groundwater potential zone mapping using modern techniques are essential for the proper identification of this renewable natural resource. Therefore, an attempt is made to identify the ground water potential zones in Haridra River basin using multi criteria evaluation technique on GIS platform. Based on the results, the groundwater potential zones in the basin have been grouped into (a) Very Good (24.44%) (b) Good (25.79%) (c) Moderate (39.72%), (d) Poor (8.07%) and (1.75%) is Very Poor zones.

Image Based Diagnosis of COVID-19

Mr.Rudresh N C, Assistant Professor, Department of CSE, GMIT, Davanagere, India

Ms. Apoorva M R, Department of CSE, GMIT, Davanagere, India

Ms. Kavana D K, Department of CSE, GMIT, Davanagere, India

Mr. Vinayak H K, Department of CSE, GMIT, Davanagere, India

Ms. Ranjitha K R, Department of CSE, GMIT, Davanagere, India

Abstract

Deep Learning has improved multi-fold in recent years and it has been playing a great role in image classification which also includes medical imaging. Convolutional Neural Networks (CNN) has been performing well in detecting many diseases including Coronary Artery Disease, Malaria, Alzheimer's disease, different dental diseases, and Parkinson's disease. Like other cases, CNN has a substantial prospect in detecting COVID-19 patients with medical images like chest Xrays and CTs. Coronavirus or COVID-19 has been declared a global pandemic by the World Health Organization (WHO). Till July 11, 2020, the total COVID-19 confirmed cases are 12.32 M and deaths are 0.556 M worldwide. Detecting Corona positive patients is very important in preventing the spread of this virus. On this conquest, a CNN model is proposed to detect COVID-19 patients from chest X-ray images. This model is evaluated with a comparative analysis of two other CNN models. The proposed model performs with an accuracy of 97.56% and a precision of 95.34%. This model gives the Receiver Operating Characteristic (ROC) curve area of 0.976 and F1-score of 97.61. It can be improved further by increasing the dataset for training the model.

Production of Different Biodiesel Fuel and Perfomance Analysis of CI Engine

Sagar H G, Department of Mechanical Engineering, GMIT, Davanagere, India

Harsha C S, Department of Mechanical Engineering, GMIT, Davanagere, India

Vinayak S P, Department of Mechanical Engineering, GMIT, Davanagere, India

Bharath T G, Department of Mechanical Engineering, GMIT, Davanagere, India

Dr.Basavarajappa D N, Associate Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Srinivasa C V, Professor & Head, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

With high technological advantage and modernization, use of petroleum based fuel is increasing. But petroleum based fuels are depleting in nature. They are not renewable as a result, demand is more than supply. Fuel cost goes on increasing day by day. Besides availability of cost, environmental issues are very important; pollution caused by this fuel is destroying life of ecosystem. Thus there is a need to search alternative fuel to petroleum based oil.

In India, Jatropha, Soyabean and waste cooking oil is used as a significant fuel source. These vegetable &non-vegetable based oils have drawn the attention of researchers in recent time, as a high potential substrate for production of biodiesel. The petroleum products play on important role in our modern life. The costs of these products depend on international markets and petroleum reserves are limited to nearly 30 years. India is projected to become the third largest consumer of transportation fuel in 2020, after the USA and China, with consumption growing at an annual rate of 6.8% from 1999 to 2020.

Vegetable based fuel have great potential as they are enviro-friendly. This paper focus on the use of Jatropha, Soyabean and waste cooking oil as alternative fuel and their comparative performance result shows that this vegetable based fuel has better performance and emission characteristic to compared diesel.

Smart Weather Monitoring System

Mr. Sampath Kumar B, Assistant Professor, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Ms. Abhilasha A Myakalamaradi, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Ms. Aishwarya I Ganiger, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Ms. Ashwini M Koppad, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Mr. Avinash Y, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

This paper focuses on the necessity of smart weather monitoring system. The aim of weather monitoring system is to detect, record and display various weather parameters such as temperature , humidity, soil moisture sensor and barometric pressure sensors. This system makes use of sensors for detecting and monitoring weather parameters and then this collected information is sent to the cloud which can be accessed using the internet. The data displayed as an output can be observed and forecasted. Here, it is implemented using Node MCU which depends on the combination of several sensors to be integrated. Node MCU will receive the readings from various sensors and then that data will be uploaded to the cloud. And then the data is made available for the user in the remote location. Here weather monitoring can be done in wireless manner where temperature, humidity, soil moisture sensor and barometric pressure sensors are integrated with the Node MCU, in which Node MCU read data and sensor data is uploaded to cloud and saved data is used for prediction of the future weather.

Face Mask Detection and Thermal Scanner for Covid Care

Mr. Sandeepa G S, Assistant Professor, Department of Computer Science and Engineering, GMIT, Davanagere, India

Karthik M Hadagali, Department of Computer Science and Engineering, GMIT, Davanagere, India

Rithika Reddy V B, Department of Computer Science and Engineering, GMIT, Davanagere, India

Pradeep Kumar B S, Department of Computer Science and Engineering, GMIT, Davanagere, India

Priyanka M N, Department of Computer Science and Engineering, GMIT, Davanagere, India

Abstract

During this current Covid - 19 pandemic situation, maintaining good health and limiting the spread of virus has become the top priority for mankind. According to the World Health Organization (WHO), the effective protection method is to wear a face mask in public areas. Keeping everyone's safety into consideration, each and everything is expected to be contactless. Face mask detection and sanitizing the hands are advanced as famous issues at current situation. We propose a computer Vision based automated system that focuses on real-time face monitoring of individuals to achieve a COVID-free environment. Automatic sanitization is performed when a person is wearing a face mask and their body temperature is within the threshold; if they are not, a buzzer will be engaged and an alert message will be delivered. We use a Raspberry Pi 3 Model B to identify face mask protocol violations with the help of an integrated Pi camera and an MLX90614 sensor to monitor body temperature. As a result, our proposed approach will benefit society by saving time and reducing the transmission of the Corona virus. This model can be used to inspect individuals in public areas like as colleges, schools and other organizations.

Keywords

Alert system, Face Mask Detection, Keras, OpenCV, Temperature Check-up, TensorFlow

Automated Reclining Wheelchair

Sanjay M S, Department of Mechanical Engineering, GMIT, Davanagere, India

Harsha H M, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Puttappa D H, Department of Mechanical Engineering, GMIT, Davanagere, India

Ramesh H G, Department of Mechanical Engineering, GMIT, Davanagere, India

Ranjith Kumar A B, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Probiotics are microorganism that gives health care when consumed. Currently, the term probiotics is applied to ingested microorganisms associated with beneficial effects on humans and animals. Probiotic drinks are commonly milk-based drinks that are milk-like in consistency. They are eaten for gastrointestinal wellbeing. The addition of soymilk probiotics will improve the characteristics and benefits of multiple folds. The addition of apple extract offers improved sensory properties and primarily increases the shelf life of the beverage or drink. The overall motive of this research work is to develop a probiotic drink from soy milk and apple extract, to enhance the digestive properties among humans. The probiotic drink was prepared by blending soy milk, apple extract and digestive microbes. The different blends were inoculated by Lactobacillus, acetic acid bacteria, saccharomyces yeast and the apple extract fermentation time was optimized for 48 hours. For overall acceptability, the 65:35 mixing ratios of soy milk and fermented apple extract produced desirable results with the highest sensory ratings.

Keywords

Probiotics, Cholesterol Assimilation, Soymilk, Fermented Apple

Performance Analysis of Machine Learning Techniques for Image Corner Detection

Santosh M Herur, Assistant Professor, Department of ECE, GM Institute of Technology, Davangere, Karnataka, India

Nagaraj Bhat, Assistant Professor Department of ECE, RV College of Engineering, Bengaluru, Karnataka, India

Ashwini S Shinde, ResearchScholar Department of ECE, KLS, Gogte Institute of Technology, Belagavi, Karnataka, India

Mahendra B M, Assistant Professor, Department of ECE, RV College of Engineering, Bengaluru, Karnataka, India

Abstract

Image analysis and computer vision is an emerging field and employed in almost every sector. To interpret an image, it is very vital to extract certain categories of features and comprehend the contents of an Image. Corner detection is one of the most important features used to analyze the image. It has a wide range of application like the image registration, motion detection, video tracking, 3D modelling, object recognition and image mosaicking panorama stitching. Corner detection overlaps with the topic of point detection. In this paper, the Support Vector Machine and Artificial Neural Network is implemented to extract the corners and compare the results with the standard existing techniques used for corner detection. The result is analyzed by the success rates of corners. Here we obtain maximum number of corners by implementing the robust ANN technique.

Object Identification and It's Audio Output with Description for Blind and Specially Abled Persons using Python

Sharanasavaveshwara H B, Assistant Professor, Department of Electronics and Communication Engineering, GMIT, Davanagere, India

Bilichodu Shivaputra H B, Department of Electronics and Communication Engineering, GMIT, Davanagere, India

Darshan M P, Department of Electronics and Communication Engineering, GMIT, Davanagere, India

Dronachar C L, Department of Electronics and Communication Engineering, GMIT, Davanagere, India

Mansooraktar H S, Department of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

Object detection has received a lot of research attention in recent years because of its tight association with video analysis and picture interpretation. Handcrafted features and shallow trainable structures are the foundations of traditional object identification systems. By generating sophisticated ensembles that incorporate various low-level picture features with high-level information from object detectors and scene classifiers, their performance can quickly stagnate. With the fast advancement of deep learning, more powerful tools that can learn semantic, high-level, and deeper features have been created to solve the issues that affect traditional systems. In terms of network design, training method, and optimization function, these models behave differently. In this work, we provide an enhanced object identification approach based on deep learning, as well as vocal output of the identified items. Our research begins with a quick overview of deep learning's history and the tool that represents it, the Convolutional Neural Network (CNN). Then we'll look at various common general object detection designs, as well as some tweaks and tips for improving detection performance even further. We also go through a few particular tasks, such as salient object recognition, object to speech output, and text to voice conversion, because different particular detection tasks have various features.

Smart Cap-Wearable Visual Guidance System for Blind

Shivanna K, Assistant Professor, Department of Computer Science and Engineering, GMIT, Davanagere, India

Shrijan M H, Department of Computer Science and Engineering, GMIT, Davanagere, India

Namrata G H, Department of Computer Science and Engineering, GMIT, Davanagere, India

Pruthvik B S, Department of Computer Science and Engineering, GMIT, Davanagere, India

S H Nagesh, Department of Computer Science and Engineering, GMIT, Davanagere, India

Abstract

Science and technology always try to make human life easier. The people who are having complete blindness or low vision faces many difficulties during their navigation. Blindness can occur due to many reasons including disease, injury or other conditions that limit vision. The main purpose of this paper is to develop a navigation aid for the blind and the visually impaired people. In this paper, we design and implement a smart cap which helps the blind and the visually impaired people to navigate freely by experiencing them surroundings. The scene around the person will be captured by using a pi camera and the objects in the scene will be detected. The earphones will give a voice output describing the detected objects. The architecture of the system includes the processor Raspberry Pi 3, Pi camera, earphones and a power source. The processor collects the frames of the surroundings and converts it to voice output. The device uses Tensor Flow API, open-source machine learning library developed by the Google Brain Team for the object detection and classification. Tensor Flow helps in creating machine learning models capable of identifying and classifying multiple objects in a single image. Thus, a detail corresponding to various objects present within a single frame is obtained using Tensor Flow API. A Text to Speech Synthesiser (TTS) software called eSpeak is used for converting the details of the detected object (in text format) to speech output. So, the video captured by using the Pi camera is finally converted to speech signals and thus, narration of the scene describing various objects is done. Objects which come under 90 different classes like cell phone, vase, person, couch etc are detected.

A Facile Synthesis, Characterization of Nanocellulose from Straw of Orizya Sativa

Onkarappa H S, Department of Chemistry G M Institute of Technology, Davangere, Karnataka, India

Shrihari B M, Department of Biotechnology G M Institute of Technology, Davangere, Karnataka, India

Radha V, Department of Chemistry G M Institute of Technology, Davangere, Karnataka, India

Simran S Revankar, Department of Biotechnology G M Institute of Technology, Davangere, Karnataka, India

Shilpa V Allipur, Department of Chemistry G M Institute of Technology, Davangere, Karnataka, India

Abstract

In the current research, Rice Straw (Orizya Sativa) is converted into most value-added products by pre-treated with NaOH (5%) and $NaClO_2$ (5%) i.e., alkali and bleaching treatment to obtain cellulose. The prepared cellulose is converted to Nanocellulose (NC) by the simple acid hydrolysis method using H2SO4. Further NC is subjected to homogenization followed by ultrasonication. The prepared Nanocellulose is characterized by Fourier Transformation Infrared Spectroscopy (FTIR) to identify the functional groups. Crystallinity is studied by X-Ray diffraction (XRD). The surface morphology and size of the NC is studied by scanning electron microscope (SEM) and Transmission electron microscope (TEM). The thermal behaviour of Nanocellulose was studied using Thermogravimetric Analysis and Differential Thermal Analysis (TGA/DTA). XRD exhibits the semi-crystalline nature, SEM monographs reveal the fibrous nature of NC and TEM monographs depict the size of the NC is in nanoscale.

Keywords

Rice straw, Nanocellulose, cellulose, Acid hydrolysis, ultrasonication

Processing Parameters Affecting the Fatigue Life of Aluminium Metal Matrix Composites (AMMCs)

Sivaprakash P, Assistant Professor, Department of Mechanical Engineering, GMIT, Davangere, India

Prajwal S, Department of Mechanical Engineering, GMIT, Davangere, India

Purushotam C Kathare, Department of Mechanical Engineering, GMIT, Davangere, India

Sanjay S Tambe, Department of Mechanical Engineering, GMIT, Davangere, India

Prasanna B, Department of Mechanical Engineering, GMIT, Davangere, India

Abstract

Aluminium's usage is constrained by its limited strength and hardness (hence being used only in lightly loaded structures) as well as its low melting point. Thus, the material is combined with various other elements to improve the properties depending upon its applications. An example of such a combination includes a family of materials known as aluminium metal matrix composites AMMCs. The main reason for Al-SiC MMCs consideration is its strength to weight ratio. Hence, this makes Al-SiC a better choice. It is seen that for any material to be used in aerospace applications, certain criteria must be met. Since the need to develop more efficient aircraft hasn't subsided the requirement for better materials is still in great demand. Although the exact set of required properties depend on the specific application, certain properties such as low density, good fatigue performance are seen as universal requirements for effective functioning of industry. Effort has been made to ascertain higher strength to weight ratio of AMMCs by considering factors of SiC concentration, preheating and ageing.

In this work, aluminum reinforced with SiC/Al_2O_3 particles are fabricated by stir casting technique and the effect of reinforcements content on microstructure and mechanical properties of AMMC are investigated. Fatigue tests are conducted to assess the mechanical behavior of the composites.The various process parameters affecting the fatigue life are measured.The effect of volume fraction on the composites will be evaluated and necessary conclusions will be drawn.

Electro-Mechanically Operated Automatic Septic Tank for Railway Bogies

Mr. Suresh Babu S U, Assistant Professor, Department of Mechanical Engineering, GM Institute of Technology- Davanagere, India

Mr. Sohail Ahmed D, Department of Mechanical Engineering, GM Institute of Technology- Davanagere, India

Mr. Syed Shoyeb K, Department of Mechanical Engineering, GM Institute of Technology- Davanagere, India

Mr. Srinidhi V Singananamalli, Department of Mechanical Engineering, GM Institute of Technology- Davanagere, India

Mr. Mohammed Mustafeez K A, Department of Mechanical Engineering, GM Institute of Technology- Davanagere, India

Abstract

The present work aims to the Effective management of fecal waste from the Railway Coaches, to maintain a clean and healthy environment in Railway Station as well as in the City Limits.

Indian Railways (IR) is a large transport organization running 8700 trains, reaching 7000 stations and handling about 1.6 crore passengers per day. IR runs several long distant trains, some of which involve journeys up to three nights. The major problem is disposal of fecal matter from the train. On April 16, 1853, the first passenger train between Bori Bunder, Bombay and Thana was inaugurated. In 1909 Toilets were introduced in trains. The early toilet system in the coaches discharged excreta directly to the ground and the railway tracks. The consequences were unacceptable hygienic conditions, particularly in the railway stations, and damage to rails. Many methods were implemented during these years for the effective management of fecal matter from the Trains. Many of the methods failed to effectively manage the fecal waste.

The existing toilet system in the coaches introduced is managing the fecal waste without any spillage on the Railway tracks, but it has some limitations with which they lack the effective management of fecal matter from the trains. IR is making efforts to introduce environment friendly toilet discharge system.

Toilets in the Railway coaches are a part of amenities being provided linked to the category of the station. There is an attempt to modernize toilets at important stations. The issue of dealing with fecal matter should be viewed in the larger context of waste management. With effective waste management, fecal matter can be recycled and used as liquid fertilizers and quality organic manures.

Finally, our work understands the issues related to fecal matter management on the Indian Railways, and provide a framework for solutions.

Analysis and Design of Multistoried Commercial Building Using ETABS

Virupaksha H V, Assistant Professor, Department, of Civil Engineering, GM Institute of Technology, Davanagere, India

Sridevi N, Department, of Civil Engineering, GM Institute of Technology, Davanagere, India

Hareesh K, Department, of Civil Engineering, GM Institute of Technology, Davanagere, India

G S Vanaja, Department, of Civil Engineering, GM Institute of Technology, Davanagere, India

Manoj G Aladakatti, Department, of Civil Engineering, GM Institute of Technology, Davanagere, India

Abstract

Structural Analysis is the method to ensure the safety of the structure. This project "Analysis and Design of Multistoried Commercial Building using ETABS" deals with the analysis and design of a multi-storied commercial building (G+2) using the software ETABS (Extended Three Dimensional Analysis Of Building Systems). This software enables to check the stability of structure under gravity loading, shear forces and seismic loads. The proposed building is a Commercial Building. The dead load and live loads are applied and the design for beams, columns, slab is obtained. In this project we are considering seismic load as the lateral load. In this project, limit state method is adopted for analysis. In this work, an attempt is made according to Building Bye Laws and design of building is done as per IS: 456-2000, SP-16 and SP-34 specifications.

Bending Behavior of Curved Sandwich Composite Structure

Dr. Srinivasa C V, Professor & Head, Department of Mechanical Engineering, GM Institute of Technology, Davangere, India

Praveen V Bongale, Department of Mechanical Engineering GM Institute of Technology, Davangere, India

Marati Prasada, Department of Mechanical Engineering GM Institute of Technology, Davangere, India

Abstract

Sandwich structure have played a very important role in modeling mechanical engineering structures. Curved structure are known to be more efficient in transfer of loads than straight sandwich structure. The transfer in the curved structure is affected by means of bending, shear and other action also. This is particularly important in studying initially curved structures. The aim of this project is to improve the use and flexibility of curved structure in various mechanical components and structures. In this project the finite element formulation is used to analyze static analysis of a curved sandwich structure with various cross sections, various types of curvature under various types of load and its directions, for linear elastic isotropic materials. To give the better structure of good strength and good life to the various kind of applications like aircrafts, automobiles, architecture, earth-moving equipment, containers and so on, and to use these structure efficiently and apply in real life and to obtain more optimum design solutions.

Design and Development of Robot Arm for Industrial Applications

Suhas A, Dept. of Mechanical Engineering, GM Institute of Technology, Davangere, India

Kiran Kumar P, Dept. of Mechanical Engineering, GM Institute of Technology, Davangere, India

Rudresh H C, Dept. of Mechanical Engineering, GM Institute of Technology, Davangere, India

Manoj R K, Dept. of Mechanical Engineering, GM Institute of Technology, Davangere, India

Bharath K N, Dept. of Mechanical Engineering, GM Institute of Technology, Davangere, India

Abstract

This paper is on Design and Development of Robot Arm for various Applications using Servo motors controllers. The objective of this project is to design and build a more compact usable pick and place robotic arm for various applications. It is an automated material handling system, synchronizing the movement of robotic arm to picking simple light object from one place and carry it to another place by moving on a conveyor belt. Using processors like Arduino, microcontroller. Programmable logic controller is used for controlling and operating robotic arm. A controller receives the output signals and uses the spatial position information as feedback to continuously guide the arm towards the target object. The major advantage of the robotic arm is that it can work in hazardous circumstances such as high temperature, pressure which is not suitable for the humans.

Touchless Smart Detoxifying Unit

Sumanth S.S, GMIT, Davanagere, India

Tripthi Shetty, GMIT, Davanagere, India

Vijetha, GMIT, Davanagere, India

Vinutha Bhargavi, GMIT, Davanagere, India

Mr. Arun Upadhyaya, GMIT, Davanagere, India

Abstract

The current catastrophic situation made us realize the importance of hygiene for safe environment. To rejuvenate the idea of hygiene we presents a "TOUCHLESS SMART DETOXIFYING UNIT "for fighting the globe pandemic. Core temperature plays an important role in medicine, a number of diseases are characterized by a change in human body temperature. But current body temperature measurement system is mainly limited by reaction time, movement noise, and labor requirement. Corona medical service in most hospital starts with patient's temperature measurement and then rapid test. The mouth spread is controlled with the mask cloth and the human hand is disinfected by the hand wash sanitizer. But the physical touch involved while pressing the dispenser may causes the virus spread from human to human. From the above speculation we present a kiosk that automatically measures body temperature in seconds and features an automatic touch less hand wash sanitizer dispenser. This kiosk is an invaluable solution for quick detection of illnesses and reduce the spread of bacteria & viruses, it vets staff members and the public before entry to premises such as Schools, Malls, Restaurants, factories, Railway stations, Airports and Corporate offices. In addition, the Kiosk features a touch-less UV-C Box to disinfect bag, cell phone and keys in less than 10 Seconds. UV-C Box kilOs 99% Viruses and Bacteria within 10 seconds on exposed surface. The entire process does not include any physical touch on the unit hence no burden of sanitizing on every go.

Keywords

hygiene, quick detection, UV-C box, fever detection, sanitizer dispenser

Experimental Study on Partial Replacement of Coarse Aggregate by Coconut Shell

Swamy L V, Department of Civil Engineering, GMIT, Davanagere, India

Milan Sagar S, Department of Civil Engineering, GMIT, Davanagere, India

Swamy G O, Department of Civil Engineering, GMIT, Davanagere, India

Manjunath C R, Department of Civil Engineering, GMIT, Davanagere, India

Kiran Kumar M H, Department of Civil Engineering, GMIT, Davanagere, India

Abstract

Disposal of waste material is a great problem and it becomes challenging to find natural resources due to their extreme exploitation. Use of waste materials as construction materials has several benefits such as decrease in cost, saving in energy, and protection of environment. Coconut shell is one of the main contributors of pollution problem as an agricultural waste. Coconut shell used as partial replacement of coarse aggregate in concrete. This paper presents an investigation of strength characteristics of concrete produced by 0%, 10%, 15%, 20% replacement of coarse aggregate by coconut shell. The test results showed that coconut shell can be used as a partial replacement of coarse aggregate in concrete. Its utilization is cost effective and eco-friendly.

Keywords

Coarse Aggregate, Coconut Shell, Compressive Strength, Waste Utilization

Analysis and Design of Multi Storied Building Using Staad.Pro

Swamy L V, Department of Civil Engineering, GMIT, Davanagere, India

Pooja R S, Department of Civil Engineering, GMIT, Davanagere, India

Chithra D R, Department of Civil Engineering, GMIT, Davanagere, India

Nanditha D, Department of Civil Engineering, GMIT, Davanagere, India

Punyashree G B, Department of Civil Engineering, GMIT, Davanagere, India

Abstract

We know civil is the mother branch of engineering, dealing with entire constructional work in the light of aesthetic view depending on the planning, analysis and designing so a civil engineer has many activities to perform, he has to think in more than one direction to utilize the resources in the optimum way.

A multi-storey is a building that has multiple floors above the ground. It can be a residential or commercial building. The present project deals with the analysis and Design of a G+3 building. The main objective of this project is to analyze and design a multi-story building, the design of reinforced concrete slabs, beams, columns, footings and Staircase were made by "Limit State Method" using IS: 456-2000 code book and compare the results by using STAAD Pro Software. Different loads acting on the member are considered according to IS: 875-1987. All the drafting and detailing was done by using Auto CAD software.

Keywords

Multi-storey, Analysis, Design, Auto CAD, STAAD Pro

Eco-Friendly Elevator for Demostic Application

Dr. Rajakumar D.G, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Chandana R, Department of Mechanical Engineering, GMIT, Davanagere, India

Akshay Kumar K, Department of Mechanical Engineering, GMIT, Davanagere, India

Tanushree M, Department of Mechanical Engineering, GMIT, Davanagere, India

Sayeda Tanaz Darvesh, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

The energy crisis is the concern that the world's demand on the limited natural resources.In 1990 energy crisis caused by the peaking of oil production in major industrial nation Renewable energy (RE) is the alternate option to meet the requirements of energy crisis.Out of all RE solar energy have promising sources.In 19970's and 1980's research and scientists had success using sunlight to power ovens for long voyages.There are many types of elevators such as Pneumatic elevators, Hydraulic elevators, Electric elevators, These are not econmical and high expensive.In solar operated elevator, solar electricity generation represents a clean alternative to electricity.Solar elevators use only renewable sources of energy .It is eco-friendly in nature and it doesn't pollute the nature.The cost expenditure is low as compared to other elevators.

Comparative Study of FLC and SMC Methods for Power Factor Improvement of Distribution System with EV Chargers for SVC

Usman Ali, Department of EEE, UBDTCE, Karnataka, India

D. Sathyanarayana, Department of EEE, UBDTCE, Karnataka, India

Abstract

Usage of Electric Vehicles (EVs) is on the rise because of the surge in fuel rate plus shortage of natural resources. Batteries of these can be used as power storage apparatus inside micro-grids plus latest electric vehicle technology having battery possess several issues like hefty price tag, heaviness, less travelling length, lengthy charging time plus electric shock issues. Soaring usage of these have given way to high pressure on grid plus have also resulted in disturbance, variation plus decreased power factor in power grid. Many nonlinear controller concepts like feedback linearization plus sliding mode controllers (SMCs) are investigated plus applied for controlling nonlinear system as the physical systems are nonlinear therefore transmission lines having SVCs possess nonlinear features. SMCs are capable of controlling system reservations plus outside turbulences having high-quality output. Artificial intelligent controller like fuzzy logic controller (FLC) is used due to its less settling time fraction of microseconds to bring the system voltage to the desired voltage. In this paper, superior quality nonlinear sliding mode controller (SMC) plus Fuzzy Logic controller (FLC) are proposed to EV charging system for compensating voltage distortions plus for enhancing power factor in opposition to unstable EV chargers. The above-mentioned controllers performance are analyzed and compared. In order to obtain proposed scheme's authentication, simulations are operated on 22.9-kV grid. Simulation work of proposed topology will be carried out in MATLAB/Simulink.

Keywords

Fuzzy Logic Controller (FLC), Sliding Mode Controller (SMC), Electric Vehicles (EVs), Static Var Compensator (SVC), Unbalanced Load, EV Charger

Intelligent Safety Device for Women using GPS and GSM

Mrs. Venkata Sumana C H, Assistant Professor, Dept., of ECE GM Institute of Technology, Davanagere, India

Megha Hiregoudra, Dept., of ECE GM Institute of Technology, Davanagere, India

Inchara M S, Dept., of ECE GM Institute of Technology, Davanagere, India

Manjunath S A, Dept., of ECE GM Institute of Technology, Davanagere, India

Mruthyunjaya B M, Dept., of ECE GM Institute of Technology, Davanagere, India

Abstract

India, which sees itself as a promising superpower and an economic hub, is still trapped in the clutches of various patriarchal evils like molestations, dowry crime against women worst among all is rape. Therefore, in such cases they feel handicap and need help to protect them. This paper proposes a quick responding mechanism that helps women during trouble, when someone is going to harass, she can just press the button and the location information is sent using as an SMS alert to few predefined numbers and to the nearest police station of latitude and longitude using GPS and GSM. The controller used is ESP8266 and programming is done in Embedded C. It is interfaced with spy camera with night vision enabled so that it can perform video and audio recording and can capture images of that area. If in case the victim is unable to press the panic button, this system has another way to provide safety for the victim that is, the system is interfaced with heart beat sensor to record the values of a heart beat rate, if the heartbeat of the victim is greater than the threshold value than automatically the alert message with the location of the victim is sent to the predefined numbers and to the nearest police station using latitude and longitude. The threshold value is being set by considering the normal heart beat rate of a person and other factors. Trail output of live location and alert message is effectively executed after experimenting interfacing of GPS and GSM with embedded computing system.

