International Conference on Advances in Science, Engineering and Technology

ICASET 2021
29th - 30th December 2021
Puducherry

Organized By
Institute For Engineering Research and Publication (IFERP)

Co-Host
Karpagam Institute of Technology, Tamil Nadu

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(ICASET- 2021)

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Editorial:

We cordially invite you to attend the 4th International Conference on Advances in Science, Engineering and Technology (ICASET-21) on 29th–30th December, 2021. The main objective of ICASET-21 is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Science, Engineering and Technology. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

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

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

Since October 2021, the Organizing Committees have received more than 80 manuscript papers, and the papers cover all the aspects in Science, Engineering and Technology. Finally, after review, about 35 papers were included to the proceedings of ICASET-21.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of ICASET-21. We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.
Acknowledgement

IFERP is hosting the International Conference on Advances in Science, Engineering and Technology - 2021 this year in the month of December. The main objective of Science, Engineering and Technology is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The session will serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and be known as a thoughtful leader.

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

Rudra Bhanu Satpathy
Chief Executive Officer
Institute for Engineering Research and Publication (IFERP)
International Conference on
Advances in Science, Engineering and Technology

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Keynote Speakers
Mark G. Lauby is senior vice president and chief engineer at the North American Electric Reliability Corporation (NERC). Mr. Lauby joined NERC in January 2007 and has held a number of positions, including vice president and director of Standards and vice president and director of Reliability Assessments and Performance Analysis.

In 2012, Mr. Lauby was elected to the North American Energy Standards Board and was appointed to the Department of Energy's Electric Advisory Committee by the Secretary of Energy from 2013-2017. He has been recognized for his achievements including the 1992 IEEE Walter Fee Young Engineer of the Year Award. He was named a Fellow by IEEE in November 2011 for “leadership in the development and application of techniques for bulk power system reliability,” and in 2014, Mr. Lauby was awarded the IEEE Power and Energy Society’s Roy Billinton Power System Reliability Award. In 2020, the National Academy of Engineering (NAE) elected Mr. Lauby as a member.

Prior to joining NERC, Mr. Lauby worked for the Electric Power Research Institute (EPRI) for 20 years. Mr. Lauby began his electric industry career in 1979 at the Mid-Continent Area Power Pool in Minneapolis, Minnesota. Mr. Lauby is the author of more than 100 technical papers. He earned his bachelor's and master's degrees in Electrical Engineering from the University of Minnesota. In addition, Mr. Lauby attended the London Business School Accelerated Development Program, as well as the Executive Leadership Program at Harvard Business School.
Rayner Alfred is an Associate Professor of Computer Science at the Faculty of Computing and Informatics, Universiti Malaysia Sabah in Malaysia that focuses on Data Science and Software Engineering programmes. He leads and defines projects around knowledge discovery, information retrieval and machine learning that focuses on building smarter mechanism that enables knowledge discovery in structured and unstructured data. His work addresses the challenges related to big data problem: How can we create and apply smarter collaborative knowledge discovery and machine learning technologies that bridge the structured and unstructured data mining and cope with the big data problem.

Rayner completed his PhD in 2008 looking at intelligent techniques using machine learning to model and optimize the dynamic and distributed processes of knowledge discovery for structured and unstructured data. He holds a PhD degree in Computer Science from York University (United Kingdom), a Master degree in Computer Science from Western Michigan University, Kalamazoo (USA) and a Computer Science degree from Polytechnic University of Brooklyn, New York (USA) where he was the recipient of the Myron M. Rosenthal Academic Achievement Award for the outstanding academic achievement in Computer Science in 1994. He has authored and co-authored more than 100 journals/book chapters and conference papers, editorials, and served on the program and organizing committees of numerous national and international conferences and workshops.

Rayner is currently a member of IEEE, a Certified Software Tester (CTFL) from the International Software Testing Qualifications Board (ISTQB), and also a certified IBM DB2 Academic Associate (IBM DB2 AA). He leads the Advanced Machine Intelligence (AMI) research group in UMS and he has lead several projects related to knowledge discovery and machine learning on Big Data. Rayner is also the recipient of the Research Fellow at Japan Advanced Institute of Science and Technology (JAIST), Japan. He is also the recipient of multiple GOLD awards at national and international research exhibitions in Data Mining and Machine Learning based solutions (Face Recognition and Knowledge Discovery), that include International Trade Fair Ideas in Nuremberg, Germany (iNEA2018) International Invention Innovation Competition in Toronto, Canada (iCAN 2018), Seoul International Invention Exhibition in Seoul, Korea (SIIF 2010). He has secured RM6,931,433.00 worth of project grants. Some of his project researches include biometric authentication using face recognition, building security based on plate number recognition using deep learning, sentiment analysis for Malay and English in measuring public opinion, news-news correlation trending, machine learning algorithm based solution for predicting diseases in health care, smart monitoring using an ensemble based face recognition system and smart information management and retrieval to name a few. Some of the completed projects include Semantic Multi-Agent For Knowledge Sharing, developing an Evolutionary-Based Ensemble Classifier Framework for Learning Big Relational Data, developing a genetic- based hierarchical agglomerative clustering technique for parallel clustering of bilingual corpora based on reduced terms, enhancing document Clustering By Integrating Semantic Background Knowledge and Syntactic Features Into the BOW Representation and the fundamental Study on an Evolutionary Based Features Construction Methods for Data Summarization Approach to Predict Survival Factors of Coral Reefs in Malaysia, to name a few and also infrared face recognition based on ensemble approach.

He has also delivered several keynote speeches to the public and private sectors on Transforming e-Government to Smart Government, Industrial Revolution 4.0, Digital Transformation, e-Commerce and Research and Innovation.
Ir. Dr. Mohammed Alias Yusof

Professor
Department of Civil Engineering
Faculty of Engineering
Department of civil Engineering
National Defense University of Malaysia

About:

Ir. Dr. Mohammed Alias Yusof is Professor in the Department of Civil Engineering, Universiti Pertahanan Nasional, Malaysia. He graduated with B. Eng (Hons) degree in Civil Engineering from Universiti Teknologi Malaysia (UTM) in 2002, a MSc. degree in Integrated Construction Project Management from Universiti Teknologi Mara (UiTM) in 2005 and PhD degree in Civil Engineering from Universiti Pertahanan Nasional Malaysia in 2013. His main research interests are in the blast resistant materials such as concrete, glass, and also military and commercial explosives. He is registered Professional Engineer with Practicing Certificate (PEPC) with Board of Engineer Malaysia. He has about 15 years experience in construction industry and 14 years of experience as an academician. Dr. Mohammed Alias Yusof is author of "Blast Resistant Materials: Concrete and Glass", book. This book focus on the introduction to explosive technology, blast phenomena, blast resistant concrete and glass. Dr. Mohammed Alias has published extensively in the areas of blast resistant materials and technology, with a total publication count of more than 80, has served as reviewer for prestigious journals Science and Technology Journal. In 2017, he has been awarded a Distinguished Scientist by Venus International Foundation, Chennai, India for his valuable contribution in the field of blast resistant materials and civil Engineering.
Dr. G.P. Ramesh  
Professor and Head  
Electronics and Communication Engineering,  
St. Peters Institute of Higher Education and Research  
Chennai

About:
Dr. G.P. Ramesh has completed his Ph.D. work in design of Luo converter for hybrid vehicles in 2010. He is working as a Professor and Head of Electronics and Communication Engineering in St. Peters Institute of Higher Education and Research. He is serving in the field of teaching for the past 21 years at various levels. He is involved in establishing laboratories in Electrical, Electronics and Communication Engineering departments. He has published more than 81 Research papers in the National/International Journals and 92 Research Papers in National/International Conferences. He has awarded 14 Ph.D’s under his supervision in the field of Electronics and Communication Engineering and presently guiding 8 scholars. He has published 3 patents on his name. He has developed three funding products sponsored by MSME. He has organized 5 International Conferences and 4 National Conferences. He is an Active Committee member in Institution of Engineers Thiruvalur local center. He is a Branch Councillor for IEEE chapter in St. Peter’s.
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ABSTRACTS
A Chatbot Escort for Pupils using Python Machine Learning Libraries

Dr.V.Gowri
SRM Institute of Science and Technology, Ramapuram Campus, Chennai, India

Abstract
This Paper addresses a chatbot Guide for students using python machine learning libraries. This paper is an elaborate description of the design and implementation of chatbot that is capable of providing answers to the queries. The Main objective of this Project is to create a smart and accessible chatbot that freshers can use to access campus related information on their fingertips. Chatbots are a very popular option to automate the answering of FAQs (Frequently Asked Questions) and it solves the problem of human non-availability. It is not always feasible to ask around for directions or look for a human help desk on campus. This chatbot provides readily available information for any user to access. Although the technology does not exist to make chatbot completely human – like. This project aims to develop a chatbot that can only answer user queries effectively, but with the help of sentimental analysis, attempts to be sympathetic with many users situation or feelings and make the decision for human intervention. We have used algorithms like levenshtein distance, jaccard index and synsets for the implementation of the chatbot guide.

Keywords
Chatbot, Levenshtein Distance, Machine Learning, University Chatbot
Prospect of Cell Suspension Culture in Plant & Animal Biotechnology

Aliyu Isa, Ibrahim Muhammad, Ahmadu Umaru, Aisha Ahmad Tijani
Department of Science Laboratory Technology, Ramat Polytechnic Maiduguri, Borno State – Nigeria

Abstract
Cell suspension culture is a type of culture in which single cells or small aggregates of cells multiply while suspended in uptight liquid medium. Establishment of single cell cultures through suspension cultures provides an exceptional chance to investigate the characteristics and potentialities of plant cells as well as animal cells for several reasons such as growth and characteristics in different cell lines, physiology and morphological presentations of such cell undergoing finite and continuous growth, studies for industrial research as well as Agricultural purposes. Such systems contribute to our understanding of the interrelationships and corresponding influences of cells in higher organisms. In addition, free cells in cultures permit quick manipulation and withdrawal of diverse chemicals/substances thereby making them easy targets for mutant selection. Therefore, both plants and cells are in direct or indirect participation in suspension cultures where different varieties of crops and cell lines are grown for research and industrial purposes.

Keywords
Cell, Culture, Suspension
Timer Based DOL Starter for Agricultural Motor Pump Sets

[1][2][3][4] AssociateProfessor,G.Pulla Reddy Engineering College ,Kurnool,Andhra Pradesh,India

Abstract

Now a days farmers are facing very difficulties in irrigating the land due to the lack of power supply or unable to get the required supply on-time. Required power supply to run the irrigation motor (3Phase) will get usually in night in villages, very hardly they get power in day time. In the present scenario, where there were frequent happenings of deaths due to the reason that the motor has to be turned ON manually, which resulted in electric shocks has proven the significance of the Timer based DOL starter. It guarantees more protection towards contact of electricity and reduces the chances of motor being damaged to a great extent by controlling the DOL starter wirelessly.