Social Distancing Detection and Alerting System

Mrs. Venkata Sumana C H, Assistant Professor, Dept. of ECE, GM Institute of Technology, Davangere, India

Mr. Mahesh N D, Dept. of ECE, GM Institute of Technology, Davangere, India

Mr. Jagadeesh H, Dept. of ECE, GM Institute of Technology, Davangere, India

Ms. Ibbani P, Dept. of ECE, GM Institute of Technology, Davangere, India

Ms.Bhavana S, Dept. of ECE, GM Institute of Technology, Davangere, India

Abstract

Social distancing is a good strategy to decrease the spread of infectious viruses during Covid-19. To reduce the chance of the disease being transferred by direct contact, people are urged to limit their contact with one another. For many areas, such as factories, banks, buses, and train stations, maintaining a safe distance is difficult. Because vaccinations are currently being developed, social distance is believed to be an adequate measure to prevent the pandemic virus from spreading. A social distance detection and warning system are proposed to provide a safe atmosphere that contributes to public safety. The goal of this proposed work is to create a deep learning platform for measuring social distance and alerting users. The code is run using OpenCV, Python, and the YOLO v3 object identification method with the Deep Neural Network module to build this system. The social distancing detection system can check if individuals are keeping a safe distance from each other by analyzing real-time video feeds from the camera to ensure social distancing protocol in public areas and the workplace. The gadget can be connected with the security camera systems and monitor if individuals are keeping a safe distance from each other at work, factories, stores, and public areas.

Performance Evaluation of Lightweight Concrete by Partial Replacement of Cement by Fly Ash

Virupaksha H V, Assistant Professor, Department, of Civil Engineering, GMIT, Davanagere, India

Darshan K H, Department, of Civil Engineering, GMIT, Davanagere, India

Jeevan Kumar C S, Department, of Civil Engineering, GMIT, Davanagere, India

Karthik Gowda H S, Department, of Civil Engineering, GMIT, Davanagere, India

Pavan Kumar D T, Department, of Civil Engineering, GMIT, Davanagere, India

Koushik G M, Department, of Civil Engineering, GMIT, Davanagere, India

Abstract

Concrete is the most used construction material in the civil engineering application in construction. Addition of some other materials may change the properties of concrete. The mineral admixture with pozzolanic properties such as fly ash (FA) is commonly used as a partial substitution of Ordinary Portland cement during construction.

Fly ash is a fine, glass-like powder recovered from gases created by thermal power generation. Power plants produce millions of tons of fly ash annually, which is usually dumped in landfills. Fly ash is an inexpensive replacement for Portland cement used in concrete, while it actually improves strength, and ease of pumping of the concrete.

The main aim of this work is to study,the effect of partial replacement of fly ash by cement, on the various strength and durability properties of concrete, by using the M-25 mix design. In this case coarse aggregate are fully replaced by cinders.Workability of concrete gradually decreases as the percentage of replacement increases, which is found in fresh and hardened properties of concrete. The partial replacement of cement by fly ash in the ratio of 10%, 20%, 30%, by the weight of cement in concrete and tested for its compression and split tensile strength. The test is done after 7 and 28 days of curing.

Vibration Minimization Using Electrorheological Damper During Hard Boring.

Aditi. D. Apte, Research Scholar Department of Mechanical Engineering, Visvesvaraya Technological University, Belagavi, Karnataka, India

Dr. Chetan S. Jarali, Scientist, Structural Technologies Division, CSIR National Aerospace Laboratories, Bengaluru, Karnataka, India

Dr. Samikkannu Raja, Scientist, Structural Technologies Division, CSIR National Aerospace Laboratories, Bengaluru, Karnataka, India

Dr. Satish. S. Kulkarni, Professor, Department of Mechanical Engineering Padmabhushan Vasantdada Patil Institute of Technology, Budhgaon, Sangli, Maharashtra, India

Abstract

Hard boring has gained substantial response in metal machining since it has substituted the cycle of traditional process such as boring, heat treatment and finish grinding associated with hard parts. This current research goals at evolving an electrorheological fluid damper for reducing vibrations of tools and endorsing improved machining results during hard boring. The electrorheological fluid performs like a spring having nonlinear vibration features tackled by configuration of electrorheological fluid, the electric parameters of electric field and the shape of plunger. Boring investigations are conducted to attain a set of electrical compositional and shape constraints which will reduce tool vibrations and endorse improved cutting performance throughout boring of steel EN24 of 49 HRC with minimum fluid application. It is perceived that utilization of electrorheological fluid damper decreases tool vibrations and increases boring performance efficiently. In this research it is observed that implementation of electrorheological fluid damper can decrease amount of vibration amplitude up to 81.81%. In future commercialization of this technique will beneficial for machining industries.

Library Database Management System

Akshata Chavan, Assistant Professor, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Rakshitha M J, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Nikhila M, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Sowmya Durga R, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Priyanka B G, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

Libraries have been a fundamental fragment of educational and information sector in any university. As the number of documents in the library increases it becomes difficult to store, manage the large number of documents and to find the requested documents by users. A Web based application is developed to maintain a large number of documents in a university. Mainly this proposed system discus about the project "Library Database Management System" which mainly focuses on monitoring and controlling the transactions in a library like adding/updating new books, members and return of books. This project is developed in HTML, PHP, CSS as front end, web API using JSP for connectivity, My SQL for database and developed Android app using Android Studio for student purpose. Library System gives the all information about students, staff and books. It will keep track on how many books are available and how many books are issued and about paying fine. It has a special feature like message intimation to inform about the last date for book submission. It keeps the record of the books borrowed, returned and new books added.

Keywords

Database Management System, monitoring and controlling, transaction, JSP, Android Studio, Message Intimation

Face Recognition-Based Car Ignition System

Mr. Anjan H R, Master Student, Department of Master of Computer Applications, Bapuji Institute of Engineering and Technology, Davangere, Karnataka, India

Dr. Shankaragowda B.B, Assistant Professor, Department of Master of Computer Applications, Bapuji Institute of Engineering and Technology, Davangere, Karnataka, India

Mr. Karibasavaraj J, Director, Sumukha InfoTech, Davanagere, Karnataka, India

Abstract

Evolution of mankind has witnessed many changes like socio-economic and life style changes, revolutions in science and industry have changed many walks of life and provided a lot of comforts to humans, these comforts have occupied various stages of life. The public changes are witnessed by the transportations too. In earlier days of life most of the people depended on public transport for their travelling purpose. But currently, with the changes and advancements, everyone got the opportunity to have their own vehicle, ranging from two wheelers to four wheelers. Though these options provided better comfort and mode of travel, they also imposed a burden, among them providing security to an owned vehicle. Though conventional system has the option of key and lock facility, it consumes some limitations too, one can breach the security with the duplicate key, many incidents have been reported from various parts that vehicles are being stolen with duplicate keys. But now, the technology is trying its best to provide a solution to this global problem. Facility like alerting the users about its current location activity via GPS, alerted by means of sounds when someone touches their vehicle, and that will help to avoid unauthorized access to them.

Automated Wheel Carried Pesticide Sprayer

Bharath B S, Department of Mechanical Engineering, GMIT, Davanagere, India

Harish D P, Department of Mechanical Engineering, GMIT, Davanagere, India

Banakara Avinash, Department of Mechanical Engineering, GMIT, Davanagere, India

Vasanth D K, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

This work aim is to develop to reduce man power and by using the micro controller and solar energy the component will moving automatically. There are many types of pesticides sprayer are available in India. But mostly used sprayer is backpack type sprayer which is used by farmers because it is cheaper, easy to use and main thing about it is less costly. With the help of this machines farmers spray pesticides in their farm, but it requires lot of time and thus high operational cost. Also, the farmers which is spraying pesticides is affected by it as it is harmful to human health and human affect by the lumbar pain due to weight of equipment. This method is used lots of time and affects human health adversely. This paper suggests machines which will save time and operational cost. Also saves human from affecting adversely.

A Comparative Study of Liver Tumor Segmentation Techniques in Computed Tomography Images Using Deep Learning Methods

Deepak D J, Assistant Professor, Department of Information Science and Engineering, RV Institute of Technology and Management, Bangalore, India

Dr. Sunil Kumar B S, Professor, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

One of the most used modalities for liver tumor identification and monitoring is computed tomography (CT) imaging. Effective diagnosis and treatment planning can be done only if liver tumors are detected properly in the early stages. Manual segmentation by radiologists is time consuming and identifying subtle variations of tissues in the early stages of tumor development is very difficult. A lot of research has gone into the automatic segmentation of the liver and liver tumors using various methodologies, but the most efficient and accurate detection methods are all based on neural networks and deep learning. It is very important to understand the current methodologies and tools used for CT image segmentation before taking up research in this field. So this paper highlights the most recent methodologies based on deep learning and discusses the performance of these methods. The results of the various liver tumor segmentation techniques discussed in this paper show that the accuracy and performance of the segmentation can be improved.

Keywords

Liver Tumor Segmentation, Computed Tomography, Deep Learning, Fully Convolutional Neural Networks, U-Net

An Approach to Enhance Image Security Using Modified RSA and DCT Transformations

Ganavi M, Assistant Professor, Department of CSE, JNNCE, Karnataka, India

Prabhudeva S, Assistant Professor, Department of CSE, JNNCE, Karnataka, India

Abstract

The growing potentialities of recent communications necessitate the information security on computer network. As data being traversed on the internet increases, the information security is becoming more significant. The confidentiality and data integrity are essential to safeguard from illegitimated approach. This headed to vital growth in the field of information embedding. In the proposed method, double encryption for secret image and computationally complex algorithm, modified Rivest-Shamir-Adleman (MRSA) for encryption keys are applied along with steganography. A combination of symmetric and asymmetric cryptographic algorithms is used. Secret image is encrypted with fast processing symmetric encryption algorithms such as Rivest cipher 6 (RC6) & one-time pad (OTP) and then embedded in cover image by applying Discrete cosine transform (DCT). Rivest-Shamir-Adleman (RSA) is an asymmetric secured cryptographic algorithm. Key authentication is carried out by encrypting it using MRSA. Simulation outcomes and analysis shows that the proposed method provides two-level security for colour image mediation and key authentication.

Keywords

RC6, OTP, DCT, MRSA, Encryption, Decryption, Steganography

Review on Michelia Champaca Seed Oil as Bio-Fuel and Bio-Lubricant for IC Engine

Pradeep K V, Professor, Dept of Automobile Engineering, Malnad College of Engineering, Hassan, India

Ravikumar K P, Professor, Dept of Automobile Engineering, Malnad College of Engineering, Hassan, India

Kavitha C S, Professor, Dept of Automobile Engineering, Malnad College of Engineering, Hassan, India

Abstract

Due to the limited availability of crude oil many countries across the world, moving towards alternative fuels derived from renewable sources and bio-fuels from vegetable, plants, animals and aquatic animal's fat or oil etc, are used to increase the energy for transportation system and to reduce the pollution impact on the countries environment. In order to reduce the demand and dependency of crude oil, bio-fuels are the best alternative for petroleum. Some bio-fuels are derived from edible oil which makes the negative impact on food chain causes the early depletion. In this context, the mini-review shows the use of easily available, non-edible, oil rich Michelia champaca seeds are used for the production of biofuel and bio-lubricant for I C Engine.

Synthesis of Nanostructured Ternary TiMgSr Alloy for Bio-Medical Applications

Pradeep N B, Assistant Professor, Department of Mechanical Engineering, JNNCE, Shivamogga, India

M M Rajathhegde, Assistant Professor, Department of Mechanical Engineering, JNNCE, Shivamogga, India

Abstract

The preliminary results of an inquiry into the production and characterisation of a Ti-Mg-Sr alloy powder using a high energy ball milling technique are presented in this research article. A high energy Planetary Ball Mill was used to mechanically alloy Ti, Mg, and Sr elemental powders. To examine structural, phase transformation, compositional, morphology, and topography, mechanically alloyed powders were studied using X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM) with EDAX, and High Resolution Transmission electron microscopy (TEM). The elemental powders were simultaneously alloyed with increasing ball milling duration, as evidenced by XRD results showing crystallite size decrease to the nano scale regime. At longer milling times, however, partial amorphization of crystalline powders is observed. TEM study revealed nano crystallites and amorphous structures, whereas SADP revealed a halo amorphous picture as well as crystalline brilliant rings, showing a shift from crystalline to partly amorphous structure during the ball milling process.

Keywords

TiMgSr alloy; Mechanical alloying; Ball milling; XRD; Electron microscopy

Entrepreneurial Marketing in MSME: The Past and the Present

Pushpa Hongal, Assistant Professor and Research Scholar, Kousali Institute of Management Studies, Karnatak University, Dharwad

Dr. N. Ramanjaneyulu, Professor, Kousali Institute of Management Studies, Karnatak University, Dharwad

Abstract

Goal: When traditional marketing practices are unsuitable for small and medium enterprises, entrepreneurs have to unlearn traditional principles and replace them with innovative thoughts and actions, such as entrepreneurial marketing (EM). This paper tries to understand the origin and development of Entrepreneurial Marketing over the period.

Design/Methodology/Approach: The research focus on theoretical principles. Several studies have used the seven proposed EM dimensions.

Results: This research will provide necessary information about the origin and development of entrepreneurial marketing. It also provides the differences between traditional marketing and entrepreneurial marketing. This paper tries to build a conceptual model for Entrepreneurial Marketing and MSME Performance.

Limitations of the Study: The proposed model may not be generalizable and may test in different contexts and cultures.

Originality / Value: This study helps discover different dimensions in the existing literature by addressing the Dimensions of Entrepreneurial Marketing. This study also aims to explain antecedents of entrepreneur, geographical factors and entrepreneurial marketing dimensions in the proposed model.

A Comparative Study-On Boost Converter with and without PFC

R Varun, Electrical and Electronics Visweswaraya Technological University Siddaganga Institute of Technology Tumkuru, India

Priya S, Electrical and Electronics Visweswaraya Technological University Siddaganga Institute of Technology Tumkuru, India

Abstract

A comparative study, on boost converter with pfc (power factor correction) and without pfc is proposed. Generally, boost without pfc operates at low pf and draws high input current THD. The proposed boost converter with pfc operates at high pf and draws low input current THD. Because of low THD filter size reduces and also cost reduces. The proposed converter has less number of switches and gate drives. A simple control technique is adopted. Simulations of these converters are carried out using matlab/ Simulink software. The experimental results depict the performance of converters and then comparison is made. The THD of boost converter with pfc is within IEC standards. The boost with pfc is operated in discontinuous conduction mode. The THD of boost with pfc is 0.55% when compared to THD of boost without pfc which is 25.29%.

Overview of Customer Churn Analysis in Telecom Industry

Radhika Patil, Assistant Professor, Department of Computer Science and Engineering, BIET, Davanagere, India

Dr. Roopa G M, Associate Professor, Department of Computer Science and Engineering, BIET, Davanagere, India

Abstract

Customer churn is the phenomenon where customers no longer want to continue interaction with business. Customer Churn rate is quantitative mathematical calculation of number of customers ceasing to use products/services of a business. Customer Churn in Telecommunications Industry is a pressing issue that has to be dealt to retain customers and build a competitive advantage over the others in the market. This paper focuses on surveying the factors affecting the customer churn, various evaluation metrics used, different churn prediction models used worldwide over a decade. It also discusses about various challenges faced. Customer churn is difficult to continuously predict and prevent when products, services and business models are constantly changing, as companies struggle to meet the rising demands of customers and stay ahead of the competition. After churn prediction, company has to take further action by providing various incentives to reduce and prevent the churn. Companies have to use such identified churns and put efforts to gain customer loyalty. This paper gives a survey on the importance of customer churn, reasons behind customers churn and the state-of- the- art of ML approaches applied in Telecom Industry and its challenges. It can be concluded that monitoring churn is the first step in understanding how good you are at retaining customers and identifying what actions might result in a higher retention rate. All industries suffer from churn. The survival of any business is based on its ability to retain customers. Churn always happens, eventually. But the efforts that is done to lower down the impact, will make all the difference.

Integrated Usage of DARQ - Distributed Ledger Technology, Artificial Intelligence, Extended Reality and Quantum Computing

Vaishnavi Ajay Inamdar, Assistant Professor, Department of Computer Science and Engineering, BIET, Davangere, India

Shwetha G, Assistant Professor, Department of Computer Science and Engineering, BIET, Davangere, India

Abstract

This paper intends to explain the collective usage of DARQ technology. DARQ is a set of high end technologies that is capable of creating a new era comprising of faster, efficient and reliable softwares. It is capable of revolutionising the computing technology and changing the course of software development. DARQ Technologies consists of four components viz; Distributed ledger, Artificial Intelligence, Extended Reality and Quantum Computing. With the advancement in the information era, the DARQ technologies came together to form more powerful computing capabilities. Distributed ledger refers to database that is capable of storing any type of transaction details be it tax collection, bank account, personal details, medical, sales deed, etc. on to a distributed system. Artificial Intelligence is machines mimicking human behaviour i.e thinking ability and decision making capabilities into machines. AI can be divided into weak and strong. Siri and Alexa can be classified into weak AI while Sophia into strong AI. Extended reality enables in merging physical and virtual worlds together. It is broadly classified into AR, MR and VR. Last but certainly not the least is quantum computing which involves electrons instead of transistors in computing. When all these powerful technologies are combined to perform a certain task the applications become limitless. DARQ is as powerful as the internet was in the early 1990s and 2000s. It is capable of solving current problems and making life simpler. Collectively, the DARQ technologies will power the innovation and opportunity associated uniquely with the post-digital era.

Design of Low Cost 3D Printing Machine

Sanjay E, Mechanical Engineering, GMIT, Davanagere, India

Vikas S Mudigowdar, Mechanical Engineering, GMIT, Davanagere, India

Rahul Kumar R M, Mechanical Engineering, GMIT, Davanagere, India

Shailesh Rajesh M, Mechanical Engineering, GMIT, Davanagere, India

Abstract

This paper focuses on design and development of a low cost 3D printer. The technological advancements in extrusion materials and 3D printer's capability have up rise the cost of manufacturing. Interest in additive techniques is growing swiftly as applications have progressed from rapid prototyping to the production of end-use products. Additive equipment can now use metals, polymers, composites, or other powders to "print" a range of functional components, layer by layer, including complex structures. The current situation of 3D printer is to increase precision of printers and printing of small parts at low cost. The whole printer along with the software was developed to reduce the cost of printers as compared to one already present in the market. This Project highlights a low-cost 3D printer's manufacturing and its working. The practical 3D printer manufactured based on this paper give accuracy in microns with price lesser than the 3D printer available in market.

Pothole Detection

Santoshkumar M, Assistant Professor, Computer Science and Engineering, Visvesvaraya Technological University, Belagavi, India

Rekha H R, Computer Science and Engineering, Visvesvaraya Technological University, Belagavi, India

Sahana G N, Computer Science and Engineering, Visvesvaraya Technological University, Belagavi, India

Swapna M Sogi, Computer Science and Engineering, Visvesvaraya Technological University, Belagavi, India

Tejaswini B U, Computer Science and Engineering, Visvesvaraya Technological University, Belagavi, India

Abstract

Traffic congestion and accidents are mainly due to pathetic condition of road. The most common form of distress on such roads are potholes, Potholes are induced by the combined presence of water in the asphalt soil structure and heavy traffic. Which can compromise safety, and result in vehicle damage. Repairing the roads on regular bases will ensure the drivers safety and helps reduction in vehicle damage.To overcome this problem, in this paper, We are using Mask r cnn algorithm to detect potholes on roads and The proposed pothole- maintenance system is a software suite to identify potholes from an uploaded video stream. Pothole information, such as size, location and appearance, is collected by the pothole-detection system and categorised accordingly. The collected data is stored in the pothole database, and the pothole-maintenance server uses it for smart pothole maintenance. This database is used to detect the potholes on roads.

Electrochemical Pretreatment of Distillery Spent Wash Using Aluminum, Iron and Zinc Electrodes

Shanmukha NT, Research Scholar, Department of Civil Engineering, University B.D.T College of engineering, Davangere, Karnataka, India

Lokeshappa B, Associate Professor, Department of Civil Engineering, University B.D.T College of engineering, Davangere, Karnataka, India

Chandrappa KG, Assistant Professor, Department of Chemistry, Government Engineering College, Doddamannina Gudde, B.M. Road, Ramanagara, Karnataka, India

Kiran Kumar HS, Assistant Professor, Department of Civil Engineering, GM Institute of Technology, Davangere, Karnataka, India

Abstract

Electrochemical pretreatment of distillery spent wash (organic pollutants) was carried out by applying a combination of paired Aluminum, Iron and Zinc electrodes in batch mode of operation. The spent wash was structurally characterized for various parameters as per the standard method of analysis and treatment results were analyzed in terms of color, electrical conductivity (EC), total dissolved solids (TDS), turbidity and chemical oxygen demand (COD). The experiments were conducted to study the effect of operational parameters such as current –voltage density, distance between the electrodes and electrolysis time. It was observed that aluminum electrodes were more suitable for the degradation of distillery spent wash as compared to iron and zinc electrodes. The maximum removal efficiency of color, EC, TDS, Turbidity, and COD is 94, 88, 89, 95, and 95 % were obtained with Al-Al electrodes at the voltage of 25, and the distance of electrodes was 2 cm for an electrolysis time 150 min with constant pH of 7 and the rotation speed of 500 rpm. This study showed that the parameter reduction is influenced by the current-voltage density and electrolysis time. The strongest organic industrial effluent having insignificant and extremely high COD, BOD and dark in color when discharged directly into natural water bodies and it can cause irretrievable damage to the environment. The electrochemical technique is one of the most vital treatment employed for industrial wastewater treatment to treat highly polluted industrial effluents.

Keywords

Distillery Spent Wash, COD, Aluminum, Colour, Iron, TDS, Turbidity, Zinc

Analysis of Scientific Research Techniques on Precision Agriculture in Farming

Shryavani K, Assistant Professor, Department of Computer Science and Engineering, BIET, Davanagere, India

Dr. Roopa G M, Associate Professor, Department of Computer Science and Engineering, BIET, Davanagere, India

Abstract

The farming sector has tremendously changed by the three previous industrial revolutions, from farming through mechanized agriculture and, most recently, precision agriculture. The industrial farming paradigm boosts production significantly. This also has led to number of difficulties, which have intensified in recent years. The process of adopting innovation, especially precision farming (PF), is inherently complex and social, and influenced by producers, change agents, social norms and organizational pressure. Industry 4.0 is anticipated to alter agriculture and accelerate the fourth agricultural revolution. Currently, the agricultural production process is mechanized and informatized. The lack of digitization and intelligence are major obstacles to improving the automation capability. These issues can be addressed by integrating emerging Industry 4.0 technologies into agriculture. First, we examine the existing state of industrial agriculture, as well as the lessons gained from industrialized agricultural production patterns, industrialized agricultural production processes, and the industrialized agri-food supply chain. Furthermore, the Internet of Things, Robotics, Artificial Intelligence, Big Data analytics are addressed as they relate to Agriculture 4.0. We concentrate on the major uses of these new technologies in agriculture, as well as the associated research difficulties. This paper intends to provide fresh research options.

Experimental Investigation on Natural Fillers Rereinforced with Epoxy Composite

Siddarth J M, Mechanical Engineering, Visveshvaraya Technological University Belagavi, India

Naveen P B, Mechanical Engineering, Visveshvaraya Technological University Belagavi, India

Abstract

Natural filler reinforced composites have gained considerable attention, particularly in the manufacturing industry owing to their light weight, corrosion resistance, abundance, and biodegradability. Objective of investigation was to evaluate the physical properties and mechanical properties. Different samples of epoxy composites containing various amounts of untreated rice husk powder, peanut shell powder and coconut shell powder were prepared. The prepared composites were investigated in view of their mechanical strength, and water absorption. The prepared composites were investigated in view of their mechanical strength, and water absorption. Tensile test and flexural test have been used as the mechanical testing for this study. The results showed that the tensile and flexural properties of the agro-waste fillers with epoxy composites were strongly affected by the filler loading. Furthermore, all the tensile and flexural properties of the agro-waste fillers with epoxy composites showed increasing trend as the filler loading increased. Water absorption results showed that coconut shell powder filler filled composite samples show the lowest percentage of water absorption compared to other filler filled composites. Finally, compare the various physical and mechanical properties results from different % variation of filler at different filler filled composites. Therefore, the prepared composites can be considered as excellent candidates for several potential applications.

Automated System for Climbing and Spraying Pesticides on Areca Nut Trees

Srikrishna Shastri C, Mangalore Institute of Technology and Engineering, Badaga Mijar, Moodabidre, Karnataka, India

Megha B, Mangalore Institute of Technology and Engineering, Badaga Mijar, Moodabidre, Karnataka, India

Avril Pinto, Mangalore Institute of Technology and Engineering, Badaga Mijar, Moodabidre, Karnataka, India

Prerana Sen, Mangalore Institute of Technology and Engineering, Badaga Mijar, Moodabidre, Karnataka, India

G Venkatesh, Mangalore Institute of Technology and Engineering, Badaga Mijar, Moodabidre, Karnataka, India

Abstract

In this paper, an automated system for climbing areca nut tree areca and to spray pesticides is discussed. The proposed system can be used as a pesticide sprayer to provide an alternative to the existing methods of human climbing the areca nut tree and spraying the pesticides. Hence the major advantage of this system is it can avoid direct contact of humans with pesticides while spraying the pesticides on a tree and also to tackle the problem of unavailability of areca- nut tree climbers.

The machine consists of an 'X' frame. At the bottom of the machine two rollers are placed which are conical in shape and are connected to two motor drivers. These motors are operated by a remote control to move up and down the tree. The model is placed around the tree and springs are used to attach it firmly to the tree. Two nozzles are placed on either side at the top of the machine with motor arrangement so that it can rotate at a 360-degree angle. Electric pumps are used to lift the pesticide towards the nozzle and spray it to the areca-nut. Arduino Uno is used for programming the motors to rotate in clockwise and anticlockwise direction. The sprayer sprays pesticide to the adjacent trees with good level of accuracy. This machine reduces the time and also dependence on labor. The flow of pesticide is remotely controlled. The user interface is easy.

Keywords

Areca nut, tree climber, pesticide sprayer, motor drivers, Arduino Uno etc

Ensure Privacy Preservation Access Control in Cloud Computing using Derived Key Identity Based Encryption

Suresha D, Research Scholar, VTURRC, Bangalore & Associate Professor of Computer Science and Engineering, Dr. AIT, Bangalore, Karnataka, India

Dr. K Karibasappa, Professor, Dayanad Sagar Academy of Technology and Management, Bangalore, Karnataka, India

Abstract

Cloud computing is a dominant technology that involves massive amounts of data storage and access via the internet. Because there is a large amount of data stored in data centers, it is critical to implement appropriate access control mechanisms over data stored in a cloud. Today, there are numerous access control mechanisms available to provide confidentiality, privacy, and data origin authentication in a cloud environment. The available access control techniques may have a higher computational overhead and lack security concerns. In this paper, we designed and implemented a privacy-preserving access control in cloud computing using derived key identity-based encryption. The proposed method may reduce computational overhead while generating the key while also increasing the robustness of cryptographic keys. During the key generation process, the trusted key canter (TKC) is involved. The experimental results show that the proposed method reduces computational overhead and provides an easy way to implement an access control mechanism in a cloud environment.

Vehicle Toll Payment System Using NFC

Sushma S G, Assistant Professor, Department of CSE, GMIT, Davanagere, India

Sneha P, Department of CSE, GMIT, Davanagere, India

Akshata C K, Department of CSE, GMIT, Davanagere, India

Madhuri B, Department of CSE, GMIT, Davanagere, India

Abstract

In toll collection systems, speed and efficiency are critical. The applications of NFC technology are growing by the day; the most basic application is in the contactless payment system. For self-payment, a Near Field Communication (NFC)-based smart card has been employed. NFC technology may be the best-fitted alternative for launching the web vehicle toll payment system, taking into account factors such as cost, dependability, and security. The toll authority will insert an NFC tag with a unique identification number (UIN) and user information.

The vehicle will be equipped with an active NFC tag. When a vehicle passes through the tollbooth system, the NFC Reader reads the data on the card and sends it to the server for verification (for verification). The server will verify the information, and the amount of the toll will be deducted from the user's wallet.

Using NFC technology, the automatic toll collecting system (ATCS) was created.

Adaptive Cruise Control System used in Cars

Abhishek K S, Department of Mechanical Engineering, GMIT Davangere, India

Ajay M, Department of Mechanical Engineering, GMIT Davangere, India

Bhooshan B, Department of Mechanical Engineering, GMIT Davangere, India

Khalil Bhasha M, Department of Mechanical Engineering, GMIT Davangere, India

Devaraj J S, Department of Mechanical Engineering, GMIT Davangere, India

Chandan H S, Department of Mechanical Engineering, GMIT Davangere, India

Abstract

There is perhaps no better symbol of the 21st century than the automobile. It is the dominant means of transport throughout the world. Indeed, many a politician throughout this century has furthered his or her career by promising constituents a greater economic ability to own an automobile. Furthermore, there are more automobiles on the road than any motorized vehicle. Reports say that, as of 1986, almost half a billion vehicles were on the road throughout the world; of which three-quarters of these were cars. With this comes the responsibility and the need of making safety a primary concern in vehicle technologies. Technologies like Anti-lock braking system and Vehicle Stability Control System are being used to monitor vehicular safety in the automobiles. Similarly, a new type of speed control, called adaptive cruise control, is being used on some new model vehicles. Adaptive Cruise Control (ACC) is an automotive feature that automatically adjusts the vehicle speed to maintain safe distance from vehicles ahead. It is basically an extension of conventional cruise control systems. These systems allow you to set a following distance, or time interval, between your vehicle and the vehicle ahead, including maximum speed.