In this paper, hardware implementation of Timer based (direct-on-line) DOL Starter is developed which may be categorized as double insulated as per the International Electrotechnical Commission. This shock resistant motor starter reduces the cost of frequent motor rewinding and the cost of loss of life of cattle and farmers due to shocks. This DOL Starter t not only save time of the farmer but also more protective than the traditions starters that the farmers usually use. If one takes all the life cycle costs, our starter will be the only affordable long-term solution.

Keywords

DOL Starter, three-phase contactor, induction motors
Virtual Reality Based Home Automation System

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Abstract
In today’s fast growing economies, Home Automation has become a crucial part. There is a rapid change in it's technology and various automating strategies are implemented. The, and New ways of producing super sensor systems is growing up as the conceptual understanding for automation has been changed. Home automation is the only way to manage everything. In Indian houses almost all the people make mistakes while using normal electrical circuit combination. They make mistake of not switching off the electrical gadgets when not in use. They even forget when go out or completely forget about it. The result of this is the wastage of energy when it is not in use. In order to avoid these drawbacks, automation techniques can be implemented. This paper presents how to fill the gap between the company and client in imagination of Home Automation system before the installation in real world. In this paper a virtual home automation system that reflects the real world is presented. Client can experience his desired home automation system even before the installation in real world. The Virtual Home Automation is developed using UNREAL ENGINE Software.

Keywords
Acorus X470 Motherboard, Home Automation, UNREAL ENGINE
A Conditional Random Field Based POS tagger for Malayalam


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Abstract
This paper presents a parts of speech tagger, which is a very important preprocessing task in Natural Language Processing. For tagging, we make use of Conditional Random Field Technique. The tagset used is BIS tagset for Indian Languages, which contain 36 tags. The tagger works on a highly agglutinative language, Malayalam. The corpora used for Training and testing is the ILCI Health corpora, constituted of 276000 words. The maximum reported accuracy is 84% while working with different features.
Density based Traffic Congestion Management and Vehicle Detection

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Abstract
This work traffic light control and vehicle detection is designed to control the traffic signal by for certain time limits based on traffic at the lanes which is applicable for junction. By using this method this would save the time for people. Present day one of the serious issue is the traffic congestion, therefore such system should be moved from manually or fixed control system to automatic control with decision making capabilities. To optimize the present-day problem, alternate method presenting the implementation of the miniature model by sensing the number of vehicles in the particular lane the time of green light can be increased, the detection of vehicle is done by using sensor and the control action is done by microcontroller. In certain instance the higher vehicle in particular lane tends to have higher time of green light comparing with the lane with lower number of vehicles this can be achieved by microcontroller and sensor. To upgrade this issue, we developed a substructure for a traffic control system in an intelligent way. Occasionally, heavy traffic at one path of junction needs higher time delay to green light than compared to provided time. Therefore, redesigned a basic mechanism of 4-way system to density-based controlling of traffic signal system in that the downtime of green and red signals are assigned in the method of the density of the vehicles present at that time

Keywords
Traffic signal, Microcontroller, Sensor.
Development of Auto Insurance Claim Management System using Ant Colony System with 2-Opt

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Abstract
At the present, if there happens to be a case of reported vehicle accident and damage, the car insurance system will separate it into 2 types of claims. These are namely dry claims, which means no other parties are involved, and fresh claims with opposition parties involved. After that, these issues are leading to assigned officer to inspect the scene of the accident and assess the initial damage. The repair can be requested in 2 types, which are with its respective car repair service center inside the company or others outside it. If the repair request is to be with an outsider car repair service center company and is also for a car insured for Limited Partnership repairs, the company will arrange a corresponding officer to perform a pricing approval at the center after receiving a quotation for repairs from that center. In such cases, there should be an effective system implemented to help manage the task because people are required to be send out to check the repair price offered by the center. As a result, this current method adds to the budget cost of managing the work in this section. Therefore, the researcher is interested in developing a job management system that analyze and show the appropriate path to take when going to a car repair service center for maximum work productivity and effectivity. The system was developed in python language and studied in ten sample data groups in the Bangkok area. An Ant Colony System algorithm (ACS) in combination with the 2-Opt local search was proposed to solve the problem. From the results of the algorithm test, it was found that the Ant Colony System with 2-Opt method had the shortest total distance. When comparing this result to the traditional Ant Colony System method, the distance was reduced by 16%, and compared to the classical method with decision criteria, the distance was reduced by 17%.
A Mathematical Model of the Risk of Airborne Transmission Assessment in a Classroom Takes into Account the Ventilation System

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Abstract
The more and longer a person interacts with others, the greater the risk of COVID-19 spreading. As a result, effective air produce better quality for controlling and reducing potentially polluted air, such as CO2 levels. The CDC recommends a multi-layered strategy to reduce SARS-CoV-2, the virus that causes COVID-19. This strategy uses a number of control techniques, including adjustments to building ventilation, to decrease disease transmission and exposure risk. This research proposed a mathematical model for measuring the risk of airborne transmission in a classroom with a ventilation system. This study suggests a mathematical model for measuring the risk of airborne transmission in a classroom with a ventilation system. The model solution is approximated using the fourth-order Runge-Kutta method. The proposed technique balances the number of the students entitled to remain in the classroom with the efficiency of the air ventilation system during the air quality control procedure.

Keywords
Airborne transmission, Classroom, Mathematical model, Risk, Ventilation system
Accelerated Deep Learning Inference from Constrained Embedded Devices

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Abstract

Hardware looping is a feature of some processor instruction sets whose hardware can repeat the body of a loop automatically, rather than requiring software instructions which take up cycles (and therefore time) to do so. Loop Unrolling is a loop transformation technique that attempts to advance a program's execution speed to the detriment of its twofold size, which is a methodology known as space–time tradeoff. A convolutional neural network is created with simple loops, with hardware looping, with loop unrolling and with both hardware looping and loop unrolling, and a comparison is made to evaluate the effectiveness of hardware looping and loop unrolling. The hardware loops alone will add to a cycle check decline, while the mix of hardware loops and dot product instructions will decrease the clock cycle tally further. The CNN is simulated on Xilinx Vivado 2021.1 running on Zync-7000 FPGA.

Keywords

Convolutional Neural Network, Deep Learning, FPGA, Hardware Looping, Loop Unrolling, Vivado.
Design, Fabrication and Analysis of Manually Operated Multi Blade Coconut Slicer Machine


Abstract
This work is to further develop effectiveness of cutting of coconut with less endeavors and less labor furthermore, to expand the Scraping of cutting the coconuts. This Coconut grater makes fresh, moist coconut from fresh coconuts. This project is mainly designed for the commercial ventures for scratching of coconut in order to save the time. It is a table mount model that clamps to any flat work surface. It can grate four coconuts in less than five minutes. Made from high-quality stainless steel, this Coconut scraper is a must for most cooks from South India where coconut is used in almost every dish.

Static structural and dynamic analysis of scraping of coconut machine to find the structural safety and finding initial modes and corresponding natural frequency and finding life estimation of the machine

Keywords
Coconuts machine, fem
Alternative of Synchronous Logic Circuit to Enhance Power Efficiency

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Abstract
Semiconductor industry is totally dominated by synchronous circuits. These clocked circuits are facing many challenges and obstacles like speed, low-power design, increasing physical level variability etc. as and when miniaturization increases. Operating frequency in Ghz complicate the existing clock management along with that, use of bulky external supply, also take up extra space on the chip and hinder the efficiency of the circuit. Hence there is a need to adapt new and innovative way to overcome these problems. This paper focuses on the use of asynchronous circuit as an alternative to increase the power efficiency in circuit. Epilogue of the paper discuss about method of using asynchronous paradigm for enhanced power efficacy.
Biopotentials of Compatible Solute Producing Halophilic Isolates from Indian Salterns and Its Pharmacological Applications


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Abstract

The saltpan workers working in an environment are highly saline. The environmental humidity, pH, and deposition of salt in palm, in between fingers, legs and hands promote skin diseases like impetigo, folliculitis, furuncles and carbuncles. In the present study, samples collected from different infected parts of saltpan workers of Thoothukudi district showed aggregate of different pathogens in which Staphylococcus sp., is of increased concentration followed by Streptococcus sp., Pseudomonas aeruginosa and Escherichia coli. Furthermore, saline soil sample was collected, from three salterns in Tamil Nadu (Thoothukudi, Marakkanam, and Kanyakumari), Ernakulum in Kerala, and Ribandar salterns in Goa, India. Samples were plated in different media and observed for the growth of halophilic isolates. Anti-microbial activity was performed using the intracellular solutes against different test organisms and the arbitrary unit was determined against Staphylococcus sp.. A topical formulation was prepared using different solvent extract of intracellular solutes isolated from halophilic bacteria, identified as Oceanobacillus oncorhynchi and Pseudomonas stutzeri on performing 16S rRNA gene sequencing. The effect of topical treatment was accomplished by animal experimental studies. The intracellular compounds showing prophylactic activity against pathogens were identified by GC-MS analysis. Comparatively, formulation prepared from Pseudomonas stutzeri was as effective as standard topical ointment.

Keywords

Skin diseases, halophilic bacteria, arbitrary unit, wound healing, anti-inflammatory
Coin Based Mobile Charger Using Solar Energy

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Abstract
The coin based mobile charging system charges the mobile phones when the coin is inserted. This system is used by shop owners, rural people and can be implemented in the public places like railway stations, bus stand to provide mobile charging facility. This system can be used for smart mobile charging at public places. This coin based mobile charging system will supply the enough amount of charge to the mobile phone and is available on demand in public places. The main advantage of this charger is, power supply for the charger is determined from solar power and current supply.

Keywords
Solar panel, Coin Box, Charger cable
IOT Based Farmland Powered using Solar Energy

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Abstract
In the present scenario, availability of power and water are insufficient to satisfy the farmer’s requirements. Traditionally implemented Techniques of irrigation are proving to be less futile as these are not good at multitasking different concerns which are combinations of availability of water, source of energy and timely soil profile analysis. With the merger of automation and the methods of irrigation used earlier. The scope to mitigate issues concerning water and power crisis, is huge. In this paper Internet of Things based solar powered smart irrigation system with monitoring and control features, is designed and implemented. The sensor enabled proposed model of smart irrigation system along with its Android application and ESP8266 as its main controllers. The farmland parameters can be monitored anywhere around the world with the help of IoT technology. The whole concept of this paper is implemented and then only the results are presented

Keywords
Arduino, Buzzer, Soil moisture sensor, Electrochemical sensor, Humidity sensor, Ultrasonic sensor, Turbidity sensor, PIR sensor, Temperature sensor, Relay, Motor
Hobli Wise Hydro Geomorphological Evaluation of the Groundwater Prospects Mapping


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Abstract

In recent days groundwater demand has increased in manifolds and in the next fifty years, availability of groundwater might be very less due to overexploitation. The general scarcity of surface water supply has led to over stress on the groundwater regime. In order to address the same, the present study identifies the zones with high groundwater prospects, through weighted overlay analysis of spatial layers were carried out. The six spatial layers used in this analysis were land use/land cover, drainage, lineament, geomorphology, lithology and slope. In the study area, there is an imbalance between recharge and withdrawal of ground water due to more agricultural activities. Hence suitable methodology needs to be framed for mapping the prospective zones of ground water. The systematic approach of understanding the terrain characteristics at the regional level and then going for detailed mapping will help in improving the quality of information and its applicability to appraise the surface and subsurface water dynamics.
Comparative Study of Performances of Banks Using a Markov Chain Model

Gowry S Kumar, Sreelekshmi G, Ushakumari P.V

Abstract
Today, the stock market becomes an important and inseparable part of the global economy and thus attracted the attention of many people. The share prices are varying day by day as it depends on the demand-supply economics. In the present paper, we analyze and predict the future stock price changes happening to the three nationalized banks in India namely Union Bank, Canara Bank, and Bank of Baroda by analyzing the data for the period 17th April 2018 to 14th July 2021. We specify equity price change as a stochastic process assumed to possess Markov dependency with respective state transition probabilities matrices following the identified state pace (i.e., decrease, stable, or increase). We established that the identified states communicate and that the chains are aperiodic and ergodic and thus possess limiting distribution. The study reveals that regardless of bank’s current share price steady-state probabilities of share ‘up’, ‘down’ and ‘remain same’ for Union Bank are 46.93%, 51.57%, and 1.51%; for Canara Bank 48.68%, 50.57%, and 0.75%; for Bank of Baroda 49.56%, 49.44%, and 1% respectively. Also, it was observed that if the closing price was up for the first day for all three banks, then it was expected to return to the same state after 2 days. In addition, we computed the average time it takes to move from one state to another and the average number of visits to a particular state from another state based on the share price.

Keywords
Markov chain, Transition probability matrix; Limiting distribution; Expected mean return time.
Design and Implementation of Solar Based Poultry Incubator

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Abstract
Incubation of poultry egg is very important these days as the demand for chicken is increasing day by day. In short conventional method of egg hatching requires continuous supply of power. In this project a new method of solar poultry incubator design is suggested which could be used to hatch eggs from solar photovoltaic and hence could reduce the usage of renewable source of energy. By implementing power and can maximize the usage of solar power which is a this method we will be able to reduce the power consumption of the incubator by 75% and the cost involved in the design also yields profit and hence could bring out a revolution in this field

Keywords
Solar panel, Eggs, Incubator
Raspberry Pi 3 Based Automatic Vehicle Speed Control System under Foggy Weather Conditions

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Abstract
Rate of mortality increasing in our routine life due to road accidents. The major sources of road accidents were reckless driving, improper road turns, poor visibility due to fog, drunk & drive, etc. Recent analysis by the Ministry of Road Transport and Highways, Government of India, stated that 16% of road accidents were due to foggy and misty weather conditions. In this context, automatic vehicle speed control systems for foggy environments were developed. Idle Air Mixture Screw/Throttle Valve/Air Flow meter methods were proposed to control the vehicle speed under foggy weather conditions. A 720 dpi webcam was connected to the Raspberry pi processor and the captured images were processed with OpenCV and NumPy modules. An ULN2003 current amplifier controls the stepper motor and limits the amount of air flow into the carburetor thereby regulating the engine Revolutions per Minute (RPM) and speed of the vehicle. The proposed methods were tested during spring season.

Keywords
Raspberry pi 3 model B, Arduino UNO, Stepper motor
A Review on Modelling & Control of Grid Integrated Inverters for Power Grid Dynamics

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Abstract
The electric power system is on the threshold of a paradigm shift due to increasing penetration of inverter-based sources. This results in larger frequency deviation due to lower rotating inertial energy. Existing grid tied inverters operate as grid-following sources, which follows voltage, angle & grid frequency to control their output. In contrast, grid forming inverters actively control their frequency output by continuously varying their active & reactive power references. A basic issue with high penetration of inverter-based sources is the technical complexity of controlling hundreds to millions of inverters. This paper provides important insights to the interaction between IBR and high-power grids. To solve the lower/no inertia problem with high penetration of IBRs different control techniques of grid forming inverter (GFM) has been reviewed. These control techniques make the GFM capable of providing system strength in terms of stability, fault ride through capability, lowering ROCOF has been addressed. This review paper also give research opportunities for research scholars in the field of grid forming inverter (GFM).

Keywords
Grid Forming Inverters (GFM), Grid Following Inverters (GFL), Inverter Based Resources (IBR), Frequency Stability.
A Detailed Literature Survey and Analysis of Heterogeneous Cross-Project Defect Prediction

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Abstract
To improve the quality of software and efficiency of the testing process, identification of the defect prone modules at right time is known as software defect prediction. In recent years, the researchers started focusing on automated software defect prediction using cross project previous data instead of same project or with identical measures. This increases the capability of software defect prediction in an optimized manner. But handling the heterogenous cross project defect prediction (HCPDC) is considered as toughest challenge because of the gap between source and target projects. This paper performs a depth analysis of the various existing literatures related to the prediction models of HCPDC and CPDC using machine learning and statistical methods. Finally, the primary challenges in selection of metrics, class imbalance handling and distribution of the datasets are discussed.

Keywords
Software testing, software quality, cross project defect prediction, machine learning, heterogenous cross project defect prediction, statistical methods.
A Mathematical Model of Carbon Dioxide Concentration Measurement in a Bus due to Passengers Breathing

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Abstract
Carbon dioxide emitted by human breath is a major contributor to airborne infections. Airborne infections can spread quickly and breathing can expose us to airborne infections that are life-threatening. If there are passengers traveling by bus, there is a risk of infection. In this research, a mathematical model of carbon dioxide concentration measurement due to human breath is introduced. This research focuses on measuring the concentration of carbon dioxide due to bus passengers. An explicit finite difference technique is used to approximate the solution of the model. The model solution can be used to know how much the passengers allow for sitting on the bus while the level of carbon dioxide concentration is controlled.

Keywords
Bus, Carbon dioxide, Explicit finite difference technique, Mathematical model, Passengers breathing
Financial Innovation among Smallholder Farmers: Enhancing Uptake of Weather Index Insurance a Pragmatic Approach

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Abstract
Advances in innovation around financial instruments over the decades have promoted response to improved development of agriculture products and services in the sector allowing, to some lesser extent, introduction and testing of these products to the rural poor farmers. Over years, the agriculture sector has faced challenges of climate change resulting in poor agriculture production and productivity for the farmers. The loses over years by farmers are resulting into serious poverty levels in the rural areas, Farmer resilience to these shocks needs to be considered for current development space hence importance of looking at financial innovations that edge some of the risks the farmers are and will continue going through. The farmers today will need to come to be part and adopt the innovations that will help increase the farmer resilience to these natural shocks due to climate change challenges. The study therefore looked at the extent to which small scale farmers are willing to uptake and adopt innovation such as weather insurance index as financial edging technology. Uptake of innovation and technologies has a number of factors. According to Rodgers (1995) theory of technology diffusion consists of five factors that needs to be considered; compatibility, relative advantage, complexity, observability and trialability. The study targeted 252 small-scale farmers in Choma district of the Southern province of Zambia. From the study, it was established that the extent of innovation diffusion of weather insurance index with the farmers is a combination of factors that needs to be put in place if farmers are to adapt and adopt technologies. The theory of innovation diffusion to some extent brings out the factors that are supposed to be paid attention as financial innovations are pushed onto the agriculture markets. The study indicated a number of farmers exhibiting ignorant over the weather insurance index regardless of it being offered to them via government initiatives.

Keywords
financial diffusion, adoption, weather index insurance, uptake.
Critical Velocities of Axially Functionally Graded Pipes Conveying Fluid Resting on Winkler Foundation


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Abstract

The present paper deals with the problem of computing critical velocities of fluid-conveying pipes resting on a Winkler foundation three classical boundary conditions. Pipelines are used extensively for transportation of fluids. The velocity of the fluid in the pipeline imparts energy to the pipeline making it to vibrate. It is well established from published literature that there exists a critical velocity of the fluid near which the natural frequency of the pipeline tends to zero. This is the required condition for buckling of the pipeline. Literature abounds with analyses, which give information on the influence of boundary conditions on the stability of elastic metallic material fluid conveying pipes. However, much of these studies have been carried out for elastic metallic material pipelines resting on Winkler or Pasternak type of foundations. This has provided the motivation for studying the critical velocities of axially functionally graded fluid-conveying pipes resting on Winkler foundation as an essential and useful case to be worth investigating. The foundation considered in this study is a one-parameter Winkler foundation model. Expressions are derived for the critical flow velocity by utilizing Fourier series and Galerkin method for three boundary conditions, namely: Pinned-Pinned, Pinned-Fixed and Fixed-Fixed. Results are presented for varying values of the foundation stiffness parameter and interesting conclusions are drawn on the effect of the foundation parameter on the critical flow velocity of the pipeline.
Potent Analysis of Hypothyroidism - A Detailed Review


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Abstract
Clinical data claims that “One out of ten” Indians are suffering from thyroid disorders. Hypothyroidism/underactive thyroid is a disorder or the condition of the endocrine system in which the thyroid gland does not produce enough thyroid hormone. Hypothyroidism mostly middle-aged and older women, anyone can develop the condition, including infant. Hypothyroidism Prediction in every individual based on their profile and behaviour is a challenging task in the current sector. Current system is a scientific research where experts guess the possibility of hypothyroidism based on symptoms. Confirmation of having hypothyroidism disorder can be done only after series of diagnostic tests. There do exist some population who need more accurate test to find the thyroid gland status. About 42 million people in India have thyroid disorders and hypothyroidism. There is no automation for hypothyroidism prediction. System uses the concept of association-rule mining approach to find out the patterns of hypothyroidism. Frequent itemset mining in dataset are used for application development. It is used in a variety of applications to meet the basic needs of human society. Data Mining patterns can play major role in health care industry. We examine how frequent itemset mining can predict the possibility of hypothyroidism disorder in this study.