CHAT BOT: An Online Conversation

Aditya Bhardwaj, B. Tech CSE, Galgotias University Greater Noida, India

Sanyam Sharma, B. Tech CSE, Galgotias University Greater Noida, India

Shubham Shami, B. Tech CSE, Galgotias University Greater Noida, India

Vaishali Gupta, Assistant Professor, SCSE Galgotias University Greater Noida, India

Abstract

A CHATBOT is a piece of artificial intelligence software that can converse with humans in their own language. These carefully developed chatbots may usually communicate by audio or written means, and they can easily imitate human speaking languages to communicate in a human-like manner.

Keywords

converse, communicate, imitate

Microcontroller Based Solar Panel Cleaner

Akshay kumar B K, Department of Mechanical Engineering, GMIT Davangere, India

Balaji M, Department of Mechanical Engineering, GMIT Davangere, India

Likith Kumar C, Department of Mechanical Engineering, GMIT Davangere, India

Amaresha R, Department of Mechanical Engineering, GMIT Davangere, India

Sandeep S H, Assistant Professor, Department of Mechanical Engineering, GMIT Davangere, India

Abstract

Growing interest in renewable energy has led the solar photovoltaic industry to expand notably in the last decade. However a big issue that is often overlooked too easily, is keeping the panels clean. Panels are often difficult and dangerous to reach and not worth the risk cleaning them. Furthermore, autonomous cleaning robots are often only economical on a larger scale due to both installation costs and the fact that custom-made parts are needed to fit the plant.

This project focus on finding a more cost-worthy solution for the drive principle in order to decrease the overall price of the robot, thus making it profitable on smaller scaled PV- plants. The goal is for it to return its investment in two years, while keeping an average family sized plant clean. A principle, where a automated system uses two wires attached to the edges of the roof, was investigated. This driving principle was virtually modelled to simulate its performance. Afterwards a proof of concept was built to validate the model.

The research found that this drive principle is a promising alternative when applied to small plants. The system is both agile, flexible and very cost effective. According to a rough estimation, for an average family, the robot would earn its price back in two years at losses of 15%. Bigger sized plants return their investment at even lower losses. The reliability has to be improved though.

Hello GMIT – Search Engine Optimization to Enable Audio Ecosystem for Localization of ALEXA

Dr. Mouneshachari S, Associate Professor, Department of Computer Science and Engineering, GM Institute of Technology, Davangere, India

Anandachari M M, Department of Computer Science and Engineering, GMIT, Davanagere, India

Prajwal M P, Department of Computer Science and Engineering, GMIT, Davanagere, India

Vidyasagar K O, Department of Computer Science and Engineering, GMIT, Davanagere, India

Abstract

The ECHO is a device that uses speech recognition to perform an ever-growing range of tasks on command. Amazon calls the built-in brains of this device "ALEXA," and it is the thing that makes it work. Localization is an adaptation of a product or service to meet the needs of a particular language, culture or desired population's "look-and-feel". The process of first enabling a product to be localized and then localizing it for different national audiences is sometimes known as product globalization. “HELLO GMIT” is a Virtual Assistant, specially designed for GM INSTITUTE OF TECHNOLOGY, DAVANGERE organization to create voice enabled interaction environment at campus.

The problem is to design the voice assistant for organization through the Search Engine Optimization of the environment data or information. Design a state of the art keyword repository to include all the information about GM INSTITUTE OF TECHNOLOGY ensure the right speech answer for any type of request through Search Optimization technique gather information about system and define that it is data of system which includes all aspects belongs to system. The major challenge is the keyword estimation for the environment context and producing the question repository based on similarity indices of the keywords in the queries. These similarities can be utilized to create a questionnaire framework. The proposed paper involves a recent and most popular Word-to-Vec algorithm, which is designed by Google. The questions and answers repository can then be used to create a skillset in amazon alexa studio.

Efficient Medical Image Segmentation of COVID-19 Chest CT Scan Images Analysis Based on Deep Learning Technique

Aravind Jadhav, Department of Electronics and communication Engineering, VTU, Belagavi, India

Sanjay Pujari, Angadi Institute of Technology and Management, Belagavi, India

Abstract

The corona virus disease is an infectious disease which primarily affects lungs. Medical imaging like computed tomography (CT) plays an important role in the global fight in COVID-19. In present days deep learning techniques is useful for diagnose lung affected by covid-19 patients. This provides good analysis of segmentation of CT images. This process based on medical image segmentation with convolution neural networks model which uses data augmentation, pre-processing, evaluation and analysis of image segmentation. This paper presents an approach of CT segmentation of lung images using U-net architecture. The result shoes a comparative lung image of covid-19 patient and non covid-19 patient using U-net Architecture.

Mahila Aarogya Setu Mobile App: Machine Learning Approaches to Predict Early Stages of Ovarian and Cervical Cancer

Naveen R Chanukotimath, VTU/GMIT, Davanagere, India

Mohtaseem Beig, VTU/GMIT, Davanagere, India

Sneha M Banakaar, VTU/GMIT, Davanagere, India

Nandana. V, VTU/GMIT, Davanagere, India

Srushti.B, VTU/GMIT, Davanagere, India

Abstract

Most of the women life in the present world is ending at the middle age between 45-60 years due to ovarian and cervical cancer. The early diagnosis and prognosis of a cancer type have become a necessity in cancer research, as it can facilitate the subsequent clinical management of patients. The proposed mobile application system will help to predict the risk of ovarian and cervical cancer at the figure tips in the early stages. Here we are using machine learning classifiers for prediction. The dataset used to train machine learning classifier model is referred from archive.ics.uci.edu machine learning repository. Here we are planned to use Random Forest, Naïve Bayes, Decision Tree (J4.8), Logistic Regression, Logistic Model Trees (LMT), and Support Vector Machines (SVM) classifiers for predicting risk of Ovarian and Cervical Cancer in the early stages address Medical and Societal Issue.

A Review on Cruise Control Strategies in Automobiles

Arulkumar, Department of Mechanical Engineering, Amrita Vishwa Vidyapeetham University, India

Prof. Srinivaas, Assistant Professor, Department of Mechanical Engineering, Amrita Vishwa Vidyapeetham University, India

Abstract

To regulate the standards in safety system there are lot of features developed over the decades, Cruise control is one of the features developed to control and limit the cruising speed of a vehicle (Mechanically called governor system) to ensure safety, ride comfort and improve the fuel efficiency. The history and evolution of driver assistance system equipped in road vehicle help to enhance driver and passenger safety which reduces accident rate. Cruise control is one of the safety features installed in vehicle to ensure safety, 90% of collisions happened in road because of drivers mistake on over speed and late reaction hence cruise control incorporates the speed and prevent crash and as well increase the fuel efficiency. This paper firstly summarizes the type, functions & methods used in designing of cruise control and development based on future trends also provides an understanding to address the issues to design an accurate system.

Keywords

Cruise control, ACC, CACC, PCC, MPC, ITS

Evaluation of Chromolaena Odorata Weed Powder as a Potential Biomass for the Sorption of Cationic Dyes in Liquid Phase

Ashwini A Kamath, Assistant Professor, Department of Chemistry, Mangalore Institute of Technology & Engineering, India

Dr. Nandini R, Department of Chemistry, Mangalore Institute of Technology & Engineering, India

Abstract

The dye removal efficiency of cationic dyes namely Malachite green (MG) and Rhodamine Blue (RhB) was investigated onto the activated surface of Chromolaena odorata weed (COW) powder and compared in batch mode in the present study. Surface analysis and functional group analysis were carried out before and after the adsorption by SEM and FTIR techniques respectively. Elemental analysis was carried out by EDS technique. Various parameters like initial Dye concentration, adsorbent dose, pH, and contact duration have been investigated in case of both dyes to evaluate the optimum conditions for greater adsorption rates. Highest Colour removal percentage of MG was found to be 93% (at a contact time of 40 min) and 71.23% for Rh B (contact time 45 min). Experimental data analysis proved that Freundlich isotherm model fitted best for adsorption studies and kinetic data best fitted to pseudo-first-order model. Experimental investigations clearly showed that activated COW powder can act as a potential adsorbent for the adsorption of MG when compared with Rh B Dye.

Keywords

Chromolaena odorata weed powder, Freundlich isotherm, Malachite Green, pseudo – first-order model, Rhodamine Blue

A Literature Review on IOT Network Security from the Perspective of DL/ML

Bharati B Pannyagol, Assistant Professor, CSE, AITM, BGM, India

Sheetal B Patil, Assistant Professor, CSE, AITM, BGM, India

Rajeshwari Kisan, Assistant Professor, CSE, AITM, BGM, India

Priyanka Pujeri, Assistant Professor, CSE, AITM, BGM, India

Abstract

IOT is intelligent interactivity between human and things to exchange information and knowledge for new value creation. The concept of IOT is that everything is linked to anything and anytime with any type of objects. It gives a prodigious feature for communication between internet enabled physical devices and objects. IOT technologies are used in real life applications, such as Smart homes, Smart Education, Smart transportation, Wearable devices, connected cars, Industrial internet smart Cities, In agriculture, smart Retail Energy engagement and in Healthcare devices. A large scale of IOT is consist of Sensor, Actuator, RFID and WSN components which are cable of connecting and exchanging data to other devices. This will generate huge amount of data. The growth of embedded systems connecting to the IOT increases year by year. Thus, make these heterogeneous devices to in ecosystem become new targets of the attackers.

This paper thoroughly reviews the concept of Internet of Things, characteristics, applications, security attacks at each layers and technologies which are used to achieve security using ML/DL concepts.

Keywords

Internet of Things (IOT), Radio Frequency Identification(RFID) , Wireless Sensor Network(WSN), Machine Learning, Deep Learning

Moisture Absorption Properties of Areca Sheath Fiber Reinforced Epoxy Composites

Bharath Sharma, Department of Mechanical Engineering, GMIT, Davanagere, India

Bhoomika D, Department of Mechanical Engineering, GMIT, Davanagere, India

Darshan Kaladagi, Department of Mechanical Engineering, GMIT, Davanagere, India

H S Tejas, Department of Mechanical Engineering, GMIT, Davanagere, India

Halesh B B, Department of Mechanical Engineering, GMIT, Davanagere, India

Manoj B R, Department of Mechanical Engineering, GMIT, Davanagere, India

Sahaydri Kallimani, Department of Mechanical Engineering, GMIT, Davanagere, India

Naveen K, Department of Mechanical Engineering, GMIT, Davanagere, India

Ashok R Banagar, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Srinivasa C V, Professor & Head, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Environmentally beneficial composites can be made by replacing synthetic fibers with various types of cellulose fibers. The most important factor in finding good fiber reinforcement in the composite is the strength of adhesion between matrix polymer and fiber. Due to the presence of hydroxide and other polar groups in various constituents of natural fibers, the moisture absorption is high which leads to poor wettability and weak interfacial bonding between fibers and the more hydrophobic matrices. Therefore, it is necessary to impart hydrophobic nature to the natural fibers by suitable chemical treatments in order to develop composites with better interfacial bonding between fiber and matrix. In the present work, the effect of surface modification on the water absorption properties of areca sheath fiber reinforced epoxy composites has been investigated.

Effect of Addition of LD Slag Aggregate on Fresh and Hardened Properties of Cement Concrete

B K Varun, Assistant Professor, Department of Civil Engineering, GMIT, Davanagere, India

Darshan P, Department of Civil Engineering, GMIT, Davanagere, India

Kori Manjula, Department of Civil Engineering, GMIT, Davanagere, India

R V Shivaraju, Department of Civil Engineering, GMIT, Davanagere, India

Sneha R, Department of Civil Engineering, GMIT, Davanagere, India

Abstract

Concrete is the most used construction material in the civil engineering. Concrete is the world's most consumable product next to water. Natural aggregates are becoming scare and their production and shipments are also becoming more difficult. The main objective of this study is to identify alternative source of good quality aggregates which is depleting very fast rate due to the fast pace of construction activities in India. India has the large production in steel making industry and LD slag is the by-product of steel industries. Steel industry generates large quantities of LD slag. The letter LD means Linz and Donawitz.

The main aim of this work is to use LD slag as partial replacement for fine aggregate and coarse aggregate. This work is to study the fresh and hardened properties of M-30 grade concrete and LD slag has been partially replaced in the ratio of 0%, 10%, 20%, 30%, 40% and 50% by the weight of natural fine aggregate. To study the fresh properties slump test is conducted. To study hardened properties of concrete, compressive and split tensile strength tests are conducted. The test is done after 28 days of curing.

Internet of Things (IoT) for Agriculture Growth using Wireless Sensor Network

Chandruvasan S, Bannari Amman Institute of Technology, India

Logesh Kannan M, Bannari Amman Institute of Technology, India

Abstract

Agriculture is one of the important employment in this world. But in now a days the peoples are not willing to doing agriculture because of unavailability of underground water and one more problem should be it is one hardest work. Since it is an hardworking and tough employment. So we can apply IoT in the field of agriculture.IoT make the agriculture to one of easiest employment. Farming productions are a necessary employment in industrial and for employment.

The Internet of Things (IoT) has the capability to convert the methods we stay in the universal. We have additional-effective manufacturing, greater associated vehicles, and smoother townships, a lot of these as flavors of an integrated Internet of Things (IoT) system. Smooth agriculture via the usage of Internet of Things (IoT) technologies will help agriculturalists to minimize produced wilds and improve efficiency. That can come from the amount of compost that has been applied to the wide variability of expeditions the farm automobiles have complete. So, ingenious undeveloped is essentially a hello-tech device of emerging food this is horizontal and is maintainable for the crowds. The use of Information Technology (IT) and items like sensors, self-necessary automobiles, automatic hardware, operate constructions, automation, and so forth on this method are key instruments. In this paper we have a look at how agriculture fields are profited from Internet of Things constructions. We enclosed the detailed Internet of Things (IoT) Solicitations in Agriculture and the way they're functional. This paper provides an indication of the existing condition and future calculations of Internet of Things (IoT) solicitations in Agriculture.

In Silico Approach towards Parkinson's Disease Pathophysiology, Drug Repurposing and Post Translational Modifications

Devesh Srivastava, Department of Biotechnology, Delhi Technological University, Delhi, India

Pravir Kumar, Department of Biotechnology, Delhi Technological University, Delhi, India

Abstract

Parkinson's disease (PD) is an enervating and debilitating neurodegenerative disorder marked by deterioration of neurons which produce dopamine in the central nervous system. PD is accompanied by a constellation of lethal motor and non-motor symptoms which are observed when the disease is progressed at an advanced stage. Hence, there is a great necessity of novel blood-based gene biomarkers which can help in early detection of the disease and can serve as new therapeutic targets to impede the progression of disease. Herein, firstly, we downloaded blood-based microarray gene expression omnibus (GEO) dataset to explore differentially expressed genes (DEGs) in PD samples compared to healthy control samples. We found 18 DEGs between PD and control samples. Further, we validated these DEGs via machine learning algorithms using their expression signature as input features. Validation with algorithms such as Artificial neural networks, Decision trees, Random Forest, Linear discriminant analysis and kernel principal component analysis (PCA) models resulted in accuracy of 92.8%, 78.5%, 92.8%, 100%, 92.8% respectively. Furthermore, we used LINCS L1000 based drug repurposing search engine L1000CDS2, and CoDReS tool to explore repurposed drugs which can reverse the expression of our obtained genes. In addition, we looked for novel transcription factors regulating the expression of genes targeted by the shortlisted drugs. Further, using in silico tools we found various post translational modifications involved in drug-gene pathway.

An Experimental Investigation on Strength Properties of Fibrous Ferrocement

Y B Bharatharaj Etigi, HOD, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Rashmi C, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Zabiulla Tumminakatti, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Shwetha S, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Ibrahim Khaleel, Department of Civil Engineering, GMIT, Davanagere, Karnataka, India

Abstract

The fibrous ferrocement, which is a combination of fibre reinforced concrete and ferrocement, can overcome most of the limitations of the FRC and ferrocement. And it can be used with assurance where high impact, high vibration and high wear and tear are expected. In this new material advantages of both FRC and ferrocement are combined. Fibrous ferrocement is a type of reinforced mortar with closely spaced multiple layers of wire mesh or small diameter rods completely infiltrated with fibrous mortar. In India fibrous ferrocement is introduced in 90's which was used for the construction of boat hulls, separation walls in buildings and a variety of other structures like silos and bunkers etc. It is durable, versatile, cheap, durable and efficient material. The elements made of fibrous ferrocement can also be used for roofing and flooring. The fibrous ferrocement, can overcome to some extent the limitations offered by ferrocement and fibre reinforced concrete. Thus, in crucial situations fibrous ferrocement will play an important role in many applications.

This paper deals with the study of compressive strength and flexural strength performance of fibrous ferrocement specimens with layers of welded mesh and varying percentages of steel fibers. The specimens were casted with cement-sand slurry mix proportion of 1:1.5 with a w/c ratio of 0.4, using single welded mesh and varying percentages of steel fibers 0.5%, 1 %, 1.5%, 2%. The size of compressive test specimens is 150 x150 x 150 mm and the flexural test specimens is 700 x150 x 150 mm.

Keywords

Compressive strength; flexural strength; fibrous ferrocement

Architectural Software Usability Study Comparison between ArchiCAD® and Revit®

Ghasan Alfalah, Department of Architecture and Building Sciences, King Saud University, Riyadh, Saudi Arabia

Abobakr Al-Sakkaf, Department of Building, Civil and Environmental Engineering, Concordia University, Montréal, Canada & Department of Architecture & Environmental Planning, College of Engineering & Petroleum, Hadhramout University, Mukalla, Yemen

Nehal Elshaboury, Construction and Project Management Research Institute/Housing and Building National Research Centre, Giza, Egypt

Eslam Mohammed Abdelkader, Structural Engineering Department, Faculty of Engineering, Cairo University, Giza, Egypt

Abstract

Building information modeling (BIM) has been introduced to meet the complexity and productivity requirements of projects. The increasing demand of construction industry generates a pressure on the architects from different perspectives such as; 1) time, and 2) cost. This led some developers to implement the building information modeling (BIM) in their software which helps architects to generate more accurate, reliable, and informative 3D model. It also facilitated the integration of the model with scheduling and cost control processes. This study aims to compare two BIM software; ArchiCAD® and Revit® from an architectural perspective in order to identify the best software in term of users' satisfaction. It should to determine which the best software and to make it easy for users to let them know what the best software is for them depending on their requirement and project. Needless to say that projects complexity and the number of available BIM software are continuously increasing which generate the urge need to a comparison among this different software in order to select the best software. This comparison introduces several factors affect the efficiency of the software to meet the architect's needs. The comparison made from three fronts: 1) common advantages, 2) common limitations, and 3) identified factors. This study develops a comparison method based on the weighted average method and the identified factors from literature review. This method aims to calculate each software score taken into consideration the identified factors. The developed method 3 can be considered as a decision support tool and can be applied to compare other software. The application of the method shows that ArchiCAD® has an advantage over Revit® in respect to the identified factors and the evaluations of these factors by experts from different perspective. Finally, a case study was conducted using ArchiCAD® and Revit®; to demonstrate the results and to show the reliability of proposed method.

Keywords

Sustainable development goals, unemployment, corruption perceptions index, global hunger index, extreme poverty

Implementation of Automatic Unmanned Battery Car Charging System using Solar Power and IOT

Dr. H C Hadimani, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Nivedita Suresh Gubber, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Swathi L, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Ruthushree K, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Surabhi R, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

In our country from 2020 onwards the battery operated vehicle are introducing to keep in mind we are design a system for automatic unmanned charging system. This project describes vehicle battery charger booth using hybrid power system. Vehicle battery charger becomes a major source of business/personal communication; the vehicle battery charger business is currently worth billions of dollars, and supports millions of vehicle. The need to provide a public charging service is essential. Many critics argued that a public charging service is not a lucrative business because most users can charge their vehicle at home, or in their office. Vehicle battery charger booth using hybrid power system is new business milestone because many are attending business convex service. Recommended locations include: Hotels, Health clubs, Training centers, Golf clubs, Retail outlets, Shopping malls, Internet cafes, Universities, Colleges road, Airports, Train terminals, etc., so that the vehicle can reactivate a low or dead battery by simply plugging in and charging This is designed based on arduino a micro controller that does the countdown timings for a period of 60 minutes with LCD displays showing the actual time left. During the timing period a relay output is latched and finishing timing in progress.

Keywords

LCD Display, hybrid (grid power, Solar Panel), Microcontroller, Battery Management System, RF ID unit, Cloud Computing

GPS based Vehicle Speed Controlling and Tracking

Gururaj E, Assistant Professor, Department of ECE, GMIT, Davanagere, India

Rakesha M, Department of ECE, GMIT, Davanagere, India

Rakesh L, Department of ECE, GMIT, Davanagere, India

P Chandbasha, Department of ECE, GMIT, Davanagere, India

Vishwanath M, Department of ECE, GMIT, Davanagere, India

Abstract

As far as automobiles are concerned, safety is very important to reduce the occurrence of accidents in speed restricted zones. It minimizes the loss of property and life. According to the recent surveys, in the past few years, an accident near the school zones, hospital zones and sharp turnings have increased tremendously, because of their hurry to get the targeted place soon. Therefore, controlling vehicle speed is a crucial issue to be considered. The proposed system aims to give a practical, compact and simple design to develop an adaptive vehicle speed limiting system for critical zones, implemented using GPS technology in order to identify the critical location and control its speed automatically. When the vehicle reaches a critical zone, the GPS device transmits the signal to the controller and the mechanism associated with the engine automatically reduces the speed of the vehicle and alerts the driver with voice message. The proposed system can be used to control speed at critical zones like schools, colleges, hospitals, sharp turning zones, etc to reduce the number of accidents. Once this technique is implemented the accidents will be reduced on a larger rate, and also reduce the nuisance by some drivers.

Experimental Study of Concrete Using GGBS as Partial Replacement for Cement

Harish B A, Assistant Professor, Department, of Civil Engineering, GMIT, Davanagere, India

Sowmya N B, Department, of Civil Engineering, GMIT, Davanagere, India

Sharath M J, Department, of Civil Engineering, GMIT, Davanagere, India

Abhishek G K, Department, of Civil Engineering, GMIT, Davanagere, India

Mohammed Hanzala, Department, of Civil Engineering, GMIT, Davanagere, India

Pavitra S, Department, of Civil Engineering, GMIT, Davanagere, India

Abstract

Concrete being one of the key ingredients in most civil engineering structure. Concrete is the world's most consumable product next to water. The GGBS has been used as partial replacement of cement in the concrete. GGBS a byproduct in pig iron manufacture has been found to be an ideal material to replace ordinary Portland cement used in concrete and it improves the durability of concrete. The GGBS is a by – product of iron and steel making industry, obtained by quenching of molten iron slag from a blast furnace in water or steam to produce a glassy granular product that is then dried and ground into a fine powder. By utilizing the products as a partial replacement of cement in concrete, the concrete can be made more eco-friendly by reducing the use of cement. In the present work, an attempt has been made to use a GGBS as a partial replacement of cement. The main aim of work is to study the hardened properties of M -20 grade control concrete and concrete made with partial replacement of GGBS with various percentages. The study is performed to evaluate compressive strength, and split tensile strength of hardened concrete by partially replacing the cement by various percentages of GGBS (0%, 10%, 20%, 25% & 30%) for M20 concrete. Totally fifteen cubes and fifteen cylinders specimens were casted. Out of the first set, three cubes and three cylinders casted with conventional concrete 0% replacement. The second set of three cubes and three cylinders casted with 10% replacement of GGBS, the third set of three cubes and three cylinders casted with 20% replacement of GGBS, The fourth set of three cubes and three cylinders casted with 25% replacement of GGBS, The fifth set of three cubes and three cylinders casted with 30% replacement of GGBS. Each set three cubes and three cylinders were tested with 28 days. Thus 30% GGBS as replacement for cement can be used in cubes and cylinders as it showed maximum compressive strength and spilt tensile strength at 28% days respectively. To study hardened properties of concrete, compressive and spilt tensile strength tests are conducted and comparative study will be carried out.

Carbon Foot Print of E-Waste

Harish K Ramatheerthamath, Department of Mechanical Engineering, GMIT, Davanagere, India

Manikanta J, Department of Mechanical Engineering, GMIT, Davanagere, India

Manjunatha U M, Department of Mechanical Engineering, GMIT, Davanagere, India

Shri Ram, Department of Mechanical Engineering, GMIT, Davanagere, India

Manjunath B K, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

The carbon footprint of any product or process has become a reference value which is of increasing importance. As part of the WEEE Recycle project the authors have assessed the carbon footprint of metals produced from PC scrap in India under different recycling scenarios. To calculate emission figures, data from the eco invent database (Classen et al., 2009) (Hischier, 2007) were used. The results show that the use of secondary raw materials can lower the carbon footprint of new products. They also demonstrate that it may be valuable in economic as well as environmental terms to dismantle the scrap manually in India before then further processing it elsewhere. Manual dismantling results in a higher dismantling depth which leads to a higher metal content in the scrap entering the smelter. Therefore, manual dismantling has a lower carbon account than mechanical dismantling. Regarding the extraction of metals through a pyro-metallurgical process it has been found that the high carbon footprint of the Indian electricity mix renders the option of shipping the waste to Europe more attractive in terms of lower carbon emissions.

Predicting Student Performance Using Data Mining: A Survey

Jonathan Baretto, Computer Engineering, Don Bosco College of Engineering, Goa, India

Yohan Fernandes, Computer Engineering, Don Bosco College of Engineering, Goa, India

Bryce Menezes, Computer Engineering, Don Bosco College of Engineering, Goa, India

Sweta Morajkar, Assistant Professor, Computer Engineering, Don Bosco College of Engineering, Goa, India

Abstract

This research examines how data mining techniques may be used to predict a student's academic success based on results obtained by various other researchers. Educational Institutes contain a large amount of student data which includes not only academic reports but also personal information, previous records and recreational or extra-curricular activities. Data mining techniques could be used to evaluate this data and give useful information that can assist in identifying individuals who require assistance as well as those who are likely to attain academic success. The analysis guides students to achieve success by providing the necessary guidance and incentives to the concerned students, this benefits not only the students themselves but the teachers and the institute as well. The results of analysis using data mining techniques provide a wider point of view on every student.

Ocean of Motion Graphics

Harshitha G M, Dept. Computer Science and Engineering SMVITM, Bantakal, Udupi, India

Savitha A Shenoy, Dept. Computer Science and Engineering SMVITM, Bantakal, Udupi, India

Aishwarya Kedlaya K, Dept. Computer Science and Engineering SMVITM, Bantakal, Udupi, India

Anjana, Dept. Computer Science and Engineering SMVITM, Bantakal, Udupi, India

Aysha Sana, Dept. Computer Science and Engineering SMVITM, Bantakal, Udupi, India

Abstract

A motion graphics is a vast topic in Web Graphics. Its history begins with an early attempts to create kinetic analogue to painting. From there on it spread its wings in the fields of broadcast design, mobile graphics, absolute films etc. Motion Graphic design was first introduced in 2014 at Taiwan 25th Golden Melody Awards, thereby showed that it can actively spread messages. Motion graphics can be used to create awareness among users virtually. Grammar-based procedural animations for motion graphics often used for advertisement, news etc. The impact of communicating security information to the general public using info graphics with reference to motion graphics, and based on a combination of info-graphics and motion graphics may be even more beneficial than each item presented individually. In addition to that it helps to Understand Social Complexity with Motion Graphics. Study of motion graphics shows connection of intellectual and physical details on human brain waves. Motion graphics is wide topic and is still growing at a rapid rate because of its uses in various applications. Root of motion graphics is penetrating deeper and deeper in various fields. Therefore we can also call it as an Ocean of Motion Graphics.

Keywords

Motion Graphics , Web Graphics, Spatio- Temporal Grammar

The Face Recognition Based Car Ignition System using Haar Cascade Classifier

Asha K, VTU/GMIT, Davanagere, India

Spoorthi A P, VTU/GMIT, Davanagere, India

Vandana M.R, VTU/GMIT, Davanagere, India

Megha D.S, VTU/GMIT, Davanagere, India

Meghana P, VTU/GMIT, Davanagere, India

Abstract

Facial Recognition Controller (FRC) may be utilized to provide a high level of security, which improves accuracy with other features that are easily adopted and practical for automobiles such as smart cars. The implementation design for a real-time face recognition-based car ignition authentication controller system is discussed in this work. The system is equipped with an FRC unit as well as an ignition monitor device. In the FRC unit, the current face is collected using a web camera and compared to a database image. Once the face is recognized, the signal is provided as a parameter to the microcontroller board, which monitors the automobile ignition and starts the engine that is fixed on the board. Once face recognition is verified, the automobile ignition starts the engine; otherwise, the car ignition does nothing.

An Android Application for Student Information

Imran Khan, Department of Information Science and Engineering, GMIT, Davanagere, India

Aishwarya U R, Department of Information Science and Engineering, GMIT, Davanagere, India

Deepa K L, Department of Information Science and Engineering, GMIT, Davanagere, India

Deepthi G, Department of Information Science and Engineering, GMIT, Davanagere, India

Sheetal D, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

In today's increasingly competitive world, parents are deeply concerned about their protective schooling. In middle of their daily struggles it becomes stressful for them to keep track of their child's daily activities. Also, teaching staffs have a lot of workloads on their hands compared to the past years. Students on the other hand have a lot of different daily tasks to deal with. This trend towards enterprise system in large and midsize organizations are significant impact on career path. Changes in information technology allow schools to utilize databases and applications such as student information system thus, making the accessing of records centralized. One of the changes that came about is the online-based applications. These applications are an improvisation to the traditional- transaction processing systems. The proposed system is an Android application to manage student details on mobile and keeping them updated about latest events in institution. The application will be used by students, teachers, parents and institutions. The utilities provided by the application are- student details maintenance, relevant messages, time table, events, attendance, fee dues and report generation. The main objective of this project is to add mobility and automation to the process of managing student information in an institute.