Keywords
Association-rule mining( ARM), Frequent-itemset mining(FIM), Hypothyroidism, Data mining.
Stable Attractors on a Certain Two-dimensional Piecewise Linear Map


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Abstract
In this article we study the behaviors of a piecewise linear map with initial condition in the second quadrant. There is a unique equilibrium point and two 4-cycles of the map. We found regions of initial condition that solutions become equilibrium point or 4-cycles. We divided the second quadrant into sub-regions and identify behaviors of solutions in each sub-region by direct calculations, and formulated inductive statement to explain the behaviors of the map without using stability theorems.

Keywords
Coexisting attractors, Periodic solution, Equilibrium point, Piecewise linear map.
Mixed Moving Average – Modified Exponentially Weighted Moving Average Control Chart for Process Mean Detecting

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Abstract
In Statistical Process Control (SPC), a control chart is the most effective tool for monitoring and improving processes. Classic control charts were created in the past and were effective at detecting both small and large changes. However, the mixed control chart has been presented to improve the performance of the traditional control chart. This research introduces a new mixed control chart, MA-MEWMA, which combines the moving average (MA) and the modified exponentially weighted moving average (MEWMA) charts to detect the mean change of the procedures with symmetric and asymmetric distributions. Average run length (ARL) can be used to evaluate performance in MA-MEWMA chart with Shewhart, MA, and MEWMA charts that employ Monte Carlo simulation (MC). The results indicate that the proposed chart was more convenient at detecting a change in the average of the process in the control where \( ARL_o = 370 \) than other control charts with the parameter level set \( \pm 0.05, \pm 0.10, \pm 0.25, \pm 0.50, \pm 0.75, \pm 1.00, \pm 1.50 \). On the other hand, the MA control chart was highly efficient when the parameter level was set \( \pm 2.00, \pm 3.00, \pm 4.00 \). An illustrative example is also provided to explain the implementation of the proposed chart and existing charts, which demonstrated that the suggested chart was more successful than other charts in detecting changes.

Keywords
Mixed control chart, Moving Average - Modified Exponentially Weighted Moving Average control chart, Average Run Length, Monte Carlo simulation
Sentence Embedding Techniques with Cosine Similarity to Classify Healthcare Savvy using Online Discussion Forum


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Abstract

Nowadays, information about people’s lifestyle and opinion on products is accessible on the internet conveniently. The data is beneficial for a business to target groups of customers, which is likely to make a high-profit. It also helps a business to improve products and services. In this paper, we will validate the prospect of insurance’s customers on social media such as Pantip.com, the most popular Thai discussion forum. Accumulating a group of keywords from the discussion topics, which are related to insurance and Coronavirus (COVID-19) in Pantip website, is the initial step in our process. After that, Natural Language Processing (NLP) is applied to modify the real data to sentence embedding. Then, the Cosine Similarity technique is applied on text that tend to have a good health. Results of this study would benefit a COVID-19 insurance company to make a decision on a target person, who is likely to be a potential customer.

Keywords

coronavirus, insurance, sentence embedding, cosine similarity, health, social media
Utilization of Mustard stalk Biochar to Produce Controlled Release Urea

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Abstract
Biochar coated urea is the one of the most appropriate alternative to polymer or other coated urea as they reduce fertilizer intake by controlling the release pattern along with reducing soil pollution. Biochars are fabricated using a technique called pyrolysis or torefraction. Due of its appropriate morphological and physicochemical qualities and since a wide range of raw materials is available in form of agro residues biochar holds promise in preparing controlled release fertilizers. In present study, preparation of Mustard stalk biochar coated urea is explained along with its role in mitigating soil and water pollution is explored.

Keywords
Controlled Release Fertilizers, Biochar Coated Urea.
A Wind-Solar Hybrid Power Generation System


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Abstract

With the global environmental pollution and energy crisis, distributed power generation system (DPGS) based on renewable energy, such as photovoltaic (PV) and wind power generation (WPG), is playing a more and more important role in energy production. However, the output power of PV and WPG are usually strongly fluctuant due to the randomness and intermittence of solar and wind energy, which requires a large capacity of energy storage to satisfy the load demand when the system works in stand-alone mode, and results in a strong impact on the utility grid when the system works in grid-connected mode. This problem can be partially overcome by utilizing the hybrid wind-solar power system thanks to the complementary characteristics of wind and solar energy. A reasonable size of PV/WPG/battery can not only improve the power supply reliability, but also reduce the cost of the system.
ARIMA Modeling and Forecasting of Covid-19 Second Wave in Ten Most Affected States of India

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Abstract

India was hit by the devastating second wave of Covid 19 with a sudden surge in cases in April 2021. It was far more severe and catastrophic than the first wave. Several models tried to gauge the severity and peak of the second wave but were successful only to some extent. The current scenario highlights the urgent need to forecast the trend and magnitude of the third COVID wave with reasonable accuracy. It will significantly aid the COVID preparation and planning by Govt and non-govt. Organizations. An accurate forecast of the third wave can help the government in planning for health infrastructure in advance. The present work forecasts the temporal trends of the second wave of Covid-19 in the ten most affected states of India using the Autoregressive Integrated Moving Average Model (ARIMA). The model is trained using daily confirmed cases of Covid 19 from March 14, 2020, to March 30, 2021, for India’s ten most affected states, i.e., Bihar, Delhi, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, and Uttar Pradesh. Performance evaluation of the model suggested that time series models can predict forthcoming COVID-19 waves by temporal analysis of previous waves. The predicted results of the second wave aligned with the actual number of COVID-19 cases.

Keywords

Pandemic, second wave prediction, time series
A New Nonparametric Tukey CUSUM-MA Control Charts for Detecting Mean Shift

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Abstract

This research proposes the new mixed control chart called the new nonparametric Tukey - Cumulative Sum-Moving Average control chart (MCM-TCC) to detect the change of average of the process with asymmetric distributions and to compare the efficiency in detecting the change of the MCM-TCC to the CUSUM, MA, MCM, MMC, CUSUM-TCC, MA-TCC and MCM-TCC control charts at the various change levels of the parameter. The criteria to measure the efficiency were average run length (ARL), standard deviation of the run length (SDRL) and median run length (MRL) which evaluated by using Monte Carlo simulation (MC). The numerical results showed that the MCM-TCC has the highest efficiency in detecting the change when the changed level was at $0.05 \leq \delta \leq 0.25$, if the changed level was at $\delta \geq 0.50$ the MA-TCC had more efficiency, for case of exponential distribution. In the case of gamma distribution, the MMC had more efficiency to detect the change when the change level was at $0.05 \leq \delta \leq 0.75$, if the change level was at $\delta \geq 1.00$ the MA-TCC had more efficiency.
The Wood Vinegar from Novel Charcoal Kiln and Their Inhibitory Activity Against *Curvularia lunata* Cause of Dirty Panicle Disease in Rice


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**Abstract**

Dirty panicle disease in rice caused by *Curvularia lunata* is one of the factors that impact rice production. In organic farming, many harmful agricultural chemicals were replaced by wood vinegar or pyroligneous acid, a byproduct of wood pyrolysis. This research aims to develop a kiln to produce wood vinegar and to evaluate antifungal activity. When the wood was heated in a novel patent charcoal kiln, the wood vinegar was generated from the gas that flows into a long pipe. The wood vinegar was extracted from the branches of Bamboo (*Dendrocalamus asper*), Mai Tiew (*Cratoxylum formosum*), Samae San (*Senna garrettiana*), Eucalyptus (*Eucalyptus globulus*), Sat (*Erythrophleum succirubrum*), Siamese Neem (*Azadirachta indica*) and Ma Khang (*Diospyros mollis*). Results showed that acetic acid and phenolic compounds were the main constituents of wood vinegar, with a range of pH from 4.37 to 5.37. The wood vinegar from Ma Khang gave the highest phenolic content of 61.22±1.91 mg GAE/mL. Inhibition of mycelium growth rate to *C. lunata* was 79.38% and 100% at a concentration of wood vinegar 5% and 10%, respectively. As a result, wood vinegar can be used in organic farming as a fungicide. However, tree species and concentration should be considered.

**Keywords**

Wood vinegar, Antifungal activity, *Curvularia lunata*
LIME Based Explainable Framework for the Detection of Diabetic Retinopathy

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Abstract
The addition of computational attainment in Artificial Intelligence (AI) has set out the opportunity to nurture Deep Learning (DL) applications for the detection and classification of medical images. In spite of most advantageous results it is observed that the model’s general precision is not exuberant all alone to align clinicians to settle on a machine learning (ML) model. Clinicians perceive reasonableness as a method for legitimizing their clinical dynamic with regards to a model's choice highlights a demand of ML models with the justification measure. This article proposes a framework that appends understanding and interpretability of well-established models for the detection of diabetic retinopathy (DR). We put in a model agnostic method on the top of ML model to provide explainability and interpretability for underlying model for the detection and classification of DR. Our proposed LIME based framework will provide best results to enhance model interpretability and flexibility by portioning the explainability from ML models as well. It makes medical decisions more robust, bridging the gap between ML solution & human explanations. As a result, use of ML / AI in sensitive & critical domains where value of human life is of an enormous concern such as healthcare will reach to new dimensions.

Keywords
Machine Learning (ML), Deep Learning (DL), Interpretable Machine Learning, Diabetic Retinopathy (DR).
High Resolution Satellite Image Compression: Survey


Abstract
Satellite images are images taken from the earth by satellite operated by companies and governments. The high-resolution satellite photos collected by satellites require vast amounts of storage. Transmission of images from satellites to the base station is a very difficult task. Compression of high resolution images is crucial in satellite image processing as it shrinks the image size to an unacceptable level without limiting the required characteristics. It seems necessary to compress large satellite images for further transmission. The previous researchers evaluated the image metrics such as peak signal to noise ratio (PSNR), compression ratio (CR), mean square error (MSE), etc. For this survey, the satellite image-based compression algorithms are considered. This study primarily focuses on the lossless compression of satellite images by a hybrid algorithm with a high compression ratio on satellite images.