EEG features – Compared and Contrasted

Imran Khan, Associate Professor, Department of Computer Science and Engineering GMIT, Davanagere, India

Dr. Mouneshachari S, Assistant Professor, Department of Computer Science and Engineering GMIT, Davanagere, India

Abstract

The aim of Brain Computer Interface (BCI) is to utilize the data to effectively produce useful information / inferences. These inferences can provide diagnostic or evaluation applications in medical and other domains of the society. Electroencephalogram (EEG) signals are used to extract correct information from brain and classify with different mental tasks. EEG signals exhibit number of properties in the form of features. Feature represents distinguishing property and significant measurement which are obtained from section of a different methodology pattern. It is necessary that extracted features should not lose the important information from the signal. Many health applications use EEG signal analysis because it can effectively identify brain stimulation, which is now widely utilized in brain computer interfaces. This paper is trying to consolidate the EEG features namely wavelet transform, Independent Component Analysis, Principal Component Analysis, Autoregressive Model, Empirical Mode Decomposition, Non-negative matrix factorization, Dictionary learning, Auto Associative Networks from various research articles. These features are compared and contrasted to understand their applicability in various other domains involving BCI. Hence, the current review on these methods mainly focus on feature extraction techniques used in EEG signalanalysis for various applications.

Sustainable Irrigation Using Sensors for Areca Crop Water Conservation

Dr.Mohammed Yaseen, Department of Civil Engineering,, GMIT, Davanagere, India

Darshan M C, Department of Civil Engineering,, GMIT, Davanagere, India

Lohith H Lakkol, Department of Civil Engineering,, GMIT, Davanagere, India

Pallavi C P, Department of Civil Engineering,, GMIT, Davanagere, India

Varsha N Kulkarni, Department of Civil Engineering,, GMIT, Davanagere, India

Abstract

The scarcity of clean water resources around the globe has generated a need for their optimum utilization. Internet of Things (IoT) solutions, based on the application specific sensors' data acquisition and intelligent processing, are bridging the gaps between the cyber and physical worlds. IoT based smart irrigation systems can help in achieving optimum water-resource utilization in the precision farming landscape. This paper presents an open-source technology based smart system to predict the irrigation requirements of a field using the sensing of ground parameter like soil moisture, soil temperature, and environmental conditions along with the weather data from the Internet. We have choosen the study area at mellakatte(V) Davangere (dist) it is 15 kms away from . The farmers here are totally dependent on areca crop. We can see the water Scarcity in this area. In this area currently the areca growers are using drip method or flooding methods of irrigation which uses more water hence this system with sensor based Technology will save the water used for the irrigation and increases the efficiency and no IOT based systems are developed for areca crop so we have choosen this area to overcome these circumstances. The intelligence of the proposed system is based on a smart algorithm, which considers sensed data along with the weather parameters like precipitation, air temperature, humidity, for the near future. The complete system has been developed and deployed on a pilot scale, where the sensor node data is wirelessly collected over the cloud using web-services and a web-based information visualization and decision support system provides the real-time information insights based on the analysis of sensors data. The paper describes the system and discusses in detail the information processing results of three weeks data based on the proposed algorithm. The system is fully functional and the prediction results are very encouraging.

Keywords

Irrigation, IOT (Internet Of Things), Soil Moisture Sensor, C++ Prgramming language

MEDI-GRANTHA: A Pharma App to Provide Information of the Medicines Used

Janardhan C N, Assistant Professor, Dept. of CS&E, Jain institute of Technology, Davangere, India

Chethan A, Department of CS&E, Jain Institute of Technology, Davangere, India

Prajwal T H, Department of CS&E, Jain Institute of Technology, Davangere, India

Shashank S, Department of CS&E, Jain Institute of Technology, Davangere, India

Shivraj K G, Department of CS&E, Jain Institute of Technology, Davangere, India

Arjun B S, Department of EC&E, GMIT, Davangere, India

Sriharsha GA, Department of CS&E, Jain Institute of Technology, Davangere, India

Abstract

India is known as a land of medicine, medicine plays a vital role in human life. Medicines are the best partners of patients to heal the health issues and improve quality of lives. Taking rite medicines is a very critical for the patient suffering from illness. It is important that the medicine taken should cure the rite cause for the patient. Any medicines before usage should be well known and understood by the patient with its quality of efficiency for the disease. We in the current scenario have many cases wherein the erroneous information about the drug has created a negative effect on people. The main reason for this is lack of information about the medicine. The proposed work develops an android application MEDI-GRANTHA , a medication application Using Image Processing that provides complete information about a medicine by capturing a medicine strip using image processing which helps even illiterates to get rite information about medicine. MEDI-GRANTHA application uses image processing technique to perform operations on an captured image, in order to extract the text from the image. In this application Image Processing technique is implemented using Firebase ML Kit. In the nest process to fetch the related information of respective medicine we make use of the firebase database. The proposed application receives an input in the form of image which contains text information i.e., name of a Medicine and provides details about the Medicine as output. . The system includes combination of different technical aspects such as Image Processing, Google Machine Learning tools (google_ml_kit), Firebase Database and Web Scraping using Python. The Image Processing consists of several sub processes such as conversion, filtering, cropping and segmentation. User can also make medicine details offline which will help in emergency cases.

Keywords

MEDI-GRANTHA, Firebase ML Kit, firebase database, Google Machine Learning tools, Web Scraping, conversion, filtering, cropping and segmentation

Measuring COVID-19 Opinion in the Online Debate Using an Unsupervised Model

Jeba Sonia J, Amal Jyothi College of Engineering, Kerala, India

Jina Varghese, Amal Jyothi College of Engineering, Kerala, India

Elisabeth Thomas, Amal Jyothi College of Engineering, Kerala, India

Abstract

A large quantity of potentially threatening COVID-19 false information is available online. In this paper, we use machine learning mechanism to measure COVID-19 materials in online adversaries of health guidance, specifically vaccinations like (anti-vaccine). We observed that the anti-vaccine group is constructing a lower focused discussion about COVID-19 than its matching part, the pro-vaccination (pro-vaccine) group. Nevertheless, the anti-vaccine group shows a wide variety of flavors of COVID-19 related topics, and henceforth can demand to a wider cross-section of entities looking for COVID-19 assistance online, like individuals may cautious of a compulsory COVID-19 vaccine or people who is seeking substitute medicines. Later the anti-vaccine group searches better positioned to fascinate full support going onward than the pro-vaccine group. This is pertaining because an extensive absence of acceptance of a COVID-19 vaccine which mean the world drops on short of yielding herd immunity, leaving countries exposed to future COVID-19 renaissance. We provide an automatic supervise machine learning model, that elucidates these results and would help in measuring the efficiency of intervention techniques. Our method is adaptable and can handle the crucial problem facing social media platforms to analyse huge volumes of online health false information and misinformation.

Keywords

pro-vax, anti-vax, coherence score, COVID-19, LDA model

UV-C Sanitizer Box

Kedar.M.H, Department of Mechanical Engineering, GMIT, Davanagere, India

Hariprasad Kulkarni, Department of Mechanical Engineering, GMIT, Davanagere, India

Manoj Shanbhog, Department of Mechanical Engineering, GMIT, Davanagere, India

Kotla Kiran, Department of Mechanical Engineering, GMIT, Davanagere, India

Dr. Srinivasa C.V, Professor & Head of Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Now, we're all at the risk of contracting and spreading COVID-19 virus. It has been tested and proven that UV-C radiations are highly effective in inactivating COVID-19 virus due to its germicidal properties and prevents the spreading of virus.

The "UV-C SANITIZER BOX" uses the UV-C rays to sanitize the objects like face masks, cell phones, currencies, keychains etc. It has time delay circuit which switch-off the UV-C lamp automatically after the preset time. The radiation exposure time can be varied as per requirement.

This UV-C SANITIZER BOX will be effective in sanitization process in schools, colleges especially in labs for ex: test tubes and other equipment used in labs all together can be sanitized in a single shot. It's faster and less labor intensive than cleaning by hand. It also reduces the need to clean with powerful chemicals. Also, this project is built considering all safety factors so it's safe to use.

Automated Solar Grass Cutter

Kirankumar M, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Harsha H M, Department of Mechanical Engineering, GMIT, Davanagere, India

Arun B S, Department of Mechanical Engineering, GMIT, Davanagere, India

Praveen Y T, Department of Mechanical Engineering, GMIT, Davanagere, India

Sunil B T, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Nowadays, the people are demanding for alternative consumer product technologies for leading a convenient and easy lifestyle. The main objective of this paper is to fabricate an Automated Solar Grass Cutter, a solar lawn mower, which is a fully automated grass cutting robotic vehicle powered by solar energy that also avoids obstacles and is capable of cutting without the need of any human intervention. The system uses 12v batteries to power the vehicle movement motor as well as the grass cutting motor. A solar panel is used to charge the battery. The grass cutter and vehicle motors are interfaced to an Arduino Nano that controls the working of all the motors. It is also used to interface an ultrasonic sensor for object detection. The SoC moves the bot in the forward direction in case no obstacle is detected. On obstacle detection; the ultrasonic sensor monitors it and the SoC thus stops the grass cutter motor to avoid any damage to the object/human/animal whatever it is. In order to detect the boundaries the bot uses Light dependent resistors (LDR) on a right angle to trigger start event. The detection of the laser on the other side triggers the bot to stop and turn a right angle clockwise and and move to next row. The bot takes another right angle turn clockwise and moves forward till the next laser fence is detected. The detection of both the lasers simultaneously triggers the stop event. The L293D9 bi-motor controller/driver is used. Finally the performance analysis of Automated Solar Grass Cutter is carried out and reported.

Smart Intelligent Mirror for Smart Living

Kunchapudi A V Balaharshavardhan, Jyothy Institute of Technology, India

Pranav Kumar N, Jyothy Institute of Technology, India

Shamanth L, Jyothy Institute of Technology, India

Gowtham S, Jyothy Institute of Technology, India

Abstract

In the mirror, we see our reactions and to get feedback on how we are and what we are experiencing at the moment, but what happens when you combine the importance of mirrors with technology? A smart mirror combines the use of traditional mirror with digital aspects to bring up-to- date information to the user directly on the mirror surface. A Smart mirror is to contribute an easy way information services to user through verbal commands, functions and listens to the user's question and response them adequately using voice commands.

This paper describes the planning associated implementation of a voice- controlled wall mirror, referred to as "Smart Mirror" or "Magic Mirror" with Artificial Intelligence for the home environment. It is a mirror, which can display real-time content like time, date, weather, and news at the same time. The Magic Mirror consists of functionalities. The user can control the magic mirror by voice commands. These features of the mirror will be scraped from the Internet and implemented using the raspberry pi board.

Keywords

Smart Mirror, Raspberry pi, Voice Recognition, Weather, Time, News, IoT (Internet of things)

Analysis of Side Channel Attacks (SCA) In Cloud Environment and Secure Cloud Based Healthcare Applications

C.Lakshminatha Reddy, Research Scholar, Department of CSE, Saveetha University, Chennai, India

Dr.C.Nelson Kennedy Babu, Professor, CSE Department, Saveetha University, Chennai, India

Abstract

In Cloud computing resources are accessed based on the customer demands only. Cloud computing depends on virtualization advancements carries enormous occasions to have virtual asset effortlessly without the need of claiming any framework. Virtualization advances empower clients to gain, arrange and be charged on compensation per-use premise. With the gradual improvement of distributed computing condition, weaknesses and their relating abuse of the general cloud resources may perhaps augment. Virtual Machine (VM) can be used for accessing delicate information, for instance, Side Channel (SC) attacks. In this paper different side channel attacks, its protection instruments has been analysed and furthermore a correlation is made among those attacks. Cloud based health care applications and its advantages are also described.

Keywords

Cloud computing, Virtual Machine, Side channel Attacks, Health care industry

Usage of Admittance Sensor in Water Level Indicator which Provides High Stable Output Compared to Capacitive Sensor

Mahavishnu G, Department of Electronics and Communication Engineering, Bannari Amman Institute of Technology, India

Matisvar MV, Department of Electronics and Communication Engineering, Bannari Amman Institute of Technology, India

Murugan K, Department of Electronics and Communication Engineering, Bannari Amman Institute of Technology, India

Abstract

Due to exploitation of water resources and speeding of climate change due to human activities, water becoming , a luxury these days and keeping tab on water consumption is a necessity now, Though Capacitive sensors , which are of low cost and which can detect dense targets and liquids ,we can use use admittance sensors ,they are specially designed Immuno coat probe comprises of sense and shield electrodes that are isolated from each other with the help of insulators which is used to measure and detect the change in admittance, the lifetime of the admittance sensors is more and it has also high stability against moisture ,whereas capacitive sensors is highly sensitive towards the changes in the environment conditions which will affect the performance, In Capacitive sensors the probe can also cause the sensor to malfunction whereas in admittance sensor the probe has no hanging material ,which is suitable for the minimum measurement range which can reach a few centimetres and the maximum measurement range can reach hundreds of metre, The experimental results indicate that the accuracy of the proposed experimental sensor is equivalent to that of a commercially available capacitive water level sensor, while, additionally, it has stable and reliable output.

Analysis of Spatial Polarimetric Time-Frequency Distribution Based DOA Estimation: By Combining Esprit with Music

Manish Kumar Pandey, Electronics and Communication Engineering, National Institute of Technology, Kurukshetra, India

Dr. Sandeep Santosh, Electronics and Communication Engineering, National Institute of Technology, Kurukshetra, India

Abstract

The emphasis of study in an array signal processing of High Frequency Surface Wave Radar has always been spatial spectrum estimation technology (HFSWR). This study uses a polarisation sensitive array as a model and combines it with a time-frequency analysis approach for DOA estimation of HFSWR echo signals, allowing it to fully use the polarisation sensitive array. Signal information in the spatial, time-frequency, and polarisation domains. The MUSIC and ESPRIT time-frequency Integrated polarisation information techniques are investigated, and a better method is provided based on the findings. Both algorithms have advantages and downsides. The revised approach uses the polarised time-frequency ESPRIT technique to assess the azimuth angles of signals and then selects a narrow scope centred on each azimuth. Within the scope, spectral peak search using MUSIC yields a more accurate DOA-estimated value. Because of the precision of the DOA estimation, it may save calculation time, and their performance is good. Computer simulations were used to examine the situation.

Keywords

DOA Estimation, Time-frequency, Polarization sensitive array

Investigations on Mode 1 Fracture Toughness and Drilling Characterization of Coconut Shell Particle Reinforced Epoxy (CSPE) Composites

Manjunatha Chary G.H, Department of Mechanical Engineering, J N N College of Engineering, Shivamogga, Karnataka, India

K Sabeel Ahmed, Department of Mechanical Engineering, J N N College of Engineering, Shivamogga, Karnataka, India

Abstract

In this novel work, experiments were carried out to investigate the effect of particle size and particle volume fraction on fracture toughness property and drilling characterization of coconut shell particle reinforced epoxy (CSPE) composites. Test samples were fabricated by open mold technique with three different particle volume fractions viz., 40%, 50% and 60% in epoxy resin using four different sizes of particles viz., 0.25 mm, 0.5 mm, 1 mm and 2 mm. Fracture toughness was measured by conducting the flexural tests on Single Edge Notch Bent (SENB) test samples as per ASTM D 5045 standard. Results reveal that, the fracture toughness decreases with the increase in particle volume fraction and particle size. The reason may be due to crack front pinning that causes due to the obstructions to propagation of the crack front by the particles and causes the pull out between the particles. CSPE composite with 0.25 mm particle size and 40% particle volume fraction showed the highest value of fracture toughness of 1.5104 MPa√m. The quality of hole and effect of speed and feed on thrust force and torque was investigated by conducting drilling operations using Batlibai radial drilling machine. Two types of drill bits viz., twist drill (1180) and Multi face drill bits both of 10 mm diameter were used to perform the drilling operations at feed rates of 0.13 mm/rev, 0.18 mm/rev, and 0.25 mm/rev and speeds of 500 rpm, 800 rpm, and 1000 rpm. Results reveal that, best quality of holes was produced at feed rate of 0.13 mm/rev and speed of 500 rpm using twist drill bit.

Keywords

Coconut Shell Particle, Particle size, Particle volume fraction, CSPE Composite

Mechanical Characterisation of Aluminium A356 Based Silicon Carbide Nanocomposites

Manoj Kulkarni, Department of Mechanical Engineering, GMIT, Davanagere, India

Adarsh C Kontikal, Department of Mechanical Engineering, GMIT, Davanagere, India

Abhimanyu K S, Department of Mechanical Engineering, GMIT, Davanagere, India

Amith S, Department of Mechanical Engineering, GMIT, Davanagere, India

Prashanth H R, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Aluminium based silicon carbide nano composites are a new generation of materials that have the potential of satisfying the recent demands of advanced engineering applications. They are widely used in automobile, biotechnology, electronic and sporting goods industries, aircrafts, structural applications and many other defense systems. Brake rotors, pistons, connecting rods and Metal matrix composite engine blocks are some of the successful applications of Al-SiC nanocomposites in automotive industry. The present work focuses on the influence of silicon carbide (SiC) particles addition on the properties of A356 aluminum matrix composites produced by liquid metallurgy route (Stir casting). These include improved abrasion resistance, dimensional stability, density, yield strength, ultimate tensile strength (UTS), exceptionally good stiffness-to-weight and strength-to-weight ratios and better high temperature performance. These nanocomposites micrographs are expected to give uniform distribution of reinforcement when they are observed under scanning electron microscope.

Machine Learning and Visual Behavior Based Driver Drowsiness Monitoring System

Naveen R Chanukotimath, VTU/GMIT, Davanagere, India

Niharika V P, VTU/GMIT, Davanagere, India

Rohit Lingeri, VTU/GMIT, Davanagere, India

Nayana A R, VTU/GMIT, Davanagere, India

Rakshita K, VTU/GMIT, Davanagere, India

Abstract

Most of the women life in the present Driver drowsiness has become one of the major reasons of deadly road accidents that lead to serious physical injuries, loss of lives. Continuously driving for long hours without rest causes fatigue and consequently fatal road accidents. Intense workload on the drivers tends to make them work overtime. These long working hours make them fatigued which in turn makes them feel drowsy while driving. To prevent deadly accidents or to warn drowsy driver just in time a reliable driver drowsiness detection system should be implemented, which would alert the driver before anything undesired happens. The aim of this is to develop a prototype drowsiness detection system. The focus will be placed on designing a system that will accurately monitor the open or closed state of the driver's eyes in real-time. By monitoring the eyes, it is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident.

Krushi e-Vanijya

Dr.Neelambike S, Department of Information Science and Engineering, GMIT, Davanagere, India

Monika Bendre, Department of Information Science and Engineering, GMIT, Davanagere, India

Sindhu B Pawar, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

Farming is the Prime Occupation in India in spite of this, today the people involved in farming belongs to the lower class and is in deep poverty.

Agro- marketing would make all the things automatic which make easier serving as a best solution to all the problems. E-commerce for farmers will serve as a way for the farmers to sell their products across the country just with some basic knowledge about how to use the website

Incineration Solid Waste Management

Naveen Basavaraj Akki, Department of Mechanical Engineering, GMIT, Davanagere, India

Pramod S K, Department of Mechanical Engineering, GMIT, Davanagere, India

Pavankumar J Sappali, Department of Mechanical Engineering, GMIT, Davanagere, India

Dr.Srinivasa C V, Head of Department, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Incineration is the main waste-to-energy form of treatment. It is a treatment technology involving destruction of solid waste by controlled burning at high temperatures. It is accompanied by the release of heat. This heat from combustion can be converted into energy. Incineration is a high-quality treatment for Municipal Solid Waste (MSW), very useful in big or crowded cities, because it reduces the quantity and volume of waste to be land filled. It can be localized in an urbanized zone, and offers the opportunity of recovering energy. However, it should be taken into account that the economic investment needed is high. The environmental conditions of the incineration process must be very precise to make it environmentally safe. The larger portion of the investment required is due to environmental measures such as emissions control. When choosing incineration as an alternative, the following issues should be considered: volume/quantity of waste produced, heat of combustion of waste, site location, dimensions of the facility, operation and maintenance costs and investment.

Study & Implementation of Single Nucleotide Polymorphism Identification Tools

Neelofar Sohi, Assistant Professor, Department of Computer Science & Engineering, Punjabi University, Patiala, Punjab, India

Amardeep Singh, Professor, Department of Computer Science & Engineering, Punjabi University, Patiala, Punjab, India

Abstract

Single Nucleotide Polymorphisms (SNPs) are the most common type of sequence variation which underlie diseases. SNPs might alter proteins leading to cause diseases in humans. Hence, identification and analysis of SNPs present on genes proves helpful in analysing effect of SNPs on gene products and association of SNPs with diseases. It helps to devise individualised treatment based on individualised response to drugs. Therefore, their identification is highly important for early diagnosis of diseases, prevention of diseases and for treatment planning. There exist various Bioinformatic SNP identification & calling tools. In this paper, basic aspects of SNPs including concept, importance of SNPs and classification of SNPs are covered along with description of various SNP identification & calling tools. A number of tools are implemented and their results are also presented in the paper.

Keywords

Single Nucleotide Polymorphisms, SNPs, SNP identification, SNP annotation

The Roadway towards Achieving Sustainable Development Goals in Africa

Nehal Elshaboury, Construction and Project Management Research Institute/Housing and Building National Research Centre, Giza, Egypt

Ghasan Alfalah, Department of Architecture and Building Sciences, King Saud University, Riyadh, Saudi Arabia

Abobakr Al-Sakkaf, Department of Architecture & Environmental Planning, College of Engineering & Petroleum, Hadhramout University, Mukalla, Yemen & Department of Building, Civil and Environmental Engineering, Concordia University, Montréal, Canada

Eslam Mohammed Abdelkader, Structural Engineering Department, Faculty of Engineering, Cairo University, Giza, Egypt

Abstract

This research explains how African countries are doing in terms of achieving the Sustainable Development Goals (SDGs). To build databases on SDG scores and other chosen variables, secondary references are used. Examples of influential variables include unemployment rates, Global Hunger Index (GHI), Corruption Perceptions Index (CPI), and proportion of the world living in abject poverty. Graphical illustrations are applied to illustrate the relationship between the SDG scores and the chosen variables. The results could be further utilized to do more statistical analyses and create relationships between the variables.

Keywords

Sustainable development goals, unemployment, corruption perceptions index, global hunger index, extreme poverty

Predictive Analysis of Student Stress Level Using Machine Learning

Pola Shreya, Dept. Of Computer Science Engineering, The National Institute of Engineering, Mysuru, India

Prakruthi Manjunath, Dept. Of Computer Science Engineering, The National Institute of Engineering, Mysuru, India

Twinkle S, Dept. Of Computer Science Engineering, The National Institute of Engineering, Mysuru, India

Vismaya Ashok, Dept. Of Computer Science Engineering, The National Institute of Engineering, Mysuru, India

Dr. Shabana Sultana, Professor, Dept. Of Computer Science Engineering, The National Institute of Engineering, Mysuru, India

Abstract

Students of today's era are invariably subjected to immense amount of stress, the contributing factors for this are in plenty. Many students are unable to cope up with the challenging and stressful environment and fail to receive help in the right way, thus leading to a persistent damage to their lifestyles. This is followed by performance degradation of the student and not being counted as an asset.

We propose a solution for the educational organization where the authorities can track the predicted stress percentages of each student enrolled. The student has the provision of taking up the survey, which encompasses the parameters which is instrumental in bringing about mental distress and anxiety. The Primary factors which cause extreme stress and mental imbalance in students are Academic related stress and mental health, Parental pressure, Parental Expectations, Peer Pressure, Inferiority complex, less social interaction etc.,

The survey data is taken as the input for a pre-trained machine learning model, structured on the KNN-classification algorithm, which predicts the stress percentage of each student. A two-way classification of the stress level is brought about by the model as to whether the student is stress-free or stressful, and a further classification under stressful students about the range in which their stress percentages lie, as to low, medium or high is done. Based on the range of the stress level and the probabilistic parameters of stress, each stressful student is given a feedback and advisable solution from the educational institute. The student can adopt the solution and make way for his or her mental peace thereby reducing stress levels. Our project also enables the student to query his grief, and an apt answer would be received by the student from the authorities and the privacy of each student is maintained.

Swarm Intelligence-Based Algorithms for Spectrum Sensing in Cognitive Radio: A Review

Mr. Praveen Hipparge, Research Scholar, Faculty of Engineering and Technology, Department of Electronics and Communication Engineering, Sharnbasva University, Kalaburagi, Karnataka, India

Dr.Shivkumar S. Jawaligi, Professor & Chairman, Faculty of Engineering and Technology, Department of Electronics and Communication Engineering, Sharnbasva University, Kalaburagi, Karnataka, India

Abstract

Cognitive Radio Network drastically improves the performance of network by its dynamicity and intelligent channel selection principles. Swarm intelligence (SI) systems are self organized algorithms and these algorithms are used to resolve complex problems with dynamicity. This review paper provides an initial understanding of the SI based algorithms and their potential use for spectrum sensing in Cognitive radio. In this paper we present the existing SI based algorithms with their applications, then we present cognitive radio that uses the SI based algorithms and at the end we discuss the intersection of two fascinating and increasingly popular domains which are SI based algorithms and spectrum sensing in cognitive radio. This review will pave the path for future studies to easily choose the appropriate SI-based algorithm for CRN.

Security System Based on Knock Pattern using Aurdino and GSM Communication

Mr.Rajappa H S, Assistant Professor, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Mr.Praveen K R, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Mr.Chanda Kumar H, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Mr.Sagar J, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

With the constant progress in this technological world, The world was advanced greatly over day by day. So, here is a smart security system based on knocking pattern using Arduino, Microcontroller, piezo electric sensor and GSM Communication. And The lock unlocks only when a certain secret knocking pattern is produced and an SMS alert is sent if anyone tries to open the door by knocking the door differently.So, this concept eliminates the fear of theifs. Thus, this Security System provides a protection in our daily life. And the Auduino Uno board acts a microcontroller and piezo electric sensor takes knocking pattern as a input and then passes it to the Arduino board. Here the input pattern is compared with the original knocking pattern. If the pattern is correct the door will open, if it is wrong the SMS is sent to a given phone number using GSM Communication.

A Meticulous Study on Cyber Crimes due to Pandemic Covid 19

Rajeshwari Kisan, AITM, VTU, India

Pooja H, BIET, VTU, India

Sheetal Patil, AITM, VTU, India

Bharati Kale, AITM, VTU, India

Dr. Rashmi Malghan, AITM, VTU, India

Abstract

The pandemic of COVID-19 and the imposed lockdown in the world, has led to more people to be confined at home with many more hours to spend online each day and increasingly relying on the Internet to access services. The attacker often target the public, who are now socialising and spending more time online in general, as well as the increased population of people who are working from home and old age people who are less known to digitalized world of money transaction by sending text or e-mail, and in most cases, a URL pointed to a fake website that requests debit/credit card details and even OTP. These involve phishing, malware, financial fraud, extortion, pharming, hacking and denial of service. It is recommended and practicing by governments and concerned defense from respective financially involved organizations alerting people to aware about these crimes through sms, email, applications, news for cyber-security knowledge.

Delay-Tolerant Routing and Message Scheduling for CR-VANETs

Rashmi Hegde, Department of Information Science and Engineering, GMIT, Davanagere, India

Divya K M, Department of Information Science and Engineering, GMIT, Davanagere, India

Abstract

Cognitive radio vehicular ad hoc networks (CR-VANETs) can solve the problem of the limited spectrum resource and improve the vehicle-to-vehicle (V2V) communication efficiency. Nevertheless, the fastmoving characteristic of vehicles and the occasional sparse density of vehicles lead to the intermittent CR-VANETs. Recent literature of routing in CR-VANETs focuses on a fully interconnected environment yet fails to address solutions for non-real-time applications. To fill this gap, we propose the delay tolerant routing and message scheduling (DTRM) schemes for non-real-time applications, aiming to maximize the delivery ratio and decrease the delivery overhead in CR-VANETs. First, we propose a routing scheme that builds a concurrent forwarding set and designs a forwarding strategy. In this set, we select relay candidates by considering both the CR channel availability and the V2V contact duration. Moreover, we evaluate the priority of the relay candidate to provide a reliable forwarding strategy. Second, based on the routing scheme, we propose a message scheduling scheme that combines an optimized-binary-tree replication algorithm and a buffer management policy. The proposed algorithm can spread messages and terminate the replication process quickly. The buffer management policy facilitates the tradeoff between the delivery ratio and the delivery overhead, taking into consideration the node priority, the message tag, and the message remaining time-to-live. Simulation results show that DTRM presents a higher packet delivery ratio and a lower overhead ratio than the counterparts. It presents on average gains of 25.1% and 10.9% in terms of delivery ratio and overhead ratio, respectively, when compared with four CR-VANET routing schemes. It also presents on average gains of 35.6% and 34.1% in terms of delivery ratio and overhead ratio, when compared with three message scheduling schemes.