Keywords
Satellite Image, Lossless Image Compression, Compression ratio (CR), and Peak signal to noise ratio (PSNR), Mean-square error (MSE).
A Review of Various Methods to Detect Fake Account on Social Media

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Abstract

In today's generation social networks have become popular due to the ability to connect people around the world and they can share photos, videos, audios. On social networks fake account creation is considered to be more dangerous than any other form of cyber-crime. Machine learning algorithm and methods have been proposed for the detection of fake accounts. In this paper we are trying to focus the impact of social networking sites and discussing the problem of fake account on social networking sites.
A Three Level Modular DC-DC Converter Applied in High Voltage DC Grid

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Abstract
Modular dc/dc converter (MDCC) based on cascaded sub modules (SMs) has been an attractive converter topology for the interconnection of high voltage dc (HVDC) grids for its low cost and high efficiency; however, the system volume. In this work, a buck three-level type MDCC (Buck-TL-MDCC) is derived from the classic buck three-level converter by replacing the switches and blocking capacitor with cascaded SMs for HVDC application. Just like the major merit of the Buck-TLC. MDCC can be reduced, and the high voltage blocking capacitor is eliminated by the cascaded SMs. Instead of the sine-wave modulation employed by prior arts of MDCCs, the stepped two-level modulation. Finally, the simulation and experimental results verify the effectiveness of the proposed Buck-TL-MDCC.

Keywords
DC-DC Converter, Buck-TL-MDCC, HVDC
In-Silico Study Based Evidence of Microbe Driven Modulation of Cancer Prognosis

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Abstract
This Paper addresses a chatbot Guide for students using python machine learning libraries. This paper is an elaborate description of the design and implementation of chatbot that is capable of providing answers to the queries. The Main objective of this Project is to create a smart and accessible chatbot that freshers can use to access campus related information on their fingertips. Chatbots are a very popular option to automate the answering of FAQs (Frequently Asked Questions) and it solves the problem of human non-availability. It is not always feasible to ask around for directions or look for a human help desk on campus. This chatbot provides readily available information for any user to access. Although the technology does not exist to make chatbot completely human – like. This project aims to develop a chatbot that can only answer user queries effectively, but with the help of sentimental analysis, attempts to be sympathetic with many users situation or feelings and make the decision for human intervention. We have used algorithms like levenshtein distance, jaccard index and synsets for the implementation of the chatbot guide.

Keywords
Chatbot, Levenshtein Distance, Machine Learning, University Chatbot
Transmission of Gasoline Based Vehicle into Battery Operated Vehicle


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Abstract
Traditional vehicle either they are two-wheeler or four-wheeler, commercial or private, they all are known to emit hazardous pollutants into the environment and directly affect the human health and countries economy also. To resolve this serious issue the government (International & National) both take an actionable and appreciable initiative to transform the traditional vehicle into electric vehicle. A transmission of gasoline-based vehicle into electric vehicle is the best solution towards environment protection, country’s economy, per capita income etc. In this research paper, we mainly focus on the transmission of traditional vehicle into electric vehicle and also observing their positive and negative impact on the country’s economy, environment and GDP also. This study also contains the benefits and barrier of the electric vehicle at initial stage.

Keywords
Gasoline vehicle, EV, Transmission, Economy, GDP.
Routing based Restricted Boltzmann Machine Clustering Algorithm in Wireless Sensor Network

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Abstract
A Wireless Sensor Network (WSN) comprises with collection of nodes, which has the characteristic of limited resources. A clustering technique introduces spatial reuse of bandwidth and to control the routing problems. Though the node stability discomposes the strength of the network and affects the performance of the protocols like routing, scheduling and resource allocation. A problem makes the network re-clustering and maintaining the current information unavailable in each node. Therefore the clustering models in WSN might carefully plan with the consideration for energy consideration in mobile nodes. In this paper, we propose a Routing based Restricted Boltzmann Machine Clustering Algorithm (RBMCA). It is the type of clustering algorithm that extends the network life time by electing the cluster heads selection. Additionally, the reward points are based on the residual energies and the dynamic monitoring of their energy consumption that diminishes their count of cluster members or gives up their role. The performance evaluation for the proposed clustering model and compared results for the related clustering approach EECRP and IPSO algorithms prove the proposed method gives the best performance.

Keywords
Certain Investigations to Abuse Node Lifetime Using Signcryption in Wireless Sensor Networks


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Abstract

Wireless sensor network (WSN) is a very large collection of sensor nodes which organizes into different form of topologies like tree, mesh etc. Wireless sensor nodes work on the power source i.e. battery which is essential for its communication. To accumulate the supremacy of the network we used the sleep scheduling technique with LEACH protocol to increase the life time of the network. Sleep scheduling is very important to become a network more efficient and flexible. Main endeavor of our project is to develop an encryption algorithm to be used along with LEACH protocol on sleep scheduling mode which ensures most of the nodes are put into sleep mode to increase the lifetime of the network and to provide end to end connectivity from source node to sink node which really secures the data connectivity in the network. In addition to this simulation is carried out using ns2 Simulator with different parameters in terms of security level, packet loss rate, throughput, delay, and overhead.
Design, Development and Evaluation of Power Generating Disinfectant Mat

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Technological University of the Philippines

Abstract

Today, the world faces COVID-19 disease, an illness caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV). The virus can spread tiny liquid particles from their mouth or nose when an infected person breathes, coughs, sneezes, or speaks. A recent study suggests that SARS-CoV-2 is “more stable on smooth surfaces.” It suggests that SARS-CoV-2 could remain infectious on shoes made from plastics, leather, and synthetic materials for several hours or even a few days. Research conducted at Wuhan says that SARS-CoV-2 can survive on footwear such as shoes, which can transfer the virus to various places, and thus, stricter measures should be taken to sanitize footwear.

Recently, all establishments, such as shopping malls, hospitals, grocery stores, pharmacies, convenience stores, and boutiques, in the Philippines strictly implemented the new normal health and safety guidelines. Under Bayanihan To Heal as One Act 2020 – 002, it is mandated to fill out a health declaration form, check the body temperature using a body thermal scanner, and disinfect footwear using disinfectant mats provided at entrances of establishments. This study aims to help in promoting the use of disinfectant mats in various establishments by providing additional features such as power generation that would catch the interests of establishment owners, guests, and visitors.

The Power Generating Disinfectant Mat (PGDM) is a power-generating device that disinfects footwear that solely relies on the footsteps of humans to produce and store energy. The power produced from this device is intended to provide power for various applications such as for thermal scanners. The device is composed of a platform with disinfectant mat, rack and pinion mechanism, sets mating gears, compression springs, DC generator, and battery storage. As a person steps on the platform, the disinfectant mat disinfects footwear while simultaneously produces energy by displacing the rack and pinion connected to the mating gears. This pairs of gears transmits the power to a shaft connected to the DC generators. The full bridge rectifier will then convert the AC to DC using then flows through the step-up voltage regulator to meet the output voltage supply of 12V. A rectifier diode was used to ensure that the current flows only in one direction preventing the lead-acid battery from powering the DC generators.

The device was tested using various weights ranging from 47 to 81 kg. The average spring deflection is 19.33 mm. Result showed that the device can produce power at 88.2% of the total steps. The device produces power while the platform was displaced downward due to the compression of the spring at an average current and power of 0.335A and 4.02 W and displaced upward when the spring decompresses and return to its original height at an average of 0.357A and 4.28 W. The average current and power produced by the device was 0.346 A and 4.186 W. This indicates an average power of 8.372 W per footstep. Statistical analysis of the data for current produced using 95% confidence interval showed a favorable result with a standard error of 0.009, standard deviation of 0.281, variance of 0.079. For power, the standard error is 0.107, standard deviation is 3.404, and variance of 11.586. Histogram for both values showed a kurtosis of -1.242 and skewness of 0.265 indicating a distribution flatter than a normal curve dominated by the values at the right of the mean.
Urban heat Islands -potential to climate change _ Review

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Abstract
Several assessments of Urban Heat Island (UHI) effects on climate change and assimilations of the same to climate projections have been carried out which reveals that the urbanization and anthropogenic heat release is causing global warming, by causing increase in the surface temperatures. A recent analysis in UK revealed that a temperature at rural areas is increasing at rate of 0. 17°C per decade at depth of 30cm when compared to urban areas where the temperature is increasing at rate of 0.85°C per decade at depth of 30cm.City temperatures are at peak during summer (Zhiwen Luo, 2020). The UHI effects can lead to smoggy climate, extreme hydro climatic effects rise in temperature of existing buildings, increased cooling energy consumption and peak electricity demand. Studies have also revealed increase in mortality rates due to accumulated heat during summers in the European regions (Helen. L, 2021).

UHI can be reduced by using green roofs, adopting green infra structures for climate proofing and adaptations of urban forestry.

The present paper highlights on the different methodologies used to quantify the heat and study of the variations. The effect of land use and change pattern and propose mitigation measures for the increased heat pockets and therefore contribute to climate proofing.
Production of vinegar from Thai herbal plants using *Shizosaccharomyces pombe* and *Acetobacter pasteurianus* isolated from traditional herbal vinegar fermentation


[1][2][3][4] Department of Biology, School of Science, King Mongkut’s Institute of Technology Ladkrabang, Bangkok

**Abstract**

Vinager production using *Schizasaccharomyces pombe* YM-19 and *Acetobacter pasteurianus* EM2-03 were isolated from vinegar fermentation process by cultural techniques and molecular techniques. Two microorganisms were prepared to inoculum starter for herbal vinegar fermentation which called “Loog Plaag mea”. The first starter culture was used as 10% v/v *Shizosaccharomyces pombe* YM1-19, the fermentation was carried out on anaerobic conditions at the 30 °C for 4 days. The alcohol content was 6.18±0.13% v/v and the pH value was 3.52±0.02 on day 4 of fermentation period. Subsequently, 10% v/v *Acetobacter pasteurianus* EM2-03 was adding to herbal fermentation process on aerobic condition at 30 °C for 32 days. The final herbal vinegar products contained 4.91±0.15% v/v, acetic acid with a pH value of 3.04±0.04, total phenolic content and IC50 value of DPPH radical scavenging was 1,908.38±38.75 µgGAE/mL and 0.017±0.001 µL/mL, respectively. The physiochemical properties of identified yeast and acetic acid bacteria fermented herbal vinegar were very similar to those of fermented traditional vinegar. As a result, the identified microorganism could be used in the mass production of vinegar to improve product consistency and quality control.
Solar Thermal Energy Storage Using Phase Change Material: A Review


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Abstract
These days because of immense energy interest, there is a full reliance on petroleum products however in the future without a doubt going to make an emergency, particularly for agricultural nations. Albeit sustainable power sources like sunlight-based energy are being used on a wide scale these days, the issue comes in law and economy i.e., discontinuous, variable and flighty. Subsequently, to conquer this multitude of issues, the sun-oriented thermal energy storage framework is taken on to guarantee a smooth stock of force. Thermal energy storage can be cultivated either by utilizing sensible heat storage devices or latent heat storage devices. Sensible heat storage devices have been utilized for quite a while by manufacturers to store or deliver inactively thermal energy, yet a lot larger volume of material is needed to store or deliver a similar measure of energy in contrast with latent heat storage devices. The latent heat storage device is more appealing than a sensible heat storage device due to its high storage thickness with more modest temperature swing however it is reality and for all intents and purposes seen that it is hard to keep the temperature steady, so in latent heat storage devices some piece of the energy is put away as sensible heat. In this paper, various sorts of writing in the course of recent years have been featured and an examination of various phase change materials can be useful as augmentation techniques in thermal energy storage are addressed.
Alternative Fuels for CI Engine and Recent Developments: A Review


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[3][4] Assistant Professor, School of Mechanical Engineering, Dr. Vishwanath Karad MIT World Peace University, Pune, Maharashtra, India

Abstract

Increasing population and proportional energy demand in all the sectors has led to the dwindling of fossil fuels and is expected to be exhausted in the coming 20-30 years. Usage of fossil fuels is satisfying the energy demand but parallelly deteriorating the environment with harmful pollutants like carbon monoxide, unburnt hydrocarbons, and smoke emanations. Additionally, the expense of petroleum derivatives is expanding step by step. Along these lines, keeping in see all the above said focuses, examination, and improvement in the field of substitute powers should be there. These alternate fuels should be such that they fulfill the entire current engine's design and performance characteristics but modification in the engines for alternative fuels will also be accepted in near future. The motivation behind this paper is to give a brief introduction and recent trends developed in the field of alternative fuels and literature surveys done before by researchers thus, giving insight, knowledge, idea, and interest in the field of alternative fuels to the readers.