FPGA based Implementation of AES Algorithm

Dr. Rudrappa K. M, Associate Professor & HOD, Department of ECE, GEC, K. R. Pet, India

Khutejatul Kubra, Department of ECE, GEC, K. R. Pet, India

Swathi B.P, Department of ECE, GEC, K. R. Pet, India

Ranjitha A.R, Department of ECE, GEC, K. R. Pet, India

Poojitha K.C, Department of ECE, GEC, K. R. Pet, India

Abstract

Encryption is the way to secure the personal data communication.AES stands for Advanced Encryption Standard and it is very efficient algorithm available today in many systems. There are three key length options supported here, viz. 128,192 bit and 256-bit key length. Higher the key length more time is required to break the system or hack the system.

The AES is an iterative algorithm. It encrypts the data using four different transformations namely Sub Bytes, Shift Rows, Mix Columns and Add Round keys. With the use of fully pipelined architecture and Look up Table (LUT), the throughput and speed of the encryption is increased tremendously.

A Pipelined and LUT based implementation of high-speed AES algorithm using Verilog HDL is presented in this work. This work presents AES-128-bit algorithm design consist of 128-bit symmetric key.

We confirmed that the proposed hardware is superior to software implementation on general-purpose processor in terms of both throughput and power consumption. Xilinx ISE 14.7 ISE and Modelsim tools are used for synthesis and simulation of this proposed architecture. Xilinx Vivado is used to obtain results for ultra-scale devices.

Keywords

Authenticated Encryption, FPGA, AES, Xilinx ISE, Plain Text, Cipher Text

Performance Improvement of Breast Cancer Classification using Association Rule and Synthetic Minority Oversampling Technique

N. Vanamadevi, Department of Instrumentation Engineering, Annamalai University, Annamalai Nagar, Tamil Nadu, India

Sailaja Pendyala, Department of Instrumentation Engineering, Annamalai University, Annamalai Nagar, Tamil Nadu, India

K.Ramanjaneyulu, Department of Electronics and Communication Engineering, P.V.P Siddartha Institute of Technology, Kanur, Vijayawada, A.P, India

Abstract

Breast Cancer is the deadliest disease mainly caused in women. Early detection is the primary step in cancer diagnosis. Tumor features are collected with the ease of use of different clinical technologies for classifying breast cancer. Data classification with high accuracy is always desired, to improve the accuracy preprocessing is one of the most important pace. In this paper Association Rule (AR) is used to eliminate the insignificant features, then resampling technique to reduce the effect of class imbalance this is the first step in our proposed approach. In the second step different classifiers are applied and accuracy is compared. There are some missing values in attribute those are replaced with the mean value, using AR, insignificant data was reduced from nine attributes to eight attributes and Synthetic Minority Oversampling Technique (SMOTE) based oversampling was applied. For evaluation tenfold cross-validation was applied to the Wisconsin Breast Cancer Diagnosis (WBCD) dataset. Four classifiers are applied to the preprocessed data and the accuracy obtained by using Support vector Machine classifier is 98.56%. The results obtained from the proposed approach are with the use of SMOTE the accuracy has been increased.

Keywords

Association Rule, Breast Cancer, imbalanced dataset, SMOTE, SVM

Estimating Area of 2D ROI Image using Image Processing

Dr. Sanjay Pande M B, Professor and Head, Department of Computer Science and Engineering, G M Institute of Technology, Davangere, India

Bhoomika Bhat, Department of Computer Science and Engineering, GMIT, Davanagere, India

Bhushan R Naik, Department of Computer Science and Engineering, GMIT, Davanagere, India

Nirmala Ananth Hegde, Department of Computer Science and Engineering, GMIT, Davanagere, India

Sharath MS, Department of Computer Science and Engineering, GMIT, Davanagere, India

Abstract

Training a computer system to do something like image processing seemed to be intriguing. Currently MRI scanned images have been helpful for studying diagnosis or segmentation of brain tumors. Tumors are caused because of abnormal growth of tissue or blood block. Identification of tumor class and area will help for further treatment.

The aim of this paper is to calculate the area of tumor region in terms of pixel. For this, in this proposed work we considered four different classes of tumor dataset (i.e., No tumor, Glioma tumor, Meningioma tumor, Pituitary tumor). An algorithmic approach i.e., a supervised learning approach to classify a monocular data is done. It is based upon 2-D images using Convolutional neural networks. Here tumor images are classified with certain approximated per cent of confidence. Further the image is taken for segmentation process. Here the main aim is to find the region of interest (i.e., tumor region). There are different techniques for segmentation. In this proposed work we implemented threshold-based segmentation technique. In present work we considered the task of calculating area of segmented image in terms of pixel value.

Android Application for Health Care Management

Dr. Sanjay Pande M B, Professor and Head, Department of CSE, GMIT, Davangere, India

Pooja M.R, Department of CSE, GMIT, Davangere, India

Roopa K.J, Department of CSE, GMIT, Davangere, India

Saleena A.B, Department of CSE, GMIT, Davangere, India

Usha K.S, Department of CSE, GMIT, Davangere, India

Abstract

Medicine for the patients at emergency is very essential to save their life. Many medical shops having different medicine and they are all residing at different places. Some medical shop having specific medicine and others having general. Medical shop management entity are also facing many problems like maintenance of large medicine data in manual records and difficult to search availability of specific medicine in emergency in manual process. It is difficult for the customers to go and search specific medicine for patients in all the medical shop one after another is more time consuming process and waste of money. As technology changes over period of a time, business needs to change from manual end to computerization to improve performance and efficient in maintenance of records. Similarly now a days in all sectors people are changing from manual to computerization in that hospital is also public sector where now a days people are interested to get necessary details form hospital such as doctor details, patient records etc...,

The aim of this paper is to developing application for pharmacy department where all medical shop medicine details are maintained in a centralized database. and implementation of web application for Hospital Management System where admin, being at the highest authority has the permission to access and maintain the health records like maintain a doctor details, patients details along with treatment and medicine details. Designing and developing a android app for the public user ,so that user can get to know the information about the availability ,cost and quantity of medicine available and availability of doctors . By Using Android app patients can get details in their hand at anytime and anywhere.

Design and Implementation of Women Safety System Based on IOT Technology

Vinutha L B, Assistant Professor, Department of ECE, GMIT, Davanagere, India

Sahataz M L, Department of ECE, GMIT, Davanagere, India

Sahana M S, Department of ECE, GMIT, Davanagere, India

Roopashree K R, Department of ECE, GMIT, Davanagere, India

Ramya G P, Department of ECE, GMIT, Davanagere, India

Abstract

In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical harassment and a fear of violence. The only though haunting every girl is when they will be able to move freely in the streets day and night without worrying about their security. In such critical situations to help women. This project suggests a new technology to protect women. *This paper cover descriptive details about the Design and implementation of "protocol*". The device consist of a rechargeable battery trigger, Microcontroller (AT mega 328), GSM module, GPS module, LCD display, IOT module, Neuro Stimulator, Buzzer and Vibrating Sensor. In this project, rechargeable battery is used to power ON the circuit. when a women senses danger she has to hold ON the trigger of the device. Once the device is activated, it tracks the current location using GPS (Global Positioning system) and sends emergency message using GSM (Global system mobile communication) to the register phone number and nearby police station. LCD display is used to display the message. IOT module is used to track the location continuously and update into the webpage .Neuro Stimulator will produce non-lethal electric shock in emergency situations to detect the attacker buzzer is used as an alarm to alert the nearby people so that they may understand that someone is needed and vibrating sensor will send the last location in case if the device gets defected.

Intersection and Signal Design at the Junction of Shamanur Road and Ring Road (Davanagere)

Santhosha R, Civil Engineering, GMIT, Davanagere, India

Manoj Kumar SM, Civil Engineering, GMIT, Davanagere, India

Sanjay BN, Civil Engineering, GMIT, Davanagere, India

Basavaraj G B, Civil Engineering, GMIT, Davanagere, India

Kiran Kumar C M, Assistant Professor, Civil Engineering, GMIT, Davanagere, India

Abstract

The increasing of traffic volume at intersections arise problems like road accidents, conflicts and congestions. These problems can now only be solved by providing an efficient traffic control at intersections and that can be achieved by provision of traffic signal system at intersections for continuous and efficient movement of vehicles through the intersections. According to traffic signal, signal timing is most important which is used to decide green time of the traffic light shall be provided at an intersection and how long the pedestrian walk signal should be provided. Traffic volume studies are to be made to determine the number, movement and classification of vehicles at the given location. These data is used identify normal flow of the road; determine the influence of heavy vehicles or pedestrians on vehicular traffic volume. The length of the sampling period depends on the type of count being taken. According to manual count with 15-minute intervals could be used to obtain the traffic volume data. The collected data is converted into PCU units. Passenger Car Unit (PCU) is the metric used to convert heterogenic traffic into homogenous traffic. In India traffic pattern is heterogeneous, it is necessary to convert heterogeneous traffic to homogenous traffic while designing any signalized intersection. PCU Value is dynamic in Nature. PCU value is depends upon current road traffic condition. In India PCU value is based on value given in /RC SP41.

Keywords

Intersection, PCU, Signal design, Traffic volume

Three Phase Induction Motor: The Vector Control Analysis of an Induction Motor by Applying V/F Speed

Shambulingana Gouda, Research Scholar, BE, M Tech, (PhD in Electrical Engineering)
Research Scholar, Sri Satya Sai University of Technology & Medical Sciences, Sehore, Madhya Pradesh, India

Abstract

The induction machine is the work horse of the industry. It has rugged construction and is suitable for many high power applications. Induction motors are the most widely used electrical motors due to their reliability, low cost and robustness. However, induction motors do not inherently have the capability of variable speed operation. Due to this reason, earlier dc motors were applied in most of the electrical drives. But the recent developments in speed control methods of the induction motor have led to their large scale use in almost all electrical drives. Out of the several methods of speed control of an induction such as pole changing, frequency variation, variable rotor resistance, variable stator voltage, constant V/f control, slip recovery method etc., the closed loop constant V/f speed control method is most widely used. In this method, the V/f ratio is kept constant which in turn maintains the magnetizing flux constant so that the maximum torque remains unchanged. During starting of an induction motor, the stator resistance and the motor inductance (both rotor and stator) must be kept low to reduce the steady state time and also to reduce the jerks during starting. On the other hand, higher value of rotor resistance leads to lesser jerks while having no effect on the steady state time. The vector control analysis of an induction motor allows the decoupled analysis where the torque and the flux components can be independently controlled (just as in dc motor). This makes the analysis easier than the per phase equivalent circuit.

Keywords

Three Phase Induction Motor, Space Vector Modulation, V/F Control, Transient Analysis, Slip, Steady State Analysis, Induction Motor Electric Motor Drive, Matlab , Simulink

A Framework for Service Blueprinting and Service Gap Analysis for Automobile Firm

Mr. Vinay.I, Department of Studies in Management GMIT, Davangere, India

Dr. Gururaj G Phatak, Department of Studies in Management GMIT, Davangere, India

Abstract

Purpose -The Purpose of this paper is to introduce a Frame Work, to help academician and students with respect to SERVICE QUALITY at Automobile Showrooms.
Methodology/Approach - Using RATER Approach we identified the SERVICE GAPS with respect to an Automobile Showroom.
Findings – The Authors Identified the Communication Gap with respect to Customers' Expectations and Perception about Customer's Expectation by an Automobile firm.
Research limitations/implications- Important implication of GAP Models are discussed.
Originality/Value- This research proposes a framework for SERVICE BLUEPRINTING & SERVCIE GAP ANALYSIS for Automobile firm.

Keywords

Service Quality, Gap Analysis, SERVQUAL, RATER, Blueprinting, Automobile Firm

Determination of Natural Frequency of Hybrid Sandwich Panel

Shashank S M, Department of Mechanical Engineering, GMIT, Davanagere, India

Mukunda S R, Department of Mechanical Engineering, GMIT, Davanagere, India

Deepa N, Department of Mechanical Engineering, GMIT, Davanagere, India

Tanushree T, Department of Mechanical Engineering, GMIT, Davanagere, India

Sandeep S H, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

In recent years, studies on the development of new and advanced composite materials have been increasing, the demand for the sandwich structure is getting increased because of its high stiffness to the low weight ratio. Fiber Metal Laminates (FML) are hybrid composite structures and they are good for advance aerospace structural application due to their high specific mechanical properties and dynamic properties. Vibration analysis of hybrid sandwich panel is required to gain better performance in its application and also every system has its own permissible limit of natural frequency. Synthetic fiber burn more readily than natural, Most of the research says the natural fibres are rarely used even though they have good mechanical properties In this project proposal a new hybrid material will be developed using naturally available fibers that are readily available with the objective of finding natural frequency using FFT analyser. A new concept of a lightweight sandwich structure designed to achieve a functional performance and reasonable cost will be proposed. The new hybrid sandwich panel may exhibit a superior damping performance than the conventional sandwich panels.

A Review of Computer-Aided Expert Systems for Breast Cancer Diagnosis

Sheetal B. Patil, Assistant Professor, Department of CSE, AITM, Belagavi, India

Pankaja B. Patil, Assistant Professor, Department of CSE, GIT, Belagavi, India

Bharati Pannyagol, Assistant Professor, Department of CSE, AITM, Belagavi, India

Rajeshwari Kisan, Assistant Professor, Department of CSE, AITM, Belagavi, India

Abstract

The human body is formed of trillions of cells. 'Cancer' is a term used when a cell divides peculiarly or hysterically, which can happen in various parts of the body. The disease type is categorized based on which part of the body cancer occurs. The most threatening is when cancer spreads uncontrollably to other parts of body and can cause death. Breast cancer is one of the most commonly diagnosed diseases in females around the world. Early detection of breast cancer lowers the risk of death among patients. It enables appropriate treatment to control the progression of Cancer. The standard procedure to diagnose breast cancer by pathologists usually requires extensive microscopic assessment. With the advanced development of artificial intelligence, many machine learning techniques have been applied for computer-aided diagnosis (CAD) systems. Deep learning was shown to outperform state-of-the-art methods in many fields of medical imaging analysis tasks. The aim of the study is to investigate techniques applied in histopathology images and deep learning methods in diagnosing breast cancer.

Advertisement Analysis Using Digital Image and Signal Processing

Spandana Shashikumar, Assistant Professor, Department of Electronics and Communication Engineering, JSS Academy of Technical Education, Bengaluru, Karnataka

Manohar B S, Assistant Professor, Department of Electronics and Communication Engineering, JSS Academy of Technical Education, Bengaluru, Karnataka

N S Abhishek, Department of Electronics and Communication Engineering, JSS Academy of Technical Education, Bengaluru, Karnataka, India

Ankit Chand, Department of Electronics and Communication Engineering, JSS Academy of Technical Education, Bengaluru, Karnataka, India

Mohammad Ekramah, Department of Electronics and Communication Engineering, JSS Academy of Technical Education, Bengaluru, Karnataka, India

Abstract

The consumer-centric world leads to a greater demand for product and service promotion on various media platforms. The advertisement industry seems to need a method to assess their ad films as they require tons of money and labour. The method of advertisement assessment using face emotion recognition along with EEG sensing gives a precise method of assessing the product. The Face emotion recognition devised by the TensorFlow tool by python uses HAAR cascade algorithm to detect faces which are then resized and pass through 4-layer Convolution Neural Network (CNN). The algorithm classifies the facial features into various fundamental emotions and gives them SoftMax scores. The test result is reinforced using Electro-Encephalogram (EEG) sensing. The brain wave sensor will send brain waves containing attention and concentration via Bluetooth to an Arduino board. After processing the data, it sends it Raspberry Pi board. The Raspberry Pi combines the results from face emotion recognition as well as brainwave sensing following an algorithm and provides a presentable output. The output is readable to everyone and can be used to assess the advertisement.

Keywords

CNN, EEG Sensing, Haar, SoftMax scores, TensorFlow tool Python

Design of Fabrication of Hybrid Two-Wheeler

Srikrishna H S, Department of Mechanical Engineering, GMIT, Davanagere, India

Suhas C B, Department of Mechanical Engineering, GMIT, Davanagere, India

Kiran M R, Department of Mechanical Engineering, GMIT, Davanagere, India

Pavan S J, Department of Mechanical Engineering, GMIT, Davanagere, India

Pavan L, Department of Mechanical Engineering, GMIT, Davanagere, India

Chetan H R, Department of Mechanical Engineering, GMIT, Davanagere, India

Shree Harsha K R, Department of Mechanical Engineering, GMIT, Davanagere, India

Vinith Kumar P V, Department of Mechanical Engineering, GMIT, Davanagere, India

Shivaprakash P, Assistant Professor, Department of Mechanical Engineering, GMIT, Davanagere, India

Dr. Srinivasa C V, Department of Mechanical Engineering, GMIT, Davanagere, India

Abstract

Several economic and environmental factors are contributing to increase interest in alternative vehicle technologies. These factors include global demand for oil, concomitant increase in fuel prices and anthropogenic climate change. Rising global demand for oil has both economic and political consequences. When petroleum products are burned, they release carbon dioxide (CO2) and greenhouse gases (GHG), which in turn trap heat in our atmosphere, making them the primary contributors to global warming. As we know that IC (Internal Combustion) engine vehicles provide high speed, more powerful and faster refueling. But they are relatively less efficient in converting on board fuel energy to propulsion as most of the energy is wasted as heat. On the other hand, electric motors are more efficient in converting the stored energy in driving a vehicle. But due to reasons such as high cost, inability to reach higher speeds and high recharge time electric motor vehicles fail to capture the market. To overcome the disadvantages of these IC (Internal Combustion) engine and EV (Electric Vehicle), the hybrid technology is implemented in automobiles. A Hybrid Electric Vehicle (HEV) is a vehicle which relies not only on batteries and also on an internal combustion (IC) engine which drives the wheels. The combination of both the power makes the vehicle dynamic in nature and provides with customer with advantages in fuel economy and environmental impact over conventional automobiles. This Hybrid Electric Vehicle (HEV) provides better fuel economy and reduces toxic emission into the atmosphere. This hybrid two-wheeler consists of two modes, one is of electric mode having economic speed and less performance which saves fuel. Another is of performance mode which runs through engine and is of high speed and more performance which recharges the battery on running. These engine and electric systems are connected in parallel therefore the proposed system is parallel hybrid electric vehicle (PHEV).

Effect of Soil Ionization on the Propagation of the Electric Field from an Impulse Radiating Antenna

K Sunitha, Department of Electrical Engineering, National Institute of Technology Calicut, India

Abstract

Impulse radiating antennas (IRA) give a sharp impulse sort of field. This is having a magnitude of few 1000k V/m and rise time of about 100s of picoseconds. One of the main application of these antennas are in the buried object detection such as mines. The underground mines are determined by sending a transmitted signal from IRA inside the soil. After some time a receiving signal is obtained back if the transmitted signal touches any buried object. The objects underground can be a buried power cable or simple rocks or it can be buried mines. To differentiate between these objects it is mandatory that the strength of the received signal should be the highest so that we can trace our the image of the mines from its frequency response by applying imaging techniques. But soil through which the field is going is a medium having a very definite frequency response. Soil has got rock particles, sand, pores and trapped water content. The relative percentage of these four particles gives a resonance frequency for any strata of soil . when IRA field passes through the soil a resonance is created between the frequency of Ira field and the soil particle. As a result of this that particular frequency content goes missingfrom IRA frequency spectrum. This is a serious issue due to which many valuable informationin the signalcan go missing. This resonance frequency can also create excitation modes in the IRA field thus imposing a different magnitude and rise time for the field. Thus this paper deals with the determination of the influence of soil ionization on the propagation of electric fields from the IRA.

Propagation Characteristics of the Electric field From an Impulse Radiating Antenna

K Sunitha, Department of Electrical Engineering, National Institute of Technology Calicut, India

Abstract

Impulse radiating antennas are special antennas that has wide variety of applications in the detection of mines, atmospheric surveillance and other extraterrestrial and even exo atmospheric object detection. The se are very powerful antennas that have a very sharp electric field in the order of about 1000 kV/m. The se antennas work in the medium of SF6 gas . This paper analyses the electric field due to such an antenna and how the field due to this antenna vary with respect to the distance and the height. The se results are extremely important for the correct design of the antenna for an application. It is seen that the electric field has a very peculiar shape having an impulse and prepulse, the time duration of them are functions of antenna distance from the o bservation point. the antenna is excited with a sharp impulse voltage of about 1MV with a rise time of few picoseconds. As such this is a very vulnerable antenna. To determine the field no normal antenna theory concepts can be utilized due to this small ri se time and extremely small wavelength. So this work uses current element integration of a parabolic antenna combined with geometrical optics theory. The results are highly matching with the experimentally determined fields. Now the fields are computed at different distances from the antenna and at different heights to know the propagation characteristics.

Parallel Coupled Microstrip Bandpass Filter for ISM Applications

Vikas C Yatnalli, Assistant Professor, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Anusha B H, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Divya J Bethur, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Divya T M, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Yashaswini M, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

This paper presents a research in wireless communication which has spurred the development of extra ordinary range of antennas, each with its own advantage and limitations. In today's modern communication industry, antennas are the most important components required to create a communication link. Microstrip antennas are an urgent need for aerospace and mobile applications because of their low profile, light weight, flexibility to efficiently combine the capabilities of multiple antennas and low power handling capacity. Bandpass filter plays a significant role in the wireless communication systems. Transmitted and received signal have to be filtered at centre frequency with a specific bandwidth. This type of filter can be used in mobile communications, WiMAX and Bluetooth. The design of parallel coupled line bandpass filter has been simulated using ANSOFT HFSS simulation software. The development of the bandpass filter includes the calculation, simulation, testing and measurement of the filter parameter. Finally obtaining with the result of bandpass filter with the frequency of 2.4 GHz which lies in S band region and is most widely used for the ISM applications.

Keywords

Bandpass Filters, Parallel Coupled Line, ISM Applications, HFSS

Need for Sustainable Planning Approaches in Peri-Urban Areas of Metropolitan Region: Case of Pune

Tanvi Katre, Assistant Professor, School of Architecture, MSRIT, Bangalore, India

Arunav Bhattacharya, Assistant Professor, School of Architecture, MSRIT, Bangalore, India

Abstract

Unsustainable Urban growth, deforestation, Loss of biodiversity are the result of urbanization along with the haphazard growth in peri-urban areas of large metropolitan regions of Indian cities. Urban expansion in peri-urban areas has become a major form of land degradation which removes valuable, fragile natural areas and large farmland from production, for which planning strategies of Sustainable Land Management needs to be formulated to minimize its future adverse impacts. Pune being the ninth most populous city, Pune is observed to be amongst the top 5 district in the country that have 'most significantly degraded Land' and researchers say that, rapid urbanization is responsible for the quality of land which explains need to formulate strategies to reduce land degradation by implementing sustainable planning approaches. Although, Primary observations in Pune peri-urban states the rapid increase in built-up area, loss of farmlands, decrease in vegetation along with hill encroachment , this fact is supported by various secondary data observation which explains the Loss of grasslands, shrublands , Forestland and Faunal species which was further analysed with the help of spatial and temporal analysis .

This research paper is an attempt to explain the need to formulate strategies to achieve sustainability which has its impacts on Rural as well as urban periphery. Paper also suggests sustainable Land Management as an effective approach adopted to improve inter-relationships among Soil quality, Land Quality and Vegetation Quality in peri-urban areas of the region.

Energy-Spectral Efficient Resource Allocation in 5g Heterogeneous Wireless System Network Using Multi Objective Meta-Heuristic Based Deep Bi-TSLSTM Model

Tejasvi Kattimani T R, Assistant Professor, GMIT Davanagere, India

Abstract

Due to the advanced modern technology, the application of wireless networks fascinates enormous people in all around the world. Wireless communication is tends to be an marvelous enhancing technology in an day to day life and it not only appeals the consumers also prospering the business man, research students, and fanatical engineers all around the sphere [1,2]. The zeroth (0G) to fourth (4G) generations like Mobile Telephone Services (MTS), analog cellular system, digital cellular system, broadband services and local Internet Protocol (IP) network takes place the essential role among the users. But the technologies up to 4G are distressed due to some beneficial demerits [3, 4]. In order to address these issues, fifth generation (5G) network technologies are developed [5]. Increasing Internet data traffic has driven the capacity demands for currently deployed 3G and 4G wireless technologies. Now, intensive research toward 5th generation wireless communication networks is progressing in many fronts. The 5G technology is escalated to face the challenges upheld by both wireless traffic explosion and energy consumption.

Integration of small cells (microcells, picocells and femtocells) in to traditional macrocells is termed as heterogeneous network (HetNet).The deployment of HetNet provide an effectual solutions in 5G wireless networks [6]. HetNet are described as multiple networks with various radio access technologies (RATs).HetNet is stated as an essential strategy among the 5G network. It enhance the capacity, spectral efficiency, energy efficiency and also safeguards the green communication in both indoor and hotspot environment [7]. The involvement of nodes in HetNet is comprised with different transmission power and coverage sizes [8]. High power nodes (HPN) are stated with large coverage areas and Low power nodes (LPN) are stated with low coverage areas. HPN are planned to cover urban, suburban and rural areas in which LPN aims to enhance the network throughput [9]. Many research activities had been industrialized by introducing node cooperation, load balancing and the enhanced coordination in inter cell interference [10]. HPN and LPN are highly coordinated to make best use of capacity and coverage of HetNet.

Bus Rapid Transit System for Davangere

Veeresh SR, Civil Engineering, GMIT, Davanagere, India

Varshini K, Civil Engineering, GMIT, Davanagere, India

Pratheek BK, Civil Engineering, GMIT, Davanagere, India

Niveditha KC, Civil Engineering, GMIT, Davanagere, India

MR. Kiran Kumar CM, Assistant Professor, Civil Engineering, GMIT, Davanagere, India

Abstract

Bus Rapid Transit System (BRTS) is the Safe, Economical, Rapid, Convenient & new concept of Public transport in India scenario perhaps in India there are more than 150 series of BRTS was running successfully world wide the few examples are Bogota, Beijing, etc Ahmedabad (India) is also successful example of BRTS. Population wise India is the second largest country & fastest growing economy of the world. Presently the population of India is 136.64 crores & Approximately 45 Millions people's lives in growing cities but in the past decades there are no considerable development in the field of urban transportation so due to this reason & also tremendous growth of vehicular population on urban roads causes the congestion and traffic jam condition in the most of Indian cities. Now this is the time to think about the urban transport.

BRTS is the most economical eco-friendly solution of public transportation for growing cities of India. Public transport is operated by the unorganized sector in all most cities of the India, which is the main cause of poor quality of public transport facility in Indian cities i.e. over loading, un-standard fare, unqualified drives & staff, unscheduled movement causes the inconvenient & unsafe journey for user of public transport. But a BRT network with comprehensive coverage can serve a diverse market (all income ranges) by moving large numbers of people between locations quickly & reliably throughout the day, while maintaining a comfortable riding experience. These characteristics are essential to satisfying the demands of diverse market or offering high frequency service without heavy subsidy.

Keywords

BRTS, Traffic survey, Accidental rate

Speech Controlled Automatic Wheelchair

Vikas Yatnalli, Assistant Professor, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Nichammanahalli Kaveri, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Manasa N, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Chandana S M, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Lakshmi B, Dept. of Electronics and Communication Engineering, GMIT, Davanagere, India

Abstract

In this paper, we propose an Intelligent Home Navigation System (IHNS) which comprises of a wheelchair, voice module and navigation module. This system can be used by an elderly or physically challenged person to move inside the home without any difficulty. In general, the elders may forget the way to the different rooms in house and the physically challenged people find hard to move the wheel chair without external aid. In the proposed system the wheelchair is operated automatically or manually by turning the wheels using hands or external aids. The proposed system is a voice-controlled wheelchair robot. The voice of the person is detected by voice capture module and that compared with predefined voices loaded in the system by voice recognition module. According to the received voice, the destination is automatically understood and the wheelchair moves according to the route which is predefined. The system is also equipped with obstacle avoidance technique, where the person may not be able to provide proper voices at right time. The wheelchair can automatically navigate from one point to other in the home as per command from the voice module.

Keywords

Intruder sensor, Voice recognition, Programmable Microcontroller, Ultrasonic, LCD

Development of Hydrophobic Cement Preparation using Oleic Acid

Alok Verma, M Tech, HBTU Kanpur, India

Dr. S K Gupta, Associate Professor, HBTU Kanpur, India

Abstract

Cement is one of the most widely used basic materials in all civil constructions. Remarkable progress in the civil engineering industry and the demands of engineers for high-quality building materials have resulted in the development of a variety of cement, both for specialized and general use in civil constructions. The cement industry is involved in the production of several types of cement such as Ordinary Portland Cement (OPC), Portland Pozzolana Cement (PPC), Portland Blast Furnace Slag Cement (PBFS), Oil Well Cement, hydrophobic cement, Rapid Hardening Portland Cement, Sulphate Resisting Portland Cement, White Cement, etc.