Keywords

Alternate fuels, C.I. engine, Future fuels, Renewable energy source
GSM Based Smart Energy Meter

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Abstract

The demand for power has increased exponentially with time. One avenue through which today’s energy problems can be address through the reduction of energy usage in households. This project presents a smart energy meter for an automatic and superior metering and billing system. The integration of the Arduino and GSM Short Message Service (SMS) provide the meter reading system with some automatic functions that are predefined. The proposed energy meter system can transmit the data like consumed energy, generated bill over GSM mobile network via SMS to the costomer. It also intimate the consumer by warning lights and sounds ,when the energy consumption is beyond the specified limit

Keywords

Node MCU,GSM,SMS,Voltage Sensor, Smart energy meter ,Display ,Current sensor.
High purity prebiotic isomalto-oligosaccharides production by cell associated transglucosidase of isolated strain *Debaryomyces hansenii* SCY204 and selective fermentation by *Saccharomyces cerevisiae* SYI065

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**Abstract**

An efficient recycling method was used to develop the continuous production of high purity isomalto-oligosaccharides (IMOs) by cell associated transglucosidase of a novel strain, *D. hansenii* from maltose and selective fermentation by *S. cerevisiae*. The most potent transglucosidase producer was screened, isolated and identified as *Debaryomyces hansenii* using LSU region sequencing. Parameters optimization studies were investigated using whole cells of *D. hansenii* (~4023 units L⁻¹ α-glucosidase activity) from 10 L fermenter to increase the enzyme activity through biotransformation. IMOs was continuously synthesized by reusing the cell biomass (6%) using microfiltration membrane system with 30% maltose concentration under controlled temperature of 34 °C in an average of 12 h for 5 cycles. The obtained low purity IMOs (67%) was further incubated with cell pellet of isolated strain *Saccharomyces cerevisiae* (4%, w/v) in 3 L bioreactor for 1 h to utilize glucose completely without affecting the product to obtain high purity IMOs by recycling method. This novel study using these yeasts was found to utilize more than 98% maltose with higher conversion efficiency for production of IMOs with > 91% purity, 79% yield and highest productivity of 198.79 g L⁻¹ h⁻¹ which was confirmed by HPLC.

**Keywords**

Biotransformation, *Debaryomyces hansenii*, Isomalto-oligosaccharides (IMOs), Microfiltration membrane system, *Saccharomyces cerevisiae*, Transglucosidase
Hiding the Sensitivities Information Using a Modified Grey Wolf Optimization Technique

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Abstract
Large amount data gathered from various sources like social media, face book, twitter, amazon and flip-kart etc,. The heterogeneous, structured and unstructured data contains sensitive information and non sensitive information. However the enormous financial growth of the organization may cause for the leakage of sensitive information in the form of association rules. In this paper proposed a modified grey wolf optimization algorithm (GWO2ARH) for ARH based on set theory sanitization algorithm to hide the sensitive association rules with minimum side effect as compared to the state of the art methods. Experiments are performed on the chess and mushroom bench mark datasets and recorded the observations. Here SEF is reduced from 24% to 5% this helps in the reduction of side effects to a greater extent than the other optimization techniques.

Keywords
sensitive, non-sensitive, grey wolf optimization
A Survey on Information Retrieval Using Ontology


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Abstract
The Web is a valuable source of information in today's rapidly changing world. A vast amount of information is available on the Internet in an unstructured format like books, web pages, journals, and recordings, for example. Which are consolidated, perceptive, and used on a daily basis by a people in wide numbers; to encourage clients to seek data recovery archives that is appropriate for their language. Acquiring useful facts from such vast amounts of data has become a complex task that requires a great amount of effort. The goal of this work is to incorporate the significant systems and ways of thinking that are used in text report portrayal, while also making nature with some of the intriguing issues that remain to be clarified, centered around text depiction and AI procedures. This paper examines the theory and tactics for report request and text mining, with an emphasis on the current composition.

Keywords
Audio, Information Retrocession, Ontology, Semantics, Video, Texts
A Context-Aware Term Indexing Structure for Associated Document Retrieval

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Abstract

Context awareness is defined as a system’s property, that uses context to provide relevant information/service to the user, where the relevancy depends on the user’s task. Indexing is a process of generating index, that acts as reference or pointers to a particular data, in order to improve accessibility for quicker information retrieval.

A novel context aware indexing model is introduced, to uncover potentially relevant data without compromising on accuracy and performance. The indexing model also incorporate, Latent Semantic Indexing (traditional model) and Neural Network model known as Skip-gram, a part of Word2vec model that searches for multiple levels of semantic relationship between the words and predicts context of the given input word.

Keywords

Context, Data set, Data Structure, Document, Index, Indexing, Latent semantic indexing, Lexical, Matrix, Noise contrastive estimation, Term, Topic Coherence, Syntactic, Semantic, Subject, Skip-gram, Vector, Word2vec
The Exact Solution of Average Run Length on Modified EWMA Control Chart for Moving Average with Exogenous Variables Models

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Abstract

The purpose of this research is to compare the performance of modified EWMA control chart and standard EWMA control chart based on the relative mean index (RMI), using the explicit formula. To examine the accuracy of the explicit formula, its average run length (ARL) was compared with the ARL of the numerical integral equation (NIE) method based on the Gauss-Legendre quadrature rule on a modified exponentially weighted moving average (EWMA) control chart for a first-order moving average with exogenous variables (MAX(1,1)) with an exponential white noise. The numerical integration technique was used with central processing unit time for testing speed of calculation. To demonstrate its capability, the proposed approach was applied to two real datasets, closing the price of the stock of PTT public company limited and THB/USD daily foreign exchange rates data with exogenous variables, and the monthly gold futures and crude oil futures price with exogenous variables. The results of real data showed that the modified EWMA control chart was better than the standard EWMA control chart.
Selection of web-based online-learning platform: Application of Multi-criteria Decision Making


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Abstract

In COVID-19 pandemic era, educational organizations across the world moved towards fast to the lockdown conventions. Accordingly, higher instructive foundations look to convey schooling through web-based platforms. This abrupt shift made an enormous effect on understudies learning abilities. In this shift of educational process totally immersed into online learning interaction with learners. This review draws a general involvement in online-mode learning platforms in this aide for learners who are quickly adjusting to new activity and styles related with video-conference so that they can best promote themselves for thoughtful positions. A number of online platforms are introduced to carry forward education process on virtual mode, such as, Webex, Google Meet, Zoom, Microsoft Team, WhatsApp Video call, Go To Meeting, Zoho Meeting, Pexip etc. commonly used. An online survey had planned among learners (n=107); participated during lockdown session and from survey result high scoring platforms were chosen for further survey. To guide the new learners to determine the best application among them, a multi criteria decision-making (MCDM) process has taken. The discoveries show that hierarchical impacts of prefer virtual platforms rely upon the accompanying elements: duration of meeting, size of application, number of participants, cost of application, quality of conferencing etc.

Keywords

hierarchical; Multi criteria decision making; video conference; virtual mode; web based platform
Performance analysis of LFSR for Energy efficient and Low power for BIST

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Alliance college of Engineering & Design, Alliance University, Banglore, India

Abstract
Testing is a necessary procedure in all applications, whether they are digital or VLSI circuits, and it raises a number of challenges. Testing is possible at several stages of the chip manufacturing process. The very first batch after manufacturing is released and tested its functionality in order to reduce loss in terms of time and economy. Testing can be performed in design level only to avoid major losses, but maintenance of testing is also required to guarantee that the device's functionality remains unchanged. Simultaneously it is essential to concentrate on area power and testing time also. For this a new technique/approach called Built-in-self-Test (BIST) into testing, to test within the circuits itself. To ensure that Linear Feedback Shift Register (LFSR) is used for test pattern generation in BIST. This approach reduces the hardware complexity and power consumption by reducing the switching activity. LFSRs can be replaced with reduced power versions and area efficient versions to minimize the energy consumption during the test pattern generation and Response analysis process. In this article the main approach of different LFSR's which are used in BIST are explained like Bit Swapping, Weighted LFSR, Pseudorandom LFSR, Ring based LFSR. This research work is implemented in Xilinx Tool.

Keywords
LFSR, BIST, Power consumption, Test pattern generation, Pseudorandom Test pattern generation, Weighted LFSR, Switching activity.
A Non-Dimensional Mathematical Model of Shoreline Evolution with a Groin Structure Using a Forward Time Centered Space Technique

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Abstract
Coastal erosion is a natural phenomena that occurs when sediment transport away from the coast is not resisted by the formation of new mass on the shoreline. To protect coastal erosion and sedimentation, a sea wall and groin were built. Shoreline evolution modeling is used to look into the beach's future topography. When a groin is inserted to a one-dimensional shoreline growth model, we provide a governing equation in this research. The model includes a non-dimensional shoreline evolution model as well as a groin structure model. The forward time centered space technique is used to approximate the incremental model in each year.

Keywords
Finite difference method, Groin structure, Mathematical model, Non-dimension, Shoreline evolution.
Simulation of Flow Over Broad-Crested Weir Using ANSYS-CFD

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Abstract
The accurate measurement of flow rate in open channels and rivers has once been an important problem faced by engineers. To overcome this problem, flow measuring structures such as orifices, notches, weirs etc., are introduced. Among the above-mentioned structures, weirs have become more preferable because of its simple structure and various other economical features. Broad crested weirs are the robust structures that are very widely used. They span the full width of the channel.