Hydrophobic cement as the name suggests has water-repellant characteristics because of which cement quality undergoes very little deterioration when kept under prolonged storage in humid and high rainfall areas. The hydrophobic properties of the cement are due to the formation of water-repellant film around each cement particle. This film gets broken during the concrete making process and hydration of the cement particles progresses normally.

Hydrophobic cement is manufactured by adding hydrophobic agents at the time of grinding of Ordinary Portland Cement clinker and gypsum such that each particle of cement gets coated with a fine film of the water-repelling film. The hydrophobic agents used are oleic Acid, stearic acid, naphthenic acid, pentachlorophenol etc. This effort enhances the property of cement against the environmental impact (like rain, moisture etc.) on cement in storage and transportation at heavy humid areas using oleic acid as a hydrophobic agent.

The hydrophobic property in cement can produce by finished grinding of raw material (Clinker and Gypsum) with oleic acid. The Hydrophobic cement can float comparatively higher period on water than normal OPC and correspondingly lower compressive strength than normal OPC cement. Other characteristics property of ground hydrophobic cement is similar with or without hydrophobic agent mixing and parameters also under the standard limit.

Keywords

Hydrophobic cement, hydrophobic agents, Ordinary Portland Cement (OPC) water-repellant film

Missing Link between NLRP3 Mediated Neuroinflammation and Micro RNA in Alzheimer's Disease

Ankita Das, Molecular Neuroscience and Functional Genomics Laboratory, Department of Biotechnology, Delhi Technological University (Formerly DCE), Delhi, India

Pravir Kumar, Molecular Neuroscience and Functional Genomics Laboratory, Department of Biotechnology, Delhi Technological University (Formerly DCE), Delhi, India

Abstract

NOD-, LRR- and pyrin domain-containing protein 3 (NLRP3) is abundantly expressed in macrophages and is involved in neuroinflammation. Together with an adaptor protein and pro-caspase-1, it forms an inflammasome complex. Inflammasome complex produces IL-1β and IL-18, triggering inflammation. Several reports elucidated the role of inflammasome in Alzheimer's disease where NLRP3 was found to be upregulated. To understand the reason behind the NLRP3 upregulation, MicroRNA (miRNA) mediated regulation approach was pursued. Stringent computational analysis was done including cerebral miRNA expression, polymorphism at 3' UTR of NLRP3, transcription factor regulation, and microarray analysis of miRNAs in AD patients. Next a thorough insilico validation was performed involving pathway analysis, miRNA sponge analysis, and mRNA-miRNA binding site accessibility prediction by evaluating RNA secondary structure. Finally, ten novel miRNAs (hsa-miR-17-5p, hsa-miR-20b-5p, hsa-miR-27a-3p, hsa-miR-186-5p, hsa-miR-30d-5p, hsa-miR-30a-5p, hsa-miR-30e-5p, hsa-miR-338-3p, hsa-miR-223-3p, and hsa-miR-548a-3p) were reported having the most potentiality to regulate the expression of NLRP3 in Alzheimer's disease.

Keywords

NLRP3 inflammasome; Neuroinflammation; Innate immunity; Alzheimer's disease; Micro RNA; RNA secondary structure; Neurodegeneration

Performance Study of Turbo Decoding and Multiuser System Performance Comparison with Various Diversities in LTE+ System Environment

Anushka Kadage, Ph.D Scholar, Department of Electronics and Telecommunication, DKTE Society's Textile and Engineering Institute Ichalkaranji, Maharashtra, India

Dr. Priyatamkumar, Professor and Head, Department of ECE, KLE Technological University, Hubballi, Karnataka, India

Abstract

A vast investigation and research on the LTE+ wireless networks has been carried out with the purpose of addressing a number of important technological criteria and challenges involved in the system. Fading coefficients with fast time variables are difficult to measure, monitor, and forecast. A multiuser system is a network with increased bandwidth and lower energy consumption. While retaining CSI precision, the advantages of such systems can be enjoyed. Degradation during channel estimation and channel ageing cause CSI inaccuracies in multiuser systems. This paper examines the impact of usage of Turbo code applied on DDCE+IPVSS estimated and adaptive equalized data. It also focuses on studying the effect of changing multiuser diversity and data coding type on system throughput and BER when turbo decoding algorithms are used. With the 16 QAM modulated turbo coded data, BER settles down to the value very near to 10-7 in high Eb/N0 range. BER gets reduced with turbo coding applied on proposed DDCE+IPVSS estimated data as compared to its counterpart. Finally, it is stated that when it comes to performance comparison of transmit diversity and receive diversity with turbo coded data, receive diversity shows a 62 percent improvement w.r.t. its counter parts.

Keywords

Transmit diversity, receive diversity, turbo decoding

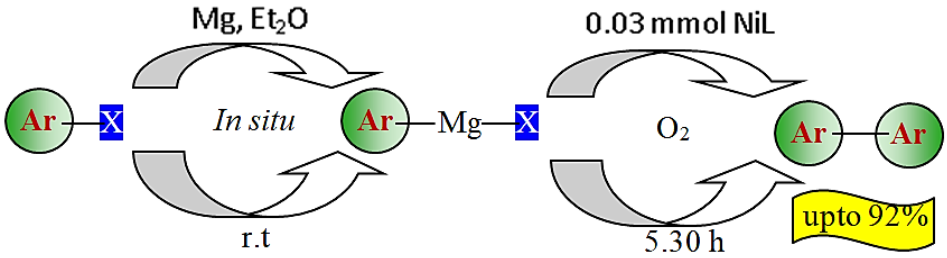
Nickel Catalyzed One Pot Synthesis of Biaryls under Air at Room Temperature

Aparna P. I. Bhat, Department of Chemistry, Mangalore Institute of Technology & Engineering Moodabidri, India

Badekai Ramachandra Bhat, Department of Chemistry, Mangalore Institute of Technology & Engineering Moodabidri, India

Abstract

Present catalytic methodology of the homocoupling of *in situ* generated Grignard reagents using nickel(II) schiff base complex renders the system more simpler and economical. Molecular oxygen being used as an oxidant, tends the reaction green.



Keywords

Homocoupling, Schiff base, molecular oxygen

Donation Tracking System using Blockchain Technology

Asha R Totagi, Computer Science and Engineering, Alva's Institute of Engineering and Technology, Tenkamijar, Karnataka India

Dr. Manjunath Kotari, Computer Science and Engineering, Alva's Institute of Engineering and Technology, Tenkamijar, Karnataka India

Abstract

Maintaining transparency in collections of various funds and proper utilization of funds is one of the fundamental duties of any social organization/NGO. Most of the charity donations, donors were unaware of utilization of their donated funds. The donation tracking system is developed to yield more transparency on donors' funds and system builds more trust on social organizations. In this system, the social organization should initially request the trusted third party to approve the purpose of fund collection. Upon the approval of request, the social organization proceeds to send the request to donors about asking donation. The donors can view the approved donation request and can donate funds, further will get a token number to view the utilization of their donated funds. The system was implemented by using Blockchain technology. The blockchain technology delivering on its promise with seamless cross border payments now a days.

A Compendium of Studies Adopting Extended Models of Theory of Planned Behaviour and Theory of Reasoned Action to Predict Green Consumer Behaviour

Balween Kaur, Research Scholar, Lovely Professional University, Phagwara (Punjab) India

Veer P.Gangwar, Mittal School of Business Lovely Professional University, Phagwara (Punjab) India

Abstract

Purpose – The present review paper endeavours to enlist the additional constructs employed by researchers in recent literature as extensions to Theory of Planned Behaviour and Theory of Reasoned Action and corroborate their association with green consumer behaviour. The review paper also aims to detail more additional constructs and factors as suggested by past researchers to be adopted by future scholars as extensions of the stated theories.

Design/methodology/approach – The authors have conducted an extensive review of literature by examining the studies of last five years (2016 to 2020) related to behaviour of consumers towards pro-environmental products and services which have applied extended models of TPB and TRA.

Findings- The cross cultural review of studies corroborates a detailed list of constructs which have been adopted by previous authors as additional constructs to the theoretical framework. These additional constructs are: environmental concern, knowledge and consciousness, altruism, health consciousness, perceived consumer values, personality, lifestyle, perceived consumer effectiveness, socio-demographic factors, social and reference group influence. The present study also enlists the additional constructs as suggested in recent researches which can be employed in further studies as extension to theoretical underpinnings.

Research limitations/implications- The major limitation of present study is that it is a review of previous studies and does not have any support of empirical evidences. The findings are based on secondary sources.

Practical implications – An obliging role is being played by the present review article in elucidating the importance and relevance of Theory of Planned Behaviour and Theory of Reasoned Action in determining the green behaviour of global consumers. The study also provides guidance to future researchers to adopt other uninvestigated variables in addition to the theoretical framework in their future research studies.

Originality/value – The review article is original in nature as it is first to develop a detailed account of additional constructs which have been employed by researchers in recent five years as an extension to TPB and TRA models.

Keywords

Green products, green consumer behaviour, theory of planned behaviour, theory of reasoned action

Effect of Thermal Modulation on the Onset of Convection in a Horizontal Fluid Saturated Anisotropic Porous Layer: Darcy Model

Dupadahalli Basavaraja, Assistant Professor, Department of Mathematics, Government First Grade College, Harihara, Davangere, Karnataka, India

Abstract

An examination is done to study theoretically the stability of a fluid saturated anisotropic permeable medium, heated from below, for the case of a time-periodic wall temperature field. A technique based on the small amplitude of the modulation is used to compute the critical values of the Rayleigh number and wave number. The move in the critical Rayleigh number is determined as a function of the frequency of the modulation, the Prandtl number, the porous parameter, and the anisotropy parameter. We found that it is feasible to progress or defer the beginning of convection by proper tuning of the frequency of modulation of the wall temperature. It is likewise tracked down that the low-frequency thermal modulation and the small anisotropy parameter have a significant impact on the stability of the system.

Keywords

Convection, modulation, porous medium, anisotropic

IoT Based Health Monitoring System for General and Coma Patients

Bharath Raj, Electronics and Communication Engineering, VTU, Davanagere, India

Bhavana G N, Electronics and Communication Engineering, VTU, Davanagere, India

Dhamini A B, Electronics and Communication Engineering, VTU, Davanagere, India

Mouna K, Electronics and Communication Engineering, VTU, Davanagere, India

Abstract

IoT places a vital role in patient health monitoring system. The device is specially designed for actual time monitoring of the health parameters of the patient. Because patients need utmost care and 24*7 observations. If there is any sudden changes occur in the normal range of body parameters like body temperature falls or rise, heart rate increases or decreases, where these are not stable conditions for better health, and finger movement of a coma patients and eye blink movement can be detected, then it has facility to automatically alert the medical person. This proposed system consists of numerous smart sensors like Temperature, Heartbeat, Eyeblink and Flex sensors for fetching the patient's body temperature, heart rate, eye movement, and body movement of the patient. This system use ESP32 board as a microcontroller and Cloud computing concept. Here the Flex sensor used to display the finger movement and Eye-blink sensor used to detect the eye movement of the patient. The patient's vital parameters are transmitted to smart telephones and systems of the legal individual by the use of cloud server. These records may be saved and analyzed for future evaluation and selection making.

Evaluation of Industrial By-Products in the Bituminous Concrete Mixtures

Chavan Ravishankar, Department of Civil Engineering, RV College of Engineering, VTU, Bangalore, India

M.S.Nagakumar, Department of Civil Engineering, RV College of Engineering, VTU, Bangalore, India

Abstract

Foundry sand from the mould casting industry and copper slag from the copper extracting industry are both industrial byproducts generated in huge amounts in India. The physical characteristics of foundry sand and copper slag materials fulfill the standards given out in Ministry of Road Transport and Highways specifications for mineral fillers. This study investigates the potential use of these two industrial byproducts, as well as cement and traditional quarry stone dust from Granite stone, as mineral fillers in bituminous pavement construction. The Marshall methodology was used to prepare bituminous concrete grading-2 mixes with four different percents of the three kinds of mineral fillers. Water resistivity, rutting, and repetitive load tests are used to investigate the performance of bituminous concrete grading-2 (BC-2) mixtures. EDXA and SEM were also used to examine the elements content (chemical composition) and texture of copper slag (CSMF) and foundry sand (FSMF). According to the findings, foundry sand and copper slag have a high potential for usage as mineral fillers in bituminous concrete grading-2 mixtures. Copper slag is the most potential mineral filler of the two industrial by-products, and it will also be the most cost-effective, as mixtures containing Copper slag have the lowest optimal binder percentage.

Keywords

Bituminous concrete; Mineral Filler; Morphology; Fatigue; Rutting

Characteristics of Bituminous Concrete Mixtures Utilizing Industrial By-Products

Chavan Ravishankar, Department of Civil Engineering, RV College of Engineering, Visvesvaraya Technological University, Bangalore, India

M.S.Nagakumar, Department of Civil Engineering, RV College of Engineering, Visvesvaraya Technological University, Bangalore, India

Abstract

Research work regarding feasibility and utilization of IBP in flexible pavements is limited. Therefore several aspects necessitate studying this significance distinctly before a higher percentage of IBP to be utilized in bituminous concrete mixtures with a high level of confidence. Effects of IBP on the mechanistic & volumetric parameters such as mixture design parameters, static tensile properties, rutting behavior and resistance to moisture of bituminous concrete mixtures using copper slag and foundry sand as fine aggregate and mineral fillers need to be studied and analyzed in depth. Hence in this paper, the quantification of different elements (chemical composition) and morphology of copper slag and foundry sand are analyzed through EDXA and SEM respectively. The performance of bituminous concrete grading-2 mixtures using copper slag as mineral filler and fine aggregate showed improvement in Stability value, ITS, moisture resistivity & resistance to rutting compared to conventional bituminous mixtures and mixtures with foundry sand.

Keywords

Industrial by-products (IBP), Indirect Tensile Strength, Moisture resistivity, Rutting

A Sustainable Pre-Effluent Treatment of Tannery Wastewater by Electro-Coagulation

J. Christon Ringle Taube, Department of Chemical Engineering, Harcourt Butler Technical University (HBTU), Kanpur, UP, India

Dr. Rajesh Kattiyar, Department of Chemical Engineering, Harcourt Butler Technical University (HBTU), Kanpur, UP, India

Dr. Sundarapandiyan, Regional Centre for Extension and Development, CSIR-CLRI, Kanpur, UP, India

Abstract

Leather manufacturing is one of the industrial activities, which is associated with significant environmental impacts. From the leather manufacturing, process, wastes in all the three forms such as wastewater, solid waste and gaseous emissions are generated. In conventional treatment of tannery wastewater, primary and secondary treatments were the two processes, which had been followed initially. Primary treatment aims at removal of suspended solids. Though, chemical coagulation is one of the widespread technique to remove the suspended solids. It is consuming large amount of chemicals, generation of secondary pollutants, time consuming, need large operational area and not effective. Electro-coagulation currently offers promising approaches for the prevention of pollution problems from industrial effluents. This present works aims to study the effectiveness of electro-coagulation as an alternative approach to remove suspended solids and chromium from the tannery waste water. Electro-coagulation was carried out in continuous reactor equipped with aluminium electrodes. The operational parameters such as flow, settling time, current density is also optimized. During the electro-coagulation, it had been observed that the removal of suspended solids and chromium were removed by 95.46 % and 89.20 % respectively. The obtained results indicate that EC reactor is the applicable option to treat tannery industry wastewater in terms of removal efficiency and operating cost.

Keywords

Tannery wastewater, Pollution reduction, Suspended solids, Chromium, electro-coagulation

Number Theory

Deepak Tiwari, Research Scholar, Dept. of Mathematics, Himalayan University, Arunachal Pradesh, India

Dr.Jaya Kushwah, Assistant Professor, Dept. of Mathematics, Vikram University, Ujjain, M.P. India

Abstract

Maths is a universal language which allows us to think analytically. Mathematics is essentially the discipline that addresses the logic of form, volume, and organisation. And the number theory is a field of basic mathematics, which is primarily concerned with the study of binary, integer or arithmetic or arithmetic methods for older purposes. Helps to find and to prove that there are true fascinating partnerships between different numbers. The theory of number is often quantitative and sometimes analytical. The experimental aspect leads to questions and offers ways to react. The analytical component attempts to develop an argument that answers the questions decisively. The science of numbers has long intrigued amateurs and experts. While Solutions of the question to the theorem and proofs, many issues and numerical theorems by people can be understood in comparison to other branch of mathematics. The historical and unsolved issues of number theory, positive numerical numbers and natural numbers are presented in this paper.

Keywords

Mathematics; Number Theory; Natural Numbers; Positive Numbers

Topological Indices of Carbon nanobud through M polynomial

Deepasree S Kumar, Department of Mathematics Acharya Institute of Technology, Bangalore, India

Abstract

Topological indices are the numerical values that correlate the molecular structure of chemical compounds to its different physical properties and synthetic reactivity. A major class of topological indices is degree based topological indices, have prominent role in Mathematical Chemistry especially in quantitative structure property relationship (QSPR) and quantitative structure activity relationship (QSAR) studies. Structure of Carbon Nano buds is a fusion of fullerene and Nanotubes with carbon-carbon covalent bond connections between outer sidewalls of the nanotube and the fullerene. Consequently, these structures possess the properties of both fullerene and nanotubes. A fullerene, C60 attached on the surface zigzag Single walled Carbon Nano tube (SWNT) by a [2 x 2] cyclo-addition is considered in this article and some degree based topological indices are computed for this structure. In this paper we compute some topological indices like Zagreb Indices, SDD index, ABC index etc.

Keywords

Topological Indices, Zagreb index, SDD index, Carbon Nanobuds

A Secured Text Message Mapping Technique for Encoding and Decoding on Elliptic Curve Cryptography

Ms. Deepika Bhatia, Jagannath University, Jaipur, India

Dr. Meenu Dave, Jagannath University, Jaipur, India

Abstract

Security of user's confidential data is a very important aspect over public cloud environment. Intruders can intercept user's data for their business benefits. So, this information must be secured from such kind of hacking. Hacking has adverse effects over real time applications such as ATM card transactions, medical information, E-voting data and E-commerce applications etc. There are various symmetric and asymmetric cryptography techniques. Elliptic Curve Cryptography (ECC) is a public key asymmetric encryption technique which is based on the concept of public and private keys for communication between different parties. This paper describes a technique that uses Koblitz's encoding and decoding of text data for security purpose. ECC technique is very much secured and uses Koblitz curve mapping technique for data security. This research work provides the bases for ECC encryption and decryption in future implementations.

Keywords

Encryption, Security, Data, Cryptography, Privacy, Encoding, Decoding, Cryptananlysis, Hacking etc

Environmental Impacts of Automotive Coating Industry and Their Sustainable Solutions: An Overview

Dhiraj Wadhwa, Department of Chemical Engineering, Harcourt Butler Technological University, Kanpur, India

Jitendra Kumar, Department of Chemical Engineering, Harcourt Butler Technological University, Kanpur, India

Rajesh Katiyar, Department of Chemical Engineering, Harcourt Butler Technological University, Kanpur, India

Deepak Yadav, Department of Chemical Engineering, Harcourt Butler Technological University, Kanpur, India

Abstract

Automotive industry is categorized as Orange industry by Ministry of Environment, Forest and Climate change (MoEFCC). The average pollution index score is 41 to 59 in this sector, second worse to Red Category having score of 60 and above. In Automotive Industry, Painting operations is the chief contributor for the generation of hazardous waste in the form of volatile organic compounds (VOCs). Use of Painting Robots in Automotive Industry is gradually flattering popular for Top Coat application. Poor paint efficiency will leads to generation of waste collected in form of Paint Sludge. The article covers Painting Robots Transfer efficiency testing mechanism along with various factors impacting their performance, study of the fluctuation of various parameters within specified operating range that impact the overall process performance. The Transfer Efficiency is critical feature of Painting Robots Bell which is largely dependent on Robot movement, Paint Delivery by FGP (Flexible Gear Pump), Paint properties like viscosity, electrical resistance and other Bell Control functions viz. Turbine speed, Electrostatic Voltage & Shaping air, Bell tip angle and distance from the object. This review analyzes the use of various statistical tools and design of experiments (DOE) will help in identification and selection of optimum process parameters which favors the least generation of the sludge.

Keywords

Painting Robots, paint efficiency, transfer efficiency, Paint Sludge, optimum process parameters

Analysis of Skin-Stringer Attachment and Selection of Stringer Cross Sections

Ganesh Pateel D G, Research Scholar, Mechanical Engineering Department, BMS Institute of Technology and Management, Bangalore, India

Dr. Suresh N, Retd, Professor, Mechanical Engineering Department, BMS Institute of Technology and Management, Bangalore, India

Abstract

In the present study, various cross sections of stringers of an aircraft wing were analyzed. Stringers stabilize the skin against buckling and carry bending and axial stresses of the wing. Stringer cross sections play an important role in achieving an efficient design and weight optimization of an aircraft wing. The study starts with take-off weight estimation of an aircraft based on the flight mission profile and subsequently suitable airfoil has been selected. The primary loading of the wing; Lift, drag and pitching moments were calculated. The wing structures response under wing primary loading on the different cross sections of the stringers was studied. The selection of stringer sections is driven by static strength and stability of the skin-stringer attachment. Skin-stringer net strength analysis was performed on the bottom cover and buckling checks were performed on the top cover of the wing. I-section and J-section stringers provide better attachment, higher strength and stability over other shapes of the same cross sectional area. The analysis of skin and stringers was carried-out using finite element method and software tools used were Hypermesh as a pre and post processor and Nastran as a solver.

Keywords

Aircraft wing, weight estimation, stringers, skin panels, buckling, instability, Hypermesh, Nastran

Experimental and Numerical Study on Heat Transfer Characteristics of Al_2O_3 and Base Fluid Water in the Heat Exchanger

Gururaj Lalagi, Department of Mechanical Engineering, M S Ramaiah Institute of Technology Bengaluru, Karnataka, India

P B Nagaraj, Department of Mechanical Engineering, M S Ramaiah Institute of Technology Bengaluru, Karnataka, India

Mallikarjuna Veerabhadrappa Bidari, Department of Mechanical Engineering, GM Institute of Technology, Davangere, India

Abstract

In recent years, heat exchangers are not limited to applications like automobiles, shell and tube heat exchangers, and the chemical processing industry, etc. apart from that, the heat exchanger has been used in computers, VLSI, printed circuit board, and Electric vehicles. The main aim of the heat exchangers is to reduce the size and cost with a higher performance rate. A smaller size of heat exchangers has used in electric vehicle battery cooling systems. Nanofluids are future fluids in the future compact heat exchanger to enhance heat transfer performance. The present study investigated the heat transfer characteristics of nanofluid and base water for the conventional heat exchanger both numerically and experimentally. The base fluid water of 5 liters and 10 % of Al2O3 nanoparticles are used to prepare nanofluid by the two-step method. The experiments have been conducted for a mass flow rate of 4, 6, and 8 liters per minute at 40^0 C, 50^0 C, and 60^0 C temperature, and CFD work has been carried out for the nanofluid and base fluid water at the same boundary conditions. The effect of thermal conductivity of Al2O3 nanoparticles is dominant more in increasing the heat transfer than Reynolds number.

Keywords

Heat Exchanger, Nanofluid, CFD, Reynolds number

A New Topology of Multilevel Inverter Fed From Photovoltaic System

Hemalatha Javvaji, PVP Siddhartha Institute of Technology, Vijayawada, Andhra Pradesh, India

Basavaraja Banakara, University BDT College of Engineering, Davanagere, Karnataka, India

Abstract

Inverter plays very important role in many areas of Renewable Sources of Energy (RSE). One of the major developments in using RSE is solar power. This article introduces the power converter topology and consists of a power interface and various levels of MIT (Multilevel Inverter Topology). A modified version of the Cascade H-Bridge Multilevel Inverter (CH-MLI) has been introduced to improve power quality, power loss and topology complexity and cost. The input voltage is set to the rated voltage by the power converter and transferred to the DC bus. The MLT converts the DC bus voltage to AC and is supplied to an AC load. To reduce harmonics, advanced phased array pulse width modulation technology is applied to the drive of the MIT. LC filters are also designed to reduce harmonics. The entire system is simulated with MTLAB / SIMULINK. The proposed inverter is compared to CH-MLI in terms of DC sources, number of switches, diodes, driver circuit and dv/dt stress.

Keywords

Multilevel Inverter Topology (MIT), modulation Techniques, total harmonic distortion (THD), Maximum Power Point Tracking (MPPT)

Non-Linear Analysis of Prestressed Concrete Slabs

Jomol John, Civil Engineering (Structural Engineering & Construction Management), APJ Abdul Kalam Technological University (KTU) St. Joseph's College of Engineering & Technology, Palai, Kerala, India

Neethu Joseph, Civil Engineering (Structural Engineering & Construction Management), APJ Abdul Kalam Technological University (KTU) St. Joseph's College of Engineering & Technology, Palai, Kerala, India

Abstract

This paper studies the non-linear analysis of Prestressed concrete slabs. A Prestressed concrete structure has many advantages, such as delaying cracks, saving materials, reducing deflection, and has been widely or increasingly used in long-span structures, shells, and nuclear containment vessels. This study is modelled by finite element model using ANSYs software. This study includes the time dependent effects due to creep, shrinkage, temperature history and load history. Parametric studies are done to determine the behaviour of Prestressed concrete slabs.

Keywords

Prestressed Concrete Slabs, Finite Element Analysis

A Comparison of Graphical Authentication Mechanisms Impervious to Shoulder Surfing Attacks

Kalpana B N, Department of CSE, Dayananda Sagar University, Bangalore, India

Dr. R. Saravanakumar, Department of CSE, Dayananda Sagar University, Bangalore, India

Abstract

In the present era, there is a rapid increase in Internet users. Every application that we use requires authentication. The biggest threat in web security is the choice of weak text passwords. People tend to choose weak passwords for easy remembrance, and it paves the way for the attacker to gain access to the system. Though two-factor authentication mechanisms emerged to tackle the problem, security is still a concern. Graphical passwords are a substitute for text-based passwords in which click-points in an image act as a password to provide authentication. Various approaches for Graphical authentication are present to circumvent security issues, but they suffer from shoulder surfing attacks. In a Shoulder surfing attack, the attacker tries to obtain sensitive information by simply peeping around the victim's shoulder or installing web cameras. This paper mainly analyses various existing graphical password authentication techniques resistant to shoulder surfing attacks.

Keywords

Authentication, Shoulder surfing attack, Graphical passwords

Design and Analysis of Treadmill Bicycle

MD.Asif, Associate Professor, Department of EEE, Vardhaman College of engineering, Hyderabad, India

Dadigala Dileep Kumar, Department of EEE, Vardhaman College of engineering, Hyderabad, India

Muthyala Kamalnath, Department of EEE, Vardhaman College of engineering, Hyderabad, India

Katha Siva Dheeraj Reddy, Department of EEE, Vardhaman College of engineering, Hyderabad, India

Abstract

Thread mill is equipment which most of us use for fitness purpose in which we walk on a belt, connected by rollers driven with the help of a motor. And coming to bicycle, it is a two wheeler vehicle which we use for travelling and also for exercise. But most of the people can't ride on bicycle for too long because of body pains. So in order to get fitness and to travel we are combining bicycle with treadmill in which a treadmill is fixed to two wheels with certain gear and chain system where the bicycle is moved forward when the person walks on the treadmill. So now most of us can walk only for some time but travel long distance than normal with the same effort.

Keywords

Treadmill; travel; Exercise; Gears

Impact of Employee Engagement on Job Performance and Organizational Commitment

Mrs. Kavyashree M B, Assistant Professor & Research Scholar, JSS Centre for Management Studies, JSS Science and Technology University, Mysuru, India

Dr. Sridevi Kulenur, Associate Professor, JSS Centre for Management Studies, JSS Science and Technology University, Mysuru, India

Dr. Nagesh P, Professor & Dean of Management Studies, JSS Centre for Management Studies, JSS Science and Technology University, Mysuru, India

Dr. Pradeep M, Assistant Professor, JSS Centre for Management Studies, JSS Science and Technology University, Mysuru, India

Abstract

Employee Engagement has become a popular managerial viewpoint in the recent years. Organizations are relying on various employee engagement strategies for the purpose of getting competitive advantage and increasing the employee performance. Even though there are a lot of emerging works on the construct employee engagement there lies a scope for further studies on various avenues of employee engagement and its contribution to organizational success. The present study is exploratory in nature that aims to identify the drivers of employee engagement and also the impact of employee engagement on job performance and organizational commitment of employees. A survey questionnaire was formulated and validated for the present study. Regression analysis was used as tool to predict, explain and analyze the proposed relationships. The study respondents were employees working in various IT Sectors in Mysore and Bangalore region. The responses were collected from 200 employees working across various IT companies. Pearson Correlation and Regression were used to estimate the relationships. Leadership and Organizational Justice were found to be most significant drivers of employee engagement with regression analysis. Employee Engagement was found to have significant impact on job performance and lesser impact on organizational commitment.

Keywords

Employee Engagement, Job Performance, Organizational Commitment

Machine Vision Based Quality Control Stretagies for Smart Manufacturing

C B Kolanur, Department of Automation & Robotics, KLE Technological University, Hubballi, India

Dr. Jyoti Bali, Department of Automation & Robotics, KLE Technological University, Hubballi, India

Arunkumar C Giriyapur, Department of Automation & Robotics, KLE Technological University, Hubballi, India

Abstract

Quality control and inspection have proven to be the key driver for improved productivity and enhanced customer satisfaction. The strategies employed for quality control and inspection have evolved over the years as intelligent and sophisticated mechanisms. Machine vision-based quality control techniques have taken a prominent place in a smart manufacturing system for monitoring, inspection, design, and manufacturing to cater to the requirements of industry4.0 standards. Under the proposed work, a systematic review of issues, needs, principles, challenges, and recent trends in the area of quality control and inspection methods is presented. The scope, requirements, and issues in building intelligent machine vision-based quality control techniques for the smart manufacturing facility are discussed.

Keywords

Industry 4.0, Smart Manufacturing, Quality Control, Intelligence in Quality Control, Machine Learning, and Machine Vision

An Efficient Approach to Detect Mature Earnings Prediction Using Deep Learning

Krishnaiah Boyana, Assistant Professor, Information Technology, Bapatla Engineering College, Bapatla, A.P, India

Vasana Achyuth, Assistant Professor, Information Technology, Bapatla Engineering College, Bapatla, A.P, India

Abstract

The obvious clumsiness of bounty and wage is a massive anxiety exclusively in united States. The possibility of decreasing destitution is one generous encouragement to lessen the world's swamping level of financial imbalance. The norm of comprehensive reasonableness guarantees sensible innovative growth and improve the monetary safety of a nation. Administrations in various nations have remained creation an honest strength to resolve this concern and stretch a model solution. This investigation shows the utilization of ML and Deep Learning procedures in open-handed response to the wage consistency issue. The UCI (university of california Irvine) Adult Dataset has been applied for the motive. Categorization has remained complete to foresee whether a personality's annual pay in US reductions in the pay class of whichever extra notable than “50K” Bucks or fewer comparable to “50K” Dollar’s organization based on a detailed preparation of possessions. By using the ML algorithms, we got Receiver Operating Characteristics Curve score of 0.81 and 0.87 by trial-and-error strategy. When we proceed onward to profound deep learning methods, we got 0.90 Receiver Operating Characteristics Curve score.

Keywords

UCI, Label Encoder, Normalization, K-NN, Neural networks, ROC (Receiver Operating Characteristics Curve), F -score

Study on Leafy Vegetables' Growth Using Auxin Produced By Rhizobium Phaseoli under Salt Stress Conditions

Ksheera J J, Biotechnology, Bapuji Institue of Engineering and Technology, Karnataka, India

Shubhanka A C, Biotechnology, Bapuji Institue of Engineering and Technology, Karnataka, India

Meghana V S, Biotechnology, Bapuji Institue of Engineering and Technology, Karnataka, India

Pooja B S, Biotechnology, Bapuji Institue of Engineering and Technology, Karnataka, India

Abstract

Salinity is a major environmental stress that limits crop production worldwide. It is well understood that environmental adaptations, physiological and biochemical traits adjust salinity tolerance in plants. But imparting the knowledge gained towards crop improvement remain arduous. Utilizing the potential of beneficial microorganisms present in the rhizosphere is an alternative strategy to improve crop production under optimal or stress conditions.

The current study aims at escalating the ability of plant growth-promoting rhizobacteria – a (PGPR) in improving leafy vegetables growth under salt stress condition. Subject to four levels of salt stress (0, 40, 80,120m NaCl) with three replications in research greenhouse. Under leaves fully developed, leaf samples were collected and traits were measured. Later IAA content is estimated and plant height is measured, stem freshness and dry weight is also examined. the significant decrease in Na and subsequently increased K concentration in leaves are compare with untreated plants. The results indicate that PGPR has improved growth under control as well as salt stress conditions. Thus IAA extracted from Rhizobium phaseoli significantly contribute to solve the plant production problems caused by high salinity in the soil and scarcity.

Finite Element Modeling of Cantilever Beam Bounded with Piezoelectric Patch Subjected to Vibration for Energy Harvesting

Laxmi.B.Wali, Department of Mechanical Engineering, Assistant Professor, RNSIT, VTU, Bengaluru, India

Dr.Chandrashekara C V, Department of Mechanical Engineering, Professor, Design Lead, PES University, Bengaluru, India

Abstract

This paper presents the Finite element modeling of the cantilever beam bounded with piezoelectric patch to generate voltage in Matlab , The equations of motion is represented using Hamilton's principle. Frequency convergence study with varying number of elements is carried to known the number of elements required to analyze the resonance frequencies to generate voltage. Energy harvesting is the process by which energy is derived from external sources; vibration is one such energy source which can be captured and stored. Piezoelectric materials are considered as a media to harvest vibration energy .Piezoelectric materials have received tremendous interest in energy harvesting technology due to its unique ability to capitalize the ambient vibrations to generate electric potential.

Keywords

FEM, Vibration, Energy Harvesting, Piezoelectric

Reduction in Environmental Load through Automotive Paintshop Process Optimization

Mahesh Pratap Singh, Chemical Engineering Department, HBTU, Kanpur, Uttar Pradesh, India

Ashwini Sood, Chemical Engineering Department, HBTU, Kanpur, Uttar Pradesh, India

Deepak Yadav, Chemical Engineering Department, HBTU, Kanpur, Uttar Pradesh, India

Abstract

Paint sludge is a challenging environmental problem, which leads to soil/ water pollution and in turn causes several health concerns. The primary source of paint sludge at an automotive manufacturing plant is automotive painting. The paint shop generates the utmost environmental load among all manufacturing stages of an automobile plant. Mostly phosphate sludge is generated as a bi-product during tricationic phosphating process. Phosphating is very important stage of pretreatment in an automotive industry as it becomes as intermediate stage between bare metal and electrodeposition coating so phosphating is a conversion coating. Phosphating process gives very good corrosion protection under paint and excellent adhesion of coating. Phosphate sludge can be controlled by less coating weight phosphating, total acid in lower range , low bath temperature , smooth and auto dosing of phosphate chemicals etc. Firstly we have to collect data for phosphate sludge generation in gms per vehicle then Using Individual moving range charts with controlled process stability and process capabilities, phosphate sludge generation can be controlled which is economical for automotive industry as well good for society and environment.

Keywords

Phosphate sludge, Pretreatment, Tricationic complex, Total acid , Coating weight , Process stability , Process capability

Design and Development of Device Used for Detection of Cracks on Railway Tracks

Mayank Mishra, Department of Mechanical Engineering, MIT Academy of engineering, Alandi, Pune, India

Rushikesh Bhawar, Department of Mechanical Engineering, MIT Academy of engineering, Alandi, Pune, India

Rehan Yahoo, Department of Mechanical Engineering, MIT Academy of engineering, Alandi, Pune, India

Bhagyashri Kamble, Department of Mechanical Engineering, MIT Academy of engineering, Alandi, Pune, India

Yogesh Maske, Assistant Professor, Department of Mechanical Engineering, MIT Academy of engineering, Alandi, Pune, India

Abstract

The Indian railway is one of the largest railway networks in the world. Despite being such a large network, the safety parameters of Indian railways are substandard. The safety standards and outdated technology causes numerous train accidents and puts human lives in danger. These lives can be saved by avoiding and eliminating the main cause of such accidents i.e. detecting cracks in railway tracks and detecting obstacles over the track. The objective of this paper is to design and develop a system using sensors and automation to detect and warn the station master about possible danger. This paper briefs the sensors like GPS module, GSM modem, IR sensor, PIR sensor used for application of communication purpose, crack detection, and finding of human beings present in the railway track. Here, the GPS module and GSM modem help us to find and send railway geometric parameters of crack detection to the nearest railway station. This paper completes the study of a reliable crack detection system which can also be used in physical conditions.

Keywords

GPS module, GSM module, IR sensor,Railway track crack detection, Ultrasonic distance meter

Performance Analysis of Geotechnical Properties of Expansive Soil Stabilized by Glass Powder and Granite Dust

Mayank Soni, M E Scholar, Department of Civil Engineering, JEC, Jabalpur, India

Prof. S. S. Parte, Assistant Professor, Department of Civil Engineering, JEC, Jabalpur, India

Abstract

In our country large area covered with highly plastic soil and expansive black cotton soil which is unsuitable for construction purpose. The wide spread of the black cotton soil create problems to the construction activities. The Black cotton soils are very hard when dry, but lose its strength when in wet condition. Black cotton soil exhibit high swelling and shrinkage when exposed changes in moisture content and have been found to be most troublesome from engineering considerations. In the first set of experimental work the BC soil is mixed with Glass powder in different proportion i.e. 2%,4%,6%,8% and 10% and the optimum quantity of Glass powder is determined. The optimum quantity of Glass powder is found as 8% of the dry weight of clay. In the second set of experimental work the BC soil is stabilized by Glass powder and Granite dust in combination. Granite dust used 10-20 % of the dry weight of clay with and Glass powder additives.The test results revealed that there is significant improvement in the compaction characteristics and the large quantity of Granite dust causing disposal problem will also be utilized therefore this will be cost effective also.

Keywords

Optimum moisture content, maximum dry density, compaction, stabilized soil, black cotton soil, plastic soil

Digital Disruption of Fin-Tech in the Financial World

Dr. A. Michael John, S.J, Director, Xavier Institute of Business Administration, St. Xavier's college (Autonomous), Palayamkottai, India

A. Pugazh Naavarasi, Research Scholar, Xavier Institute of Business Administration, St. Xavier's college (Autonomous), Palayamkottai, India

Abstract

Fin-Tech, the nebulous term is a part of the financial world is the one that evolved very quickly. Fin-Tech companies integrate technologies into traditional financial sectors to make them safer, faster and more efficient. Fin-Tech is innovating in almost every area of finance; from payments and loans to credit scoring and stock trading.

It enhances or automates financial services and processes to any business that adopts technology. Fin-Tech is a broad and rapidly growing industry which serves both consumers and businesses. From mobile banking and insurance to cryptocurrency and investment apps, fin-Tech has broad applications.

Though the industry conjures up images of startups and industry-changing technology, fin-Tech is progressively sculpting the financial sector. This particular paper analyzes how the fin-Tech is both disrupting and enhancing Indian Fin-Tech Industry and clearly gives an idea to understand the significance of digital India through the recent trends in India.

Keywords

Fin-Tech, Finance, Artificial intelligence, block-chain, disruptive technology

Demonstration of Phytoremediation Potential to Mitigate Water Pollution in Haldia, West Bengal

Moumita Maity, Department of Bio-Sciences, Seacom Skills University, Birbhum, West Bengal, India

Rajarshi Banerjee, Department of Bio-Sciences, Seacom Skills University, Birbhum, West Bengal, India

Abstract

A green technology was approached to assess the potential to reduce water pollution in Haldia, an industrial port city of West Bengal. More than 500 families (below poverty line) live at the periphery of canal water where people are directly or indirectly dependent on this water body was found polluted in our previous work. Phytoremediation technology being a very low cost and minimum energy consuming technology was explored for its potential. Two types of available free- floating plants were selected i.e. water hyacinth (Eichhornia crassipes) and water lettuce (Pistia stratiotes) in this process. Selected set of physico-chemical parameters of the polluted water was analysed at the initial stage as well as at final stage of water treatment. Both species showed a noticeable reduction of parameters which lays the potential to scale up pilot setups. Experiment revealed a successful cleanup technique where water hyacinth was found more effective than water lettuce. The whole process includes phytodegradation, phytoextraction and phytovolatization. Few morphological changes of plants indicated metal accumulation and removal efficiency. This lays a strong potential to us this technology to reduce water pollution.

Indian Automotive Sector: Investment in R&D, Technology Adoption and Transfer

Mudita Dixit, Department of Mechanical Engineering, Thadomal Shahani Engineering College, Bandra (W) Mumbai, Maharastra, India

Dr. G.T.Thampi, Department of Mechanical Engineering, Thadomal Shahani Engineering College, Bandra (W) Mumbai, Maharastra, India

Abstract

The Indian automotive sector is one of the biggest in the world. India is the world's largest three-wheeler and tractor manufacturer and also second largest two-wheeler manufacturer. It is the sixth-largest producer of automobiles in the world in terms of worth and volume. In spite of this, India has a steady trade deficit of US$2 billion in auto components every year. To understand the cause of this deficit, this paper focusses on a few important factors which may affect efficient manufacturing in automotive industry. This paper addresses the specific aspects of technology adoption & transfer-budget for R&D, investment in buying new technology and skilling man power in different sectors (OEM, large, medium and small enterprises) of the automotive industry. An extensive survey was conducted across 272 automotive enterprises located in the western region of India in 2018-2019 for this purpose. One way ANOVA was carried out for the analysis using SPSS. Results showed that OEMs have higher allocation for R&D in their total budget and getting new technology as compared to the small, medium and large enterprises. On the other hand, a big fraction of small enterprises does not allocate budget for R&D and buying new technology at all. Small enterprises have the lowest investment in employee training; whereas large enterprises and OEMs invest heavily in it.

The results of this research would provide insight into the different segments of the automotive industry regarding various issues related to technology adoption. It is hoped that the results of this research will empower the decision-makers in taking well informed measures for improvement of manufacturing, that could enable India to become a Global Manufacturing Hub.

Pilot-Scale Treatment and Reuse of Leather Industry Wastewater by Electrochemical Techniques

Narendra Singh, Harcourt Butler Technical University (HBTU), Kanpur, UP, India

Shivangi Nigam, Harcourt Butler Technical University (HBTU), Kanpur, UP, India

Dr. Rajesh Kattiyar, Harcourt Butler Technical University (HBTU), Kanpur, UP, India

Dr. Sundarapandiyan, Regional Centre for Extension and Development, CSIR-CLRI, Kanpur, UP, India

Abstract

Conventional methods of tannery wastewater involves the generation of primary and secondary sludge, generation of secondary pollutants and mostly does not meet the environmental norms. Electro-oxidation are emerging techniques for the treatment of tannery wastewater especially degradation of recalcitrant compounds presents in the wastewater. Pilot scale reactor is equipped with titanium electrodes coated with triple oxide ($TiO_2/RuO_2/IrO_2$) for anodes and stainless-steel cathodes. Tannery composite wastewater had been treated and reuse experiments had been carried out. From the results, pollution parameters such as BOD, COD, TSS and TDS reduced by about 92.0%, 84.5%, 94.6% and 12.6 % respectively through electro-oxidation. It is understood that the organic pollutant present in wastewater is completely mineralized. Organic pollutants present in the wastewater could be mineralized by electrooxidation treatment and the characteristics of the wastewater thus processed indicated that the wastewater was suitable for reuse. Treated wastewater was reused for four times and no significant change in quality of the wastewater. The physical properties of the leathers obtained through reuse experiments were akin to those of the control leathers. Thus, effective treatment of composite wastewater can be achieved long with additional benefits of reduction in water consumption and pollution load.

Keywords

Electro-oxidation, Tannery wastewater, Recycle & Reuse, Leather industry, Pilot-Scale, Sustainability

Change in Consumer Behaviour towards Online Delivery during Covid-19 Pandemic: Shift from Offline Purchase to Online shopping

Nishtha Goel, BBA Honours, School of Business and management CHRIST (Deemed to be University), Bangalore, india

Shrinivas Kulkarni, Assistant Professor, School of Business and management CHRIST (Deemed to be University), Bangalore, India

Abstract

The covid-19 pandemic has led to a change in the way the world functions. With the rise in cases of the Covid-19 virus, government-imposed country lockdowns made consumers stay at home. Due to the scare of transmission of the virus, consumers were exposed to an alternative to visiting stores and purchase, i.e., online shopping physically. The study analyses the changes and buying patterns of the Covid-19 pandemic and country lockdown due to the same towards online shopping, online delivery and online payments. Primary data of 260 samples were collected for more than 6 months from October 2020 to March 2021 through well-structured questionnaire and analyzed whether there was an impact of the Covid-19 pandemic on consumer behavior towards online delivery through various statistical tools like correlation, regression, and ANOVA. The research shows a significant increase in online shopping and delivery frequency from once a month before the lockdown to more than four times a month during the lockdown and around three times a month after the lockdown. Since the exposure brought by the Covid-19 pandemic towards online delivery was very high, the companies should aim at understanding the challenges faced by the consumers while using online delivery and should make necessary changes to provide them with excellent service. This will ensure the consumers see how this alternative is better than traditional shopping and retain loyal customers of online delivery for the long term. Covid-19 pandemic influenced consumer behavior to change consumption and shift from traditional shopping methods to online shopping methods. The increase in frequency usage is a clear representation of it.

Keywords

Consumer behaviour, Online delivery, COVID – 19 Pandemic

Radiographic Examination using Deep- Learning

Mrs Pranita N Palsapure, Department of ECE, VTU, Karnataka, India

Manish B, Department of ECE, VTU, Karnataka, India

R Abhishek, Department of ECE, VTU, Karnataka, India

Deepak S, Department of ECE, VTU, Karnataka, India

Karthik R S, Department of ECE, VTU, Karnataka, India

Abstract

With the exponential growth of deep learning along with the extension of its branches to the field of medicine has distinctly sown the seeds for new era of technology with greater accuracy and less error giving rise to multiple opportunities that are still unraveled. The diagnosis of abnormalities without the invasion into patient's body is also one such field referred as Diagnostic Radiology. A new challenge has emerged since 2019 which shook the whole world with its impact i.e. SARS COV-2 nothing but Covid-19.The amalgamation of diagnostic radiology and technology accompanies newer advancements to steer into newer domains. The unification of deterministic and probabilistic models in order to acknowledge diagnostic abnormalities remains intact. A distinctive blended approach is adhered in this process. An attempt to examine Radiograph using various CNN (convolutionalneural network)such as Plain CNN and Nested CNN. Among the Nested CNN approach ResNet and DenseNet are employed. The complexity of CNN architecture is directly related to the number of classes present in a classifier. The deterministic model predicts the radiograph into three classes such as Normal, Covid and Viral Pneumonia. The probabilistic model predicts the radiograph into Normal, Cardiomegaly, mass and other abnormalities using Class activation maps(CAM) .The average accuracy of the model obtained during training results upto 95%.The Statistical analysis in the healthcare market estimates the profit to be tEn times greater by the year 2026 due to coalesance of Al with healthcare. The Cognition and Comprehension of medical data still remains unfixed in the rural area. An optimistic attempt is made in treading towards the new era of AI.

Implementation of Eye Aspect Ratio and Mouth Aspect Ratio for Driver Drowsiness Detection

Princy Upadhyay, Computer Science and Engineering, Dr. A.P.J. Abdul Kalam Technical University Uttar Pradesh, India

Lauren Jain, Computer Science and Engineering, Dr. A.P.J. Abdul Kalam Technical University Uttar Pradesh, India

Satya Mishra, Computer Science and Engineering, Dr. A.P.J. Abdul Kalam Technical University Uttar Pradesh, India

Shriya Goyal, Computer Science and Engineering, Dr. A.P.J. Abdul Kalam Technical University Uttar Pradesh, India

Abstract

Driver Drowsiness Detection System monitors the driver's eye and mouth using a camera, and by developing an algorithm, the system detects signs of driver's fatigue. Many tragic accidents can be avoided if drivers are warned in advance. So, this system is helpful in detecting fatigue of driver beforehand and gives warning output as an alarm. The related aspects of drowsiness are retrieved from facial gestures such as eye closure and yawning to determine the drowsiness's degree. For actualizing this system OpenCV library has been utilized, to avoid street accidents, this library relies on continuous facial image inspection to inform the driver of sleepiness and lack of attention. Images of the driver's face have been taken by a webcam. An algorithm has been proposed to determine the degree of drowsiness by estimating the duration of an eyelid blink and yawning so that the driver is warned accordingly. The strong point of this proposed system is that the location of the driver is sent to the dear ones of the driver so that in the case of any mishap, driver's dear ones would get to know on time. Moreover, the warning signal is disabled manually to ensure the driver's activation.

Emotions Monitoring System

Rajmani Sharma, Department of ECE, ABES Engineering College, Ghaziabad, Uttar Pradesh, India

Piyush Dubey, Department of ECE, ABES Engineering College, Ghaziabad, Uttar Pradesh, India

Sanjeev Kumar Saini, Department of ECE, ABES Engineering College, Ghaziabad, Uttar Pradesh, India

Abstract

The aim of this paper is to review different types of emotions monitoring systems used by individuals while performing a task. This helps monitor the personal health of a person by determining his or her stress level. This system will let people know what stresses them and further they can discover ways to alleviate it. The system monitors the emotions based on the electrical conductivity of the skin. The skin's electrical conductivity increases or decreases because of the sweat. Also the pulse rate increases and decreases accordingly. The system processes the Galvanic Skin Response (GSR) signals and Pulse Rate Sensor signals. An Arduino is connected to the GSM module to send a notification on the registered mobile number of the person about his or her status of Emotion. This device can be used for home care services, used by hospitals for close observations of patients, also people who have heart disease problems.

Keywords

Stress, Emotions, Galvanic Skin Response (GSR), Global System for Mobile Communication (GSM), Arduino (Microcontroller), Pulse Rate

IoT Based Illegal Tree Cutting Prevention and Monitoring System

Mr. Raviteja Balekai, Assistant Professor, Department of ECE, GM Institute of Technology, Davangere, India

Shwetha N Gudugur, Department of ECE, GM Institute of Technology, Davangere, India

Sunita Byali, Department of ECE, GM Institute of Technology, Davangere, India

Sahana P, Department of ECE, GM Institute of Technology, Davangere, India

Sindhu H V, Department of ECE, GM Institute of Technology, Davangere, India

Abstract

Forests are the precious natural resources which provide us wood, timber tree, human living essentials and it is the place where flora and fauna live. It helps in balancing the eco system. But the greedy mankind destroys this natural resource legally and illegally there by eco system gets unbalanced. The prime of the way of exploiting these forest resources is cutting the trees. To conserve the illegal logging of forest wood we proposed a " IOT based Illegal tree cutting prevention and monitoring systems. This system is suitable for large-scale forest monitoring from illegal logging. We have used a cluster of sensor nodes to monitor the cutting of trees. Periodically the sensed data will be transmitted to the monitoring centre, where it will be recorded.

Keywords

IoT , Sensors, Node MCU

INDICATOR-Based Approach for Development of Sustainability Index for A Davanagere City

Vijaya kumar B H, PG Scholar, PEST, UBDTCE, Davanagere, India

Dr. Nagesha N, Chairman & Professor, Department of Industrial & Production Engineering, University B.D. T. College of Engineering, Davangere, India

Abstract

Managing urban growth has become one of the most important challenges of the 21st century. The city sustainability concept would be the proper solution for achieving sustainability in urban areas. The development of sustainability index for a city is key to urban planning, and its usefulness extends to smart cities. Different methods, techniques and instruments for urban sustainability assessment that help determine how cities can become more sustainable have emerged over a period of time. Among these, indicator-based approach will achieve urban sustainability without affecting environment, social and economical factors. The paper builds on the background of the available literatures.

This paper preliminary develops a set of indicators for a local city based on households perceptions with set of questionnaires and later develop index using these indicators for achieving city sustainability index. This paper concludes development of city sustainability only by balancing of environmental, social and economical pillars of sustainability.

Applications of Grey Wolf Optimization Technique in Power System State Estimation

Sakshi, Assistant Professor, Department of Information Technology, KIET Group of Institutions Ghaziabad, India

Shiv Kumar Sikarwar, Assistant Professor, Department of Electrical and Electronics Engineering, KIET Group of Institutions Ghaziabad, India

Abstract

State estimation is the technique by which a worth can be assigned to the state variable of an unknown system on the basis of measurements taken from that system. Generally, this method demands imperfect measurements that are redundant. During the power grid, the state variables are considered as the voltage magnitudes as well as the relative phase angles at the system nodes. Computations are needed so that system performance can be estimated in real time for system security control as well as for the constraints on economic dispatch. During the old days, a large number of traditional algorithms that supported gradient approach are utilized for this cause.

This paper unravels the problem of state estimation, which occurs during a power grid, with the help of Grey wolf optimization (GWO), an application of Artificial Intelligence algorithm. Two methods have been produced for the same: the Weighted Least Absolute Value (WLAV) function and the other one is Weighted Least Square (WLS) function. The effectiveness of GWO is shown over newton state estimation method (NSE) by comparing their results with the truth values of state variable that is achieved using Newton-Raphson (NR) algorithm.

Advanced Deep Learning Technique for Gender Data Classification

Sangita Choudhary, Research Scholar, Banasthali Vidyapith, Banasthali, India

Manisha Agarwal, Associate Professor, Banasthali Vidyapith, Banasthali, India

Abstract

Advanced deep learning (ADL) is advantageous at any instance when dealing with large image data sets. Gender identification from either the image is both a challenging and complicated task. There are many software programs in the areas of facial recognition, security, tracking, communication between people and computers, etc. Researchers operating in this region had suggested various techniques for gender recognition to extract characteristics from picture. etc. Convolutional Neural Network (CNN) is now commonly used in various vision apps to extract and classify features. Here is proposed an assessment on the use of MCNN for sexuality recognition. Findings from either the trials performed assist the assessment. To proposed Advanced Deep Learning pre-trained MCNN model (VGG16)for Gender Data Classification.

Keywords

Convolutional neural networks, Deep learning, Fusion Based learning

RFID Based Contactless Attendance Monitoring System

Dr. Shankaragowda B.B, Assistant Professor, Department of Master of Computer Applications, Bapuji Institute of Engineering and Technology, Davangere, India

Karibasavaraj J, Director, Sumukha InfoTech, Davangere, India

Abstract

During a pandemic, personal contact or sharing accessories or utilities with an infected person may lead us to getting infected by a virus as in the case of the COVID-19. In this paper we have developed a contactless system for monitoring attendance of an organization using the Internet of Things (IoT) and Radio Frequency RFID. The radio-frequency identification is a technology which works on the concept of electromagnetic fields where in the RFID reader can read the unique identity transmitted by the passive RFID tag through radio wave transmission which is leveraged to record the attendance of a person by bringing the RFID tag in the proximity of the Reader. The Internet of Things is a widespread technology used to connect the different physical objects consisting of sensors and software which connect and exchange data with devices over the Internet. The attendee is allotted with an RFID tag which he/she will use to record their attendance by bringing the RFID tag near the reader. The reader connects to ESP 32 through which the attendance information is transmitted to a webpage which stores information in MySQL database.

Keywords

Radio-frequency identification, Sensor, Internet of Things

GNN Based Approach for Fake News Detection in E-Media

Shoieb Ahmed, Department of Computer Science & BCA, Government First Grade College, Sorab, Shimoga, Karnataka, India

Sathyanarayana K B, Department of Information Science &Engineering, Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka, India

Pradeep H K, Department of Information Science &Engineering, Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka, India

Abstract

Consuming news from social media is becoming increasingly popular nowadays. Social media brings benefits to users due to the inherent nature of fast dissemination, cheap cost, and easy access. Over the past few years, social media networks like Facebook or Twitter admit that more fake and duplicate accounts, fake news and fake likes are existing. With these accounts, their creators can distribute false information, support or attack an idea, a product or an election candidate, influencing real network users in making a decision. Detecting fake news becomes very important and increasing attention due to the detrimental effects on individuals and the society. Most of the algorithms focuses on mining the data rather than identifying and provide the guidance of fake news. In this work, we present a robust system build with the aim of identifying fake news in the E-Media like Twitter social network which employs effective Graph based model with Neural Networks.

Fake news are generated either through gossips or in the political areas, so for the task of experimentation we have used these two types of datasets. They are Politifact which contains data related to politics and Gossipicop that contains data related to gossips. We have collected 15464 samples of Gossipicop compared to 6314 samples of Politifact as more number of gossips are fake. A Three Level Approach is proposed where GCNFN is implemented using two GCN layers and one mean-pooling layer as the graph encoder. The 320-dimensional node feature is composed of 300-dimensional comment word2vec embedding along with 20-dimensional profile features. The GNN-CL is implemented using DiffPool as the graph encoder and profile feature as the node feature. Proposed Approach is compared with the latest work and have found a higher level of efficacy of 98.9% with Ten-Fold verification.

Keywords

Fake News, GNN, Twitter, Machine Learning

Design and Implementation of BICMOS based Bandgap Reference Circuit

Shreesha N S, Dept. of ECE, BIET, India

Aditya R Bangur, Dept. of ECE, BIET, India

Srujana Kandagal, Dept. of ECE, BIET, India

Swathi K S, Dept. of ECE, BIET, India

Dr. Nirmala S O, Professor, Dept. of ECE, BIET, India

Abstract

All analog circuits use "golden reference", which are extensively used for biasing. This paper presents a first-order Bandgap reference (BGR), realized in two different architectures – using Cascode Current Mirror and using two stage Op – Amp where the Op – Amp is miller compensated and produces a gain of 60 dB with phase margin of 60º. 180 nm standard CMOS process is used to implement the circuit. The BGR produces a constant output reference voltage of 1.18 V when designed using Cascode Current Mirror architecture, while 1.10 V in Op – Amp based architecture. Cascode Current Mirror based BGR has a Temperature Coefficient of 21.83 ppm for a wide range of -20º to 100º and 50ppm for Op – Amp based BGR. The line regulation achieved with Cascode Current Mirror architecture is 4.932mV/V, while 5.77mV/V for Op –Amp Based architecture for an input variation of 2.6V to 3.6 V. The circuit has the PSRR of 80dB for Cascode Current Mirror architecture and 42.5dB for Op – Amp based BGR up to 110 Hz and 10KHz respectively. The schematic entry and layouts of circuits were drawn using Cadence virtuoso 6.1.5 tool and assura verification tool was used for all verifications.