Simulation analysis is gaining importance in present day scenario, since it evades the effort and time to be spent for physical modelling. Also, the accuracy of results is claimed to be high in simulation analysis since it eliminates human and instrumental errors. Looking at the present context the studies have been carried out to estimate the coefficient of discharge from the experimental analysis. Further, an attempt is made to estimate the same using simulation analysis. The studies were taken up by means of 2-D and 3-D geometries using k-ε turbulence model in ANSYS CFD software. The results obtained from simulation analysis were compared with the experimental analysis and found to be in good consonance with each other. Also plots pertaining to Velocity Magnitudes, Dynamic pressure and Volume Fraction contours are extracted to observe the flow characteristics.

Keywords
Weir, Physical modelling, Simulation, Turbulence Models, ANSYS-CFD
Fire Alarm System sing Arduino and Raspberry Pi

[1][2] Electronics and Communication Engineering, SRM University, Chennai, India

Abstract

The proposed Fire alarm system is a real-time monitoring system that detects the presence of smoke in the air due to fire and captures images via a camera installed inside a room when a fire occurs. The embedded systems used to develop this fire alarm system are Raspberry Pi and Arduino Uno. The key feature of the system is the ability to remotely send an alert when a fire is detected. When the presence of smoke is detected, the system will display an image of the room state in a web page. The system will need the user confirmation to report the event to the Firefighter using Short Message Service (SMS). The advantage of using this system is it will reduce the possibility of false alert reported to the Firefighter. The camera will only capture an image, so this system will consume a little storage and power.
Real Time Sign Language Recognition System for Hearing & Speech Impaired People

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Abstract
Sign Language is used globally by more than 70 million impaired people to communicate and is characterized by fast, highly articulate motion of hand gestures which is difficult for verbal speakers to understand. This limitation combined with the lack of knowledge about sign language by verbal speakers creates a separation where both parties are unable to effectively communicate. To overcome this limitation, we propose a new method for sign language recognition using OpenCV (A python library) which is used for preprocessing images and extracting different skin-toned hands from the background. In this method, hand gestures are used to make signs which are detected by YOLOv5 algorithm for object detection which is the fastest algorithm till date while Convolutional Neural Networks (CNN) are used for training gestures and to classify the images. The proposed system has various advantages like Portability, User-friendly Interface and Voice Module. The software is also very cost-effective which only needs a camera of laptop or webcam and hand gestures.

Keywords
sign language, hand gestures, OpenCV, python, image processing, yolov5, object detection, CNN, convolution neural networks
Continuous Health Monitoring for Elder Patients using IoT

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Abstract
Life expectancy in maximum nations has been growing constantly over the numerous few spans a way to substantial enhancements in medicine, public fitness, in addition to non-public and ecological cleanliness. However, expanded lifestyles expectancy mixed with dwindling beginning costs are predicted to produce a massive growing old demographic within the close to destiny that could impose full-size burdens at the socio-financial shape of those nations. Therefore, it's miles vital to develop value-powerful, uncomplicated-to-use structures for the sake of aged healthcare and well-being. Remote fitness tracking, primarily based totally on non-invasive and wearable sensors, actuators and contemporary-day communication and statistics technology gives a green and reasonable result that permits the aged to retain to stay of their homely domestic surroundings rather than high-priced healthcare facilities. These structures may also permit healthcare workers to screen essential physiological symptoms and symptoms of their sufferers in actual time, investigate fitness situations and offer comments from remote facilities. Internet of things (IoT) visualizes the way forward in solving in problem of medical aid for something anyplace by anyone at any time. So as realize pervasive healthcare system a foreign healthcare monitoring is important. Multiple physical signs like electrocardiogram (ECG), heart rate, blood pressure, blood glucose, arterial oxygen saturation (SpO2) with patient’s location is designed to be sampled at different rates continuously using IoT with live Global Positioning System (GPS) location tracking system. The patient data recorded on remote measurement is compared with clinical trials.

Keywords
IoT (Internet of Things), patient monitoring, data acquisition, heartbeat sensor, electrocardiogram (ECG) sensor, SpO2 sensor, blood pressure sensor, blood glucose, Global positioning system (GPS) and Global system for mobile communication (GSM).
English to Tamil Multi-Modal Image Captioning Translation

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Abstract
With the increased gap between local languages and the latest technology coming out which is exclusive to only English speakers, Machine Translation plays a major role in bridging that gap for the vast non-English-speaking community prevalent in Eastern countries, especially in a multi-lingual country like India. Image captioning is one such new research field which requires a multi-modal setup to give captions for a given image in the required local language. This research work will explore several multi-modal architectures to provide captions of images. The generated captions will be in English and then subsequently translated captions will be in the Indic language – Tamil. With key focus towards the local and global visual features, and pre-trained embeddings, the image captions were generated using multiple architectures. The generated captions were translated using attention mechanism which allows for sequence-to-sequence modelling enabling rich translation between languages. The modals were finally evaluated using Bilingual Evaluation Understudy Score (BLEU).

Keywords
Deep Neural Networks, English to Indic Language Machine Translation, Image Captioning.
A Mathematical Model of Human Breath Carbon Dioxide Concentration Measurement in an Outpatient Room with a Variable Number of People


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Abstract
TB, COVID-19, MERS, and SARS are all significant infectious diseases that are transmitted by the air or aerosol via coughing, spitting, sneezing, speaking, or wounds. Human breath emits a lot of carbon dioxide, which contributes a lot to airborne infections. We should also be informed about how patients in the outpatient room are managed. When the number of patients in each room changes over time, it is challenging to measure and manage carbon dioxide in a hospital with a ventilation system. A mathematical model of carbon dioxide concentration measurement in an outpatient room with a ventilation system is investigated in this research, while the number of patients in each room changes over time. The fourth-order Runge-Kutta method is used to approximate the model solution. Several scenarios for improving air quality are presented in the simulations. In the air quality management process, the proposed technique balances the number of persons allowed to stay in the room with the capacity of the air ventilation system.

Keywords
Breath, Carbon dioxide, Mathematical model, Outpatient room, Ventilation.
Synbiotic Beverage Production from Mangosteen Juice using \textit{Lactobacillus casei} 431


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Abstract

Synbiotic beverage is combination of prebiotic and probiotic, which prebiotic provide the survival and the implantation of the probiotic in the gut. The aims of this research were to develop a synbiotic beverage from mangosteen juice and yam bean juice by using \textit{Lactobacillus casei} 431. The physiochemical properties and viable cell count were determined during synbiotic fermentation. The yam bean juice gave the highest growth of this bacterium at 37°C for 15 h. (6.98 log CFU/mL), then using to prepare the inoculum. The synbiotic beverage was prepared by blending mangosteen juice and yam bean juice in various ratios and using 10%, 20%, and 30% inoculum, fermentation time was optimized. The 80:20 blend ratios of mangosteen juice and yam bean juice was fermented using 30% inoculum for 10 h which gave maximum viable cell counts (7.89 log CFU/mL). pH, total acidity were slowly changed and remained about 3.27±0.01 and 0.58±0.00 %, respectively which was not statistically differing from the initial fermentation. The freeze-drying powder of this beverage using 20% inulin had the highest viability (6.84 log CFU/mL) of this bacterium and the survival rate was 95.27%. The result suggested that mangosteen juice synbiotic beverage can be useful as functional beverage.

Keywords

Lactic acid, Probiotic, Prebiotic, Synbiotic
Design of Safety Management System for Training Room Applying Internet of Things

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Abstract
As an important place for practical teaching, the safety management of training rooms in vocational colleges is still mainly manual which is unsafe and inconvenient. The development of Internet of Things technology supports for the intelligent management of training rooms. A safety management system of training rooms is designed applying Internet of Things technology. The composition of the system and the design of software and hardware are discussed. Using of sensor technology, ZigBee, and other IoT applications, the hardware, software and management platform of the training room management system are designed. The control terminal based on STM32F103C8 processor is used for data real-time wireless communication through Zigbee technology and management platform, and C language is used to design control program and management platform. The door can easily open the by swiping the card and starting the training equipment with one key by using safety management system which solves some disadvantages of manual management.

Keywords
Internet of Things, training room, safety management system.
AI And Its Impact on Digital Marketing

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Abstract

Nowadays, AI is playing a huge role to figuring out various marketing trends. Digital marketers are using AI as an efficient aspect to improve their customer facing services. Artificial Intelligence technically embedded functions that help a machine to think and act like a human. This research has focused on various aspects of AI within digital marketing process. Various tools used within digital marketing process of companies with the help of AI-based technology have been found out in this research. Use of AI within Content creation, Voice recognition, email marketing and Search Engine Optimisation are addressed in this research work. As per this research, most of the digital trading companies found AI-based technologies as the most attractive method of their marketing approach within current digital era. Apart from this, it has been found from this research work that there are several ethical dilemmas and challenges within the AI-based technologies such as within Chat Bots; which needs to be considered by them before implanting it within their digital marketing process. However, chat bots are used as an effective way to quickly respond to the potential customers 24/7; that increase the customer relationship. AI this data is collected from various secondary sources such as journal articles, Newspaper magazines and company reports. Results excavated from the data are framed out through few themes. The result mainly focuses on current position of AI that has created a revolutionary change within digital marketing system and its future aspects. This needs to consider few changes such as customer backlashes as well as inaccurate algorithms; for developing a better future in digital world.

Keywords

Content Creation, Ethical dilemma, Email Marketing, Inaccurate Algorithms, Machine Learning, Predictive Marketing, Voice Search Methods
Experimental Study of Flexural Behavior of Bamboo Reinforced Concrete Beams


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Abstract
The importance of bamboo as a sustainable material is gradually increasing in the construction sector. It is rapidly becoming a concerned area of research, either as a construction material or alternative replacement to steel. This study involves use of bamboo as an alternative to steel reinforcement in concrete beams and its comparative analysis with reinforced cement concrete beams. The present study involves casting of 15 beams i.e., 3 RCC, 3 BSRCC & 9 BRCC. The reinforcement used in BRCC beams had an average dimension of 20 mm x 6 mm and were divided into plain, coated-plain & coated-grooved types. The beams were subjected to four-point loading using universal testing machine. The results of casting suggested that BRCC beams sustain better load and deflection than RCC beams.