Design and Verification of CMOS LDO Regulator

Shreevathsa N S, Department of ECE, BIET, Bangalore, India

Viresh Banakar, Department of ECE, BIET, Bangalore, India

Shravya N, Department of ECE, BIET, Bangalore, India

Dr. G S Sunitha, Professor & HOD, Department of ECE, BIET, Bangalore, India

Abstract

This paper presents a design of a low dropout regulator based on a 180 nm standard CMOS process. The Low Dropout regulator (LDO) proposed has a dropout of 110 mV and produces a constant output of 1.5 V. The circuit makes use of a two-stage miller compensated error amplifier which is designed to have a gain of 60 dB and a phase margin of around 60º. PMOS pass element has been selected. The circuit exhibits a load regulation of 9.4527 mV/A (i.e., 0.031 %) with typical and maximum load currents being 25 mA and 50 mA respectively. The line regulation of the circuit is 912.7396µV/V for an input variation of 1.6V to 2 V. The proposed circuit makes use of dominant pole compensation technique to make the whole system stable and has a maximum gain of 81 dB and phase margin of 72º while the circuit has a gain bandwidth of 117 kHz and has the worst-case power supply rejection ratio (PSRR) of [76 dB, 55.71 dB] @ [100 Hz, 251 kHz] in full load condition. The circuit dissipates a total power of 5.50805 mW. The circuit grounds a quiescent current of 5 µA.

Keywords

Low dropout, regulator, error amplifier, pass element

A Case Study on Rapid Transit System in Bangalore

Shreya H C, Department of Civil Engineering, Visvesvaraya Technological University, Karnataka, India

Abstract

There are presently 13 functional rapid transit systems in India. In January 2021, India has 760.62 kilometres of functional metro lines and 540 stations. A further 578.34 km of lines are under construction. In this one of the metro named Bangalore metro or Namma Metro is a rapid transit system serving the city of Bangalore, India. It is the first metro system in South India. In construction part, phase 1 contains two lines spanning a length of 42.30 km, of which about 8.82 km is underground and about 33.48 km is elevated. There are 40 stations in phase 1, of which 7 stations are underground, 1 at grade and 32 are elevated. 102.02 hectares land would be required for phase 2 (including phase 2A). Phase 2A and phase 2B are under construction run to a distance of 58.19 km projected ridership on both the lines in 2026 is 7.7 lakhs. Phase 3 also in construction. Along with the advantages and disadvantages of metro should be portrayed.

A Qualitative Study of DevOps Usage in Practice

Shwetha G, Assistant Professor, Department of CSE, BIET, Davanagere, India

Vaishnavi Ajay Inamdar, Assistant Professor, Department of CSE, BIET, Davanagere, India

Abstract

DevOps is extended from certain agile practices with a mix of patterns intended to improve collaboration between development and operation teams A literature survey has carried out to explore about current DevOps practices in industry. Organizations are introducing agile and lean software development techniques in operations to increase the pace of their software development process and to improve the quality of their software. They use the term DevOps, a portmanteau of development and operations, as an umbrella term to describe their efforts. In this way describe the ways in which organizations implement DevOps and the outcomes they experience.

First summarize the results of a Systematic Literature Review that we performed to discover what researchers have written about DevOps. We then describe the results of an exploratory interviewbased study involving six organizations of various sizes that are active in various industries. As part of our findings, we observed that all organizations were positive about their experiences and only minor problems were encountered while adopting DevOps.

A Review on Integration of IOT with Blockchain Technology Resistant to Security and Privacy Issues

Shwetha G.S, Department of CSE, Dayananda Sagar University, Bengaluru, India

Dr.M.K. Banga, Department of CSE, Dayananda Sagar University, Bengaluru, India

Abstract

Internet of Things (IoT) is the epoch of communication. With IoT, physical objects can collect, receive, act and take decisions without any human intervention. With its myriads of applications, IoT plays a major role in improving the quality of life in every possible sector. Unlike traditional networks, it is difficult to provide security for IoT networks as they are low-powered, profound computational capability, and memory deficient. Most of the existing security solutions are centralized and suffer from a single point of failure. Considering the growth of IoT in upcoming years, a more well-grounded and authentic security mechanism is essential. Blockchain's immutable, distributed, decentralized, transparent, tamper-proof, and timestamped properties can be applied to IoT to achieve the required security and privacy. In this study, a comprehensive survey of security issues that subsist in IoT networks and the existing blockchain solutions that address those issues are analysed. The paper also presents the vital complications that occur in the course of the integration of both technologies.

Keywords

IoT, Blockchain, Security, Privacy

Topology and Modulation Methodology for High-Frequency-Link MMC Based Multi-port DC-DC Converter for HVDC/MVDC and LVDC Applications

D.Srinivasa Rao, Research Scholar, Department of Electrical Engineering, Shri JJTUniversity, Jhunjhunu, India

Dr.K.Chiranjeevi, Associate Professor, Department of Electrical Engineering, Shri JJTUniversity, Jhunjhunu, India

Abstract

With the ever increasing demand for electrical supply and non conventional energy sources are occupying major part in the AC and DC grids; hybrid distribution network is an effective solution in the near future. This paper presents analysis and simulation verification of high-frequency-link (HFL) modular multilevel converter (MMC) based multiport dc–dc converter for HVDC / MVDC / LVDC applications. In the DC power transmission and distribution system, high frequency DC/DC converter based on cascaded DAB is required for the interconnection of HVDC to MVDC and LVDC grids. Recent trends in researches focus on DC/DC converters based on cascaded DAB and MMC topology which is suitable for interconnection of DC grids with different voltage levels. The corresponding topology, modulation methods which can transform the DC voltage at the DC ports of the converter are presented. MATLAB Simulation results validates the modulation and control strategy of the proposed multi-port DC/DC converter topology.

Keywords

DAB, MMC, HVDC, MVDC, LVDC Dc-Dc converter

A Review on Low Voltage Ride Through Capability Enhancement Methods for Grid Connected Permanent Magnet Synchronous Generator-Based Wind Conversion System

Stuti Christian, LDRP Institute of Technology and Research, Gandhinagar, India

Dr. S.R.Vyas, LDRP Institute of Technology and Research, Gandhinagar, India

Abstract

Wind energy is one of the most promising renewable energy sources. Due to several advantages, Permanent magnet synchronous generator (PMSG) based grid connected wind system has gain more interest among all the other types of wind energy conversion system. In order to ensure transient stability, it is essential that wind generators must remain connected to grid for specified time during voltage sag. This is called Low voltage ride through (LVRT) capability. As level of power penetration through wind energy conversion system increases, LVRT capability is becoming one of the major grid connection issue to be acknowledged. This paper presents a brief review of methods to improve LVRT capability of grid connected PMSG based wind system according to grid code. Main types of methods for LVRT capability enhancement are external devices-based methods, modified controller-based methods and hybrid or coordinated control-based methods. Comparison of the same is carried out based on reviewed literatures and possibilities for further research on LVRT capability enhancement is also discussed.

Keywords

wind energy, PMSG, Low voltage ride through, voltage sag, renewable energy

Exploiting Focused Time Delay Neural Network for mobility prediction in Ad-Hoc Networks

Subrata Debbarma, Department of Computer Science, Assam University, Silchar, India

Dr. Rakesh Kumar, Department of Computer Science, Assam University, Silchar, India

Abstract

Ad-Hoc networks are flexible and easy to install and trends to deploy in several application such as Mobiles, Vehicles, Smart Phones, Sensors, Robots and Hospitals etc. But to sustain continuous established link connection between nodes is the major challenges, due to randomly node movement that directly effects on network performance parameters. However an accurate future node location estimation or mobility prediction before leaving present location of a node can sustain continuity link connection and can improve network performance parameters. In this paper we exploited Focused Time Delay neural network (FTDNN) to predict mobile node location, as a node locations trajectory is a kind of time series location and the FTDNN are also suited for time series prediction. The model based data pattern using Gauss Markov mobility model and Real-World data pattern are used to experiment prediction results and we demonstrate the effectiveness of the FTDNN based mobility prediction model and measure the prediction accuracy using RMSE and MAE.

Keywords

Ad-Hoc Network, Mobility Prediction, Focused Time Delay Neural network

To Apply Machine Learning Techniques on Intrusion Detection Systems for Anomaly Detection on IoT Edge Devices

Suha Aimen, Department of CSE, Dayananda Sagar University, Bangalore, India

Abstract

Internet of things IoT connects various components in the real world. In day to day life we find IoT in current world everywhere. The use of IoT has become so widely used. It has myriad benefits. The security of IoT has a major concern as it is interconnected with various components from cloud to edge devices. Traditional methods for their security and privacy have become a cause of major concern. New security methods and advanced research needs to be carried out to secure these devices. Methods like accesss control, authentication, encryption, application security and network security is inefficient as they are easy to break. Hence we need some new and strong methods for securing the IoT devices.

Machine learning offers efficient methods to secure the IoT devices. It offers various methods where it detects the usual behavior and any behavior which deviates from the usual pattern and detects these as abnormal behavior in case of network security threat. In this paper we propose to find the different machine learning algorithms which are suitable for securing IoT edge devices. We try to find out which is the best suitable supervised or unsupervised machine learning algorithm which offers security in IoT edge devices. The proposed solution is to perform machine learning in the IoT edge devices rather than the cloud. For this we will study which is the best suitable ML algorithm.

Nuclear EMP Coupling With an Underground Distribution Power Cables

K. Sunitha, Department of Electrical Engineering, National Institute of Technology Calicut, India

Abstract

The interaction of transient electromagnetic fielddue to an NEMP with multi core buried power cables has been considered in this paper. Using transmission line analysis the induced current is computed on the shield of the cable. The equivalent circuit representation of the cable is analyzed and the method of calculation is derived from this circuit. The concept of the cable transfer impedance is used to find the coupled current in the inner circuit. The variation of the current induced in the inner conductor as a function of the distance along the length of the cable is computed for the purpose of analysing the effect of the reflectedcomponents of the induced current from the terminations. The effect of the variation of the depth of burial of the cable on the induced current is evaluated to determine the soil attenuation effects.

High Power Electromagnetic sources Producing Induced Voltage in a Distribution Power Cable

K. Sunitha, Department of Electrical Engineering, National Institute of Technology Calicut, India

Abstract

High power electromagnetic (HPEM) sources are a potential threat to the sensitive electrical and electronic circuits operating in their close vicinity. Hence it is worthwhile to consider the effect of these HPEM sources on communication cables which in turn carry the voltages induced in them to the systems connected at the ends of the cables. The HPEM sources considered are Nuclear Electromagnetic Pulse (NEMP), Ultra Wide Band (UWB) and High Power Microwave (HPM) sources. The induced voltage in the inner conductor of a shielded communication cable is computed to compare the electromagnetic interference potential of these sources. Prior to the voltage computation, the electric field at the cable location is determined by utilizing the characteristics of the respective sources. Out of the three HPEM sources considered, HPM produced the maximum induced voltage in the inner conductor and NEMP produced the least. Also the rise time of the induced voltage is least for HPM and maximum for NEMP and this information would be useful while designing the protection systems.

Image Caption Generator using CNN-LSTM

Tapasya Chaudhary, Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

Shruti Verma, Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

Priyanshi, Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

Vikas Kumar Singh, Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

Gaurav Agarwal, Assistant Professor, Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

Abstract

The main goal of this paper is to study the concepts of a convolutional neural network (CNN) and Long Short Term Memory (LSTM) models and build a working project of Image caption generator by adopting CNN with LSTM techniques. The description of the image will be extracted using a CNN model trained on the datasets of images, and then we will be providing input to the LSTM model which will be responsible for generating the image captions. This project is for identifying the objects and informing the people through audio and text messages. This model will observe the images and translates it into audio and sentences using LSTM. Initially, the input image will be converted to a gray scale image which will be further passed through the CNN for correctly identifying the objects. For describing the image, a well-formed English phrase is needed, that is done by LSTM. Generating description of the image in audio format is very useful for visually impaired people for understanding the problems better.

Keywords

convolutional neural network; Long Short Term Memory; Image Caption Generator; artificial intelligence

Series Connected Half Bridge Modular Multilevel Converter Motor Drive System

Vandana R, PG Scholar, Department of Electrical and Electronics Engineering, Siddaganga Institute of Technology, Tumakuru, India

Chandrashekhar P K, Assistant Professor, Department of Electrical and Electronics Engineering, Siddaganga Institute of Technology, Tumakuru, India

Abstract

The Modular multilevel converter (MMC) possesses an expansion research concern in the field of motor drives and this topology is applicable to high-power/voltage applications. However, a challenge remains that the MMC suffers from large fluctuation of voltage ripple submodule capacitors particularly towards low level motor speed. Therefore, this paper presents a Back-to-Back (BTB) structure to control the capability of this large fluctuation to a constant with rated load, a MMC with series connected half bridge four level inverter is used. For, which can excellently reduce the voltage ripple of submodule capacitors. The motor stand MMC, connected to control the drive an AC motor through dc-link with grid-tied. When dc- link current controls the constant fluctuation of capacitor, then the half bridge submodule with motor stand MMC can lower its dc-bus voltage at low frequencies, thus it's dissipated less power and can reduces the voltage ripple submodule capacitors. The operating principle and the corresponding control methods are confirmed by matlab/Simulink.

Keywords

Back-to-Back system (BTB), capacitor voltage ripple, motor drive, modular multilevel converter (MMC), sub-module (SM)

SSIM Metric for Video Quality Assessment with Sailency Based Features

Aruna Kumar B. T, Research Scholar, VTU Research Centre, UBDTCE, Davanagere & Assistant Professor, Dept. of CS&E, GMIT, Davanagere, India

Rohan K H, Dept. of CS&E, GMIT, Davanagere, India

Apoorva P Patil, Dept. of CS&E, GMIT, Davanagere, India

Keerthi H P, Dept. of CS&E, GMIT, Davanagere, India

Sushma M, Dept. of CS&E, GMIT, Davanagere, India

Abstract

In this research paper, Video quality or Image enhancement is a process of improving the quality of image by improving its feature. Image contrast enrichment techniques have been largely studied in the past decades. The histogram changes in frame of the color and depth image histograms are first distributing into subintervals using the Gaussian mixture model. Contrast enhancement increases the total contrast of an image by making light colors lighter and dark colors darker at the same time. We are using SSIM Metric algorithm using the histograms of color and depth images. Adjusting the color contrast of an image is a process of increasing or decreasing the differences between the RGB color values of the image. By using this process of image contrast enhancement algorithm that perform the histograms of both color and depth images. The divided sub-histograms are then separately covered using the predicted Gaussian parameters. The contrast of the image is increased without a large amount of change in the color of the image. The depth image is constructed from the left and right view of the same image. The color and depth image histograms are first partitioned into subintervals using the Gaussian mixture model and SSIM Metric. The positions partitioning the color histogram are then adjusted such that spatially neighboring pixels with the similar intensity and depth values can be grouped into the same sub-interval. Enhancement for each sub-interval, the global image contrast can be improved without over-enhancing the local image contrast.

In Silico Identification of Common Proteins Involved in Crotonylation and Acetylation in Alzheimer's Disease and Drug Repurposing

Swati Tiwari, Biotechnology, Delhi Technological University, Delhi, India

Pravir Kumar, Biotechnology, Delhi Technological University, Delhi, India

Abstract

Dementia is one of leading cause of the most common neuronal disorders Alzheimer's Disease (AD) that remains untreated even after decades of research. Post-translational modification (PTMs) plays many roles in protein turnover rate accumulation of aggregate and can also help in the degradation of disease-causing toxic metabolites. However, not much is known about the crosstalk between crotonylation and acetylation in AD. In this study we tried to understand the involvement of Crotonylation and acetylation in AD by using computational tools and database and finally identify a possible drug for treatment using Drug Repositioning tools.Through extensive literature analysis we found that P300 and CBP are the common enzymes associated with protein crotonylation and acetylation in Alzheimer's Disease (AD) proving the association between these two PTMs. Using step by step computational analysis we found hub genes associated with the PTMs and AD. With the help of a comprehensive visual drug network gene analysis tool we identified Arsenic Trioxide as potential drug which interacted with the MAPK1, JUN and MAPK3 genes associated with AD. And finally using DrugNet website tool for drug-disease association and PhospNet tool for disease-gene association studies developed by group of researchers from university of Granada, Spain we validated the results and concluded that Arsenic Trioxide is associated with different form of Dementia including Frontotemporal dementia, vascular Dementia and Dementia associated with lewy bodies.

IOT Based Vehicle Monitoring and Controlling System Using ESP32 and GPS

Madhushree G V, Visvesvaraya Technology University, Belagum, India

Jaikumara P L, Visvesvaraya Technology University, Belagum, India

Chetankumar Ramathala, Visvesvaraya Technology University, Belagum, India

Basavaraja D, Visvesvaraya Technology University, Belagum, India

Mr. Gnaneshwara M P, Visvesvaraya Technology University, Belagum, India

Abstract

Generally the usage of vehicle tracking system has been increased rapidly. The major concern of the proposed system is identifying the vehicle theft by implementing anti- system. Vehicle tracking system is beneficial in many ways such as providing security to the personal vehicles, taxis, cabs, school buses/cars and others. Vehicle tracking system is designed to know the position of the vehicle. Tracking system is developed by using GPS and IoT model to locate the user's vehicle easily. GPS module is used to track the location of the vehicle in the form of values such as latitude and longitude. These values are transmitted to the user using IoT technology through Blink application. Different sensors are used to detect alcohol consumption and to identify the accident. The Sensor values can be monitored by anyone from anywhere in the world using thing Blink application. We can also control the vehicle by using blink application.

Survey on Growth Prediction of Plants using Image Processing and Machine Learning

Santoshkumar M, Assistant Professor, Department of Computer Science and Engineering, GMIT, Davangere, India

Dr. Sunil Kumar B S, Professor, Department of Information Science and Engineering, GMIT, Davangere, India

Abstract

Now a days Machine learning is playing very important role in agriculture to make various decision, including crop selection and action to be taken according to seasons. In this regard many machine learning algorithms like deep learning (DL) and Artificial Neural Networks (ANN) are used to predict the plant growth or crop yield. In this study we have gone through the different techniques of plant growth prediction where algorithms and features for image processing are discussed. According to our search criteria we extracted 30 studies from 4 electronic databases, among which we shortlisted 18 for clear analysis after applying inclusion and exclusion techniques to give proper future enhancement of the research work. After proper investigation it is verified that most of the authors using leaf area, chlorophyll content. number of leaves , plant canopy and vegetation indices as their main features in image processing. In deep learning algorithm most of them are using Convolution Neural Network (CNN) algorithm for prediction, and some of the authors used Deep learning algorithm as Long Short Term Memory(LSTM) and Deep Neural Networks(DNN). We found that in image processing techniques the deep learning algorithms producing high accuracy and performance.

Keywords

Machine Learning, Deep learning, Prediction of plant growth

FPGA based PLL Control Algorithm to Enhance the Performance of APF

Rudrappa K. M, Associate Professor & HOD, ECE Department, GEC, K R Pet, India

Praveen J, Professor & HOD, ECE Department, GMIT, Davangere, India

K. M. Sudharshan, Assistant Director, School of ECE, REVA University, Bengaluru, India

Nataraj Urs H. D, Assistant Professor, School of ECE, REVA University, Bengaluru, India

Praveena K. S, Assistant Professor, ECE Department, VVCE, Mysuru, India

Abstract

The harmonic current and reactive power in power systems leads to the various problems such as transformer heating, power equipment's failure, line losses etc. The last decade has witnessed the development of various techniques to overcome these problems. A method such as SRF which is based on a control (SRFC) algorithm is simple and provides a better response. The significant feature of this SRFC algorithm is that it separates the harmonic components. Analog-to-digital (A-D), Digital-to Analog (D-A) converter methods can be implemented for synchronization. This complicates the hardware realization with digital controller. The DSP based methods provide significant flexibility and computation, however, it consumes higher CPU time. Thus APFs were used with multi processor DSP or single processor DSP methods which have a less sampling-rate and less delay time. This causes problem in designing the hardware or software with least accuracy in the harmonics compensation. Thus there is a need for a system which realizes better harmonic compensation with enhanced accuracy. This paper presents an "FPGA based control algorithm which executes all the above processes with significant performance enhancement".

Keywords

PLL, FPGA, APF, Xilinx, HDL

Crop Health Management Using Cnn Prediction Technique

SunilKumar BS, GMIT, Davanagere, Karnataka, India

Shanthala GS, GMIT, Davanagere, Karnataka, India

Sahana MH, GMIT, Davanagere, Karnataka, India

Rakshitha DM, GMIT, Davanagere, Karnataka, India

Yashodha MH, GMIT, Davanagere, Karnataka, India

Abstract

The spread of plant pests and diseases has increased dramatically in recent years. Globalization, trade and climate change, as well as reduced resilience in production systems due to decades of agricultural intensification, have all played a part. Plant pathogens can be fungal, bacterial, viral or nematodes and can damage plant parts above or below the ground. Identifying symptoms and knowing when and how to effectively control diseases is crucial. We propose the idea of leaf detection using leaf images which helps in identification of plant diseases and provides remedies that can be used as a defence mechanism against the disease. The database obtained from the Internet is properly segregated and the different plant species are identified then obtain test-database which consists of various plant diseases that are used for detecting plant disease detection. Then using training data we will train our classifier and then output will be predicted with optimum accuracy. We use Convolution Neural Network(CNN) which comprises of different layers which are used for predicting the different diseases in paddy plant and in tomato plant.Our software gives us the name of plant species with its confidence level and also the remedy that can be taken as a cure.

Keywords

Convolution neural network, Test-Database, Training data, Image processing, Deep learning

Outrigger Structural System for Tall Buildings

Sachin Kuckian, Lecturer,Middle East College, Muscat, Oman

Abstract

As the construction of mega tall buildings in all major cities around the world accelerates, the seismic risk associated with them is also increasing hence study on the response of tall buildings to earthquake loads is gaining significant importance. Outrigger tall buildings are one of the most common structural structures because they are simple to construct, save money, and have significant lateral stiffness.

This paper explores an outrigger structural system for high-rise buildings. A research was undertaken to analyse the output of a system by changing the place of outrigger positions. Dynamic research was performed in accordance with IS 1893 (Part I): 2002, the response spectrum and time period of California's most recent earthquakes.

The parameters discussed are lateral displacements, inter-storey drifts for static analysis. Base force, displacement and spectral acceleration for dynamic analysis.

From the analysis results it is found that Outrigger when located at H0/H=0.6 causes maximum reduction in the lateral displacement, hence it is the desired location to provide outrigger in a structural system. Time history analysis show that the reduction is maximum when outrigger is located at H0/H=0.9 for LA03, H0/H=0.85 for LA06 H0/H=1.0 for LA14.

The reduction in displacement is maximum when outrigger is located at H0/H=0.95 for LA03, H0/H=1 for LA06 and H0/H=0.95 for LA14.

Keywords

Outrigger, Time history, Response Spectrum

A New Topology of Multilevel Inverter Fed from Photovoltaic System

Hemalatha Javvaji, PVP Siddhartha Institute of Technology, Vijayawada, Andhra Pradesh, India

Basavaraja Banakara, University BDT College of Engineering, Davanagere, Karnataka, India

Abstract

Inverter plays very important role in many areas of Renewable Sources of Energy (RSE). One of the major developments in using RSE is solar power. This article introduces the power converter topology and consists of a power interface and various levels of MIT (Multilevel Inverter Topology). A modified version of the Cascade H-Bridge Multilevel Inverter (CH-MLI) has been introduced to improve power quality, power loss and topology complexity and cost. The input voltage is set to the rated voltage by the power converter and transferred to the DC bus. The MLT converts the DC bus voltage to AC and is supplied to an AC load. To reduce harmonics, advanced phased array pulse width modulation technology is applied to the drive of the MIT. LC filters are also designed to reduce harmonics. The entire system is simulated with MTLAB / SIMULINK. The proposed inverter is compared to CH-MLI in terms of DC sources, number of switches, diodes, driver circuit and dv/dt stress.

Automatic Vehicle Documents Detection and Verification Using Quick Response (QR) Code

Praveen J, Professor, Department of ECE, GMIT, Davangere, India

Dimple G S, Department of ECE, GMIT, Davangere, India

Manjula K P, Department of ECE, GMIT, Davangere, India

Akash V, Department of ECE, GMIT, Davangere, India

Mohammad Gouse B K, Department of ECE, GMIT, Davangere, India

Abstract

All over the world, as per the Motor Vehicles Act of the respective countries, it is compulsory that citizens always carry the original hard copy of documents like Registration certificates book, Pollution under control certificate, Vehicle Insurance policy. Many times citizens do not remember to carry the vehicle-related documents. When traffic police wanted to verify citizen's documents at that time citizens need to carry these documents with them otherwise they need to face consequences. To overcome this problem, the proposed research will have an RTO server, where all necessary documents of the vehicle documents are scanned and stored. The Quick Response code (QR Code) is a Japanese fast readable technique that scans documents of the citizen's vehicle. The real-time android application will be used as a QR code generator of citizen's documents and QR code receiver for scanning purposes. The Traffic police will scan a unique QR Code generator for user mobility. In the proposed research, whenever a citizen's documents get expired at that time it will send a notification alert. This system will help in saving a significant amount of time. To avoid intrusion of citizen's original documents, so noisy QR-code will be used to provide privacy.

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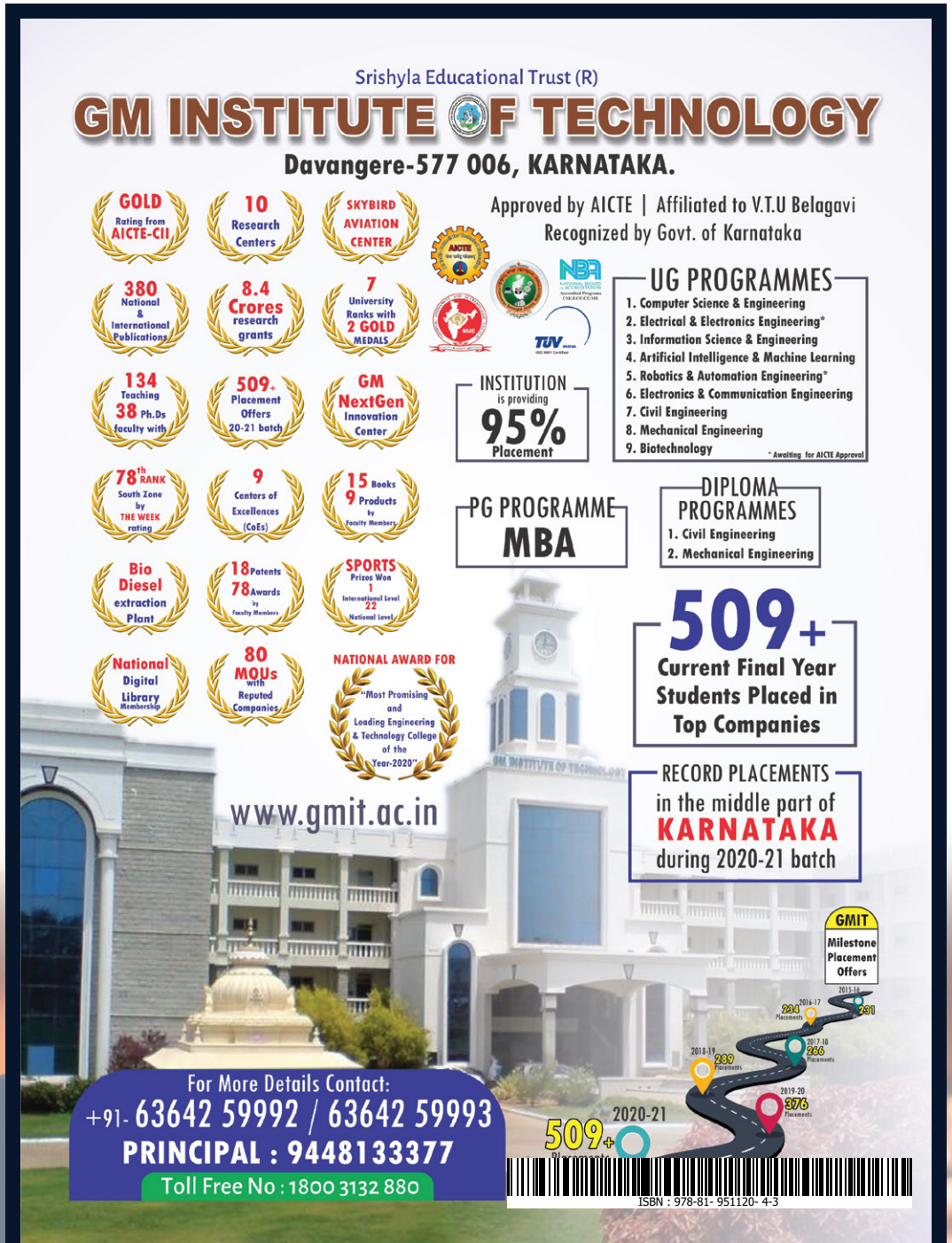

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