Keywords
Bamboo, Bamboo Reinforced, Four Point Loading, Bamboo Steel Reinforcement, Flexural Tension Failure
Performance Analysis of Adaptive Video Streaming of Multimedia in LTE by Cross-Layer Design during Handover

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Abstract

In this paper, experimentation is based on analysis of Quality of service at the end user for video transmission over Long Term Evolution mobile network by using cross layer design during Handover. To perform this, few videos are streamed based on H.264/AVC and these videos are delivered from source to destination using User Datagram Protocol (UDP). Specifically this study is about Quality of service evaluation (QOS) in terms of delay variations, Packet loss metrics, Peak signal to noise ratio and Structure Similarity Index Methods values. Experimental results show adequate improvement in the End-to-End Delay, Peak Signal to Noise Ratio and Structure Similarity Index Methods. During Handover time channel quality index is observed. Application layer requirement is fulfilled by changing modulation techniques as well as dynamic allocation of resources. Experimentation is done by using Simulation environment in Network Simulator-3, which provides credible evidence that this proposed cross-layer approach outperforms between existing methods in providing better Quality Of service for adaptive video streaming over Long Term Evolution.
MAC Scheduler Performance Analysis in LTE Network for Heterogeneous Traffic Using Crosslayer Communication

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Abstract

The different types of Quality of service characteristics need to be provided by 4G long term evolution (LTE). The big issue with this nature of LTE is, do not contain any paradigm scheduling algorithm so that it will ideally control the assignment of resources which further helps to improve consumer satisfaction. Due to this, it got became an open subject and various scheduling algorithms are proposed which are challenging and complex by nature. To report the issue, we are trying to search how the scheduler is going to be improvise the user satisfaction for traffic using crosslayer communication, so that best efforted traffic like file transfer protocol (FTP) and real-time traffic like voice over internet protocol (VoIP). Goal of our work is to maximize throughput, reduce delay, resource fairness and decreases the lost packet ratio for heterogeneous traffic. To compare the performance analysis of well known downlink schedulers named round robin (RR) and proportional fair (PF) using the network simulator 3 (NS3).

Keywords

Long Term Evolution, Medium Access Control, Orthogonal Frequency Division Multiplexing, Quality Of Service, Network Simulator-3
Analysis of Air Quality of Jabalpur City and Prediction by Using KNN Method

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Abstract
In this paper are identifies of Air pollution parameters Jabalpur city. Also investigate optimization, mean values of these parameters. This research article gives a novel approach for air pollution optimization based on deep learning method. In this paper K mean Clustering method presenting a optimize mean value for special analysis software. For result and simulation section are representing curve mean optimized vales.

Keywords
AQI, air quality parameters, pollutant, Jabalpur city, Pollution control guide line, Pollutant Health effects.
Implementation of Low Power SRAM using CNTFET


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Abstract
A new SRAM cell constructed on Carbon nano-tube Feild Effect Transistor technology, is proposed here. Carbon nano-tube has demonstrated to be a promising technology to the traditional CMOS with its predominant transport properties, prevailing thermal conductivity, high stability, and current handling capability. Here we consider CNTFET, is due to low power, high mobility charge carriers, and high velocity for faster switching over CMOS technology. The proposed CNTFET 12T SRAM cell with low power technique MTCMOS design is compared to SRAM cell design which has implemented in this paper with the traditional CMOS, in terms of delay, power consumption. The HSPICE tool simulation shows the power consumption will be reduced of the proposed CNTFET SRAM cell compared to the traditional 12T CMOS SRAM structure and other works.

Keywords
SRAM, CNTFET, MTCMOS, Power Dissipation, Delay, Read, Write.
Drowsiness Detection Software


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Abstract

Everything in this world is moving online. In this pandemic all the schools and colleges are shut down and every student’s room has turned into a classroom. But in these online classes not everyone is paying attention and it is very difficult for teachers to monitor each and every student. So, we created a drowsiness detection system that will monitor every student. If a student yawns, it will show an alert message and If they close their eyes for more than 10 seconds it will make a sound and wake them up!

To find the drowsiness of Eye we use the below formula,
Eye Aspect Ratio:
We can calculate the eye aspect ratio by using the below formula: 
\[
\frac{(P5-P1)+(P4-P2)}{2*(P3-P0)}
\]

- The normal threshold value for a person who is not closing his eyes will be 0.25.
- If the value lies behind the normal threshold value for more than 10 or 15 seconds, we can confirm that he/she has fallen asleep.
- Then we can wake them up by an alert sound.

Yawn Detection:
- The normal threshold value for the distance between the user’s lips is 20.
- If it is greater than the threshold value.
- Then we can say the person is yawning. Then it shows an alert message

Generating the alert message and the alarm:
We use Face recognition, Text to Speech and the numpy libraries in python to generate the alert message and alarm sound.
Understanding the Gender Gap in Information Technology and Engineering Programs through Text Mining

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Abstract

For the past years, there had been a huge gap between male and female in the field of science, technology, engineering, and mathematics. Women or girls have always been inadequately represented in the field of information technology and engineering in both universities, and the labor market. To understand the gender gap, the study explores the significant factors when students choose their majors. The factors were categorized as practicality, environmental factors, passion, and personal interest (PEPP).

The data needed are the enrollment statistics which was obtained from the university’s registrar’s office, and surveys were collected from the students of the university. The quantitative data from the survey questionnaire was interpreted using the descriptive statistics in data analysis, a spreadsheet application feature. To shed light on the qualitative data, text mining was used. Text mining involves understanding of unstructured texts to obtain insights on how people communicate their opinions.

The enrollment statistics data shows that the gap in the faculty of information and computer technologies, and faculty of engineering is evident. There are diversified reasons for students to register in their chosen majors. Women are most likely to be interested in any business-related field.
Data Analysis on Sales Insights


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Abstract

Data analytics have been embraced as a disruptive technology that will reshape business intelligence, which is a domain that relies on data analytics to gain business insights for better decision-making. Rooted in the recent literature, we investigate the landscape of Data analytics through the lens of a marketing mix framework in this paper. We identify the data sources, methods, and applications related to five important marketing perspectives, namely people, product, place, price, and promotion, that lay the foundation for marketing intelligence. We then discuss several challenging research issues and future directions of research in Data analytics and marketing related business intelligence in general. According to a study by Gartner, worldwide BI (business intelligence) and analytics software, consisting of BI platforms, analytic applications and advanced analytics, says that the revenue increases at an average of 18% per year. This proposed work mainly focuses on problems faced by a company and results in the approach to tackle the problems. The end product will be a dashboard where we can track revenue numbers and sales quantity numbers year over year and we will be able to track the revenue breakdown by regions / different products and we can also track the revenue trends.
IoT Based Fire Alarm Notification and Extinguisher System


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Abstract
Because of the risk of death and property damage, a fire has broken out is a catastrophic disaster that must be prevented at all costs. A fire that is left untreated can swiftly spread and take days to extinguish. As a result, this technology should be employed to mitigate, if not remove, this serious risk. In this study, a fire alarm detection and extinguisher system was built. This model has a GSM module built in, which allows it to transmit SMS and phone calls to house owners and to any shop owners. Moreover, this project finds a way that is both available and inexpensive to the general public, allowing it to be used to protect lives and property in homes, offices, and schools. When the system is marketed, it will reduce fire accidents that are out of control. It has increased by 50 percent since it notifies the dangerous situation and alerts before a fire outbreak.

Keywords
GSM Sim Model, SMS, Fire Alarm Detection System.
Improving Software Effort Estimation Using Memetic Feature Selection Algorithm

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Abstract
One of the project managers most important tasks in the development of software is to produce accurate schedule and effort estimates. Improving estimates accuracy for several software development processes is a widely recognized benefit. This paper is concerned with hybrid learning approach model which combines both Decision Tree (DT) and Memetic Algorithm (MA) to predict the software effort estimation based on past effort performance data. DT is simple to understand and interpret data mining technique for classification problem. By making use of the MA to perform feature selection, is then utilized as a preprocessor to improve software effort prediction by DT. To create benchmark, compare with DT methods such as Decision Stump, M5P, and REPTree with our proposed approach. The results were analyzed using different criterions like correlation coefficient, MAE, RMSE, RAE, and RRSE. The hybrid approach Decision Tree - Memetic Algorithm (DT - MA) model is observed to provide better results in the estimation of effort.

Keywords
Software Engineering; Effort Estimation; Machine learning; Feature Selection; Memetic Algorithm; decision tree.
Multi-level, Multi Constraint trust management optimization technique for Intrusion Detection in Wireless Sensor Network using Data Mining

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Abstract
The Field of Wireless Sensor Network (WSN) aims to provide multi-level, multi constraint for secure and efficient routing in the network. In this paper Intrusion Detection System (IDS) uses data mining and machine learning approach to detect intrusion in network. This proposed method introduces enhanced intrusion detection system that uses hybrid modified binary grey wolf optimizer with Support Vector Machine (SVM) and Particle Swarm Optimization algorithm for intrusion detection in wireless sensor network. The results of proposed system have high accuracy than the existing state-of-the-art technique such as decision tree, Radial Bias Function intrusion detection.

Keywords
Collaborative recommendation Security Model for Ubiquitous Environment using Hybrid Deep Neural Network Technique

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Abstract
ubiquitous environment embedded with artificial intelligent consist of heterogenous smart devices communicating each other in several context for the computation of requirements. In such environment the trust among the smart users have taken as the challenge to provide the secure environment during the communication in the ubiquitous region. To provide the secure trusted environment for the users of ubiquitous environment proposed approach aims to extract behavior of smart invisible entities by retrieving their behavior of communication in the network and applying the collaborative recommendation filters using hybrid Deep Neural Network (CRSM-HDNN). Therefore, proposed model adopts hybrid deep learning based classifier to classify the unfair recommendation with fair ones to have a trustworthy ubiquitous environment. The capability of proposed model is analyzed and validated by considering different attacks and additional feature of instances in comparison with generic recommendation systems.

Keywords
ubiquitous computing, collaborative recommendation, hybrid deep neural network, trust models, unfair recommendation.
IOT Based Garbage Monitoring System


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Abstract

Waste management is one of the ecosphere's most pressing issues today. The majority of the time, the garbage is poured over the dumpsters and laying nearby. As a result, several dangerous illnesses spread across the ecosystem. People also novelty it grim to tramp nearby it. Entirely of these topics are triggered by a deficiency of management and announcement between the affiliates of the surplus troop. Furthermore, the study found that waste management may be significantly more effective if rubbish is separated at the source and then disposed of separately at dumping sites. As a result, effective waste management is critical. In light of the aforementioned challenges, this study presents a method that would attempt to mitigate these drawbacks to a larger extent. This technology segregates waste first, then uses IoT to monitor rubbish levels in bins. This data about bin levels is relayed over the internet to a headwaitress, someplace the system appraises the figures in real while and advances cautions to accomplish waste assortment. The recommended line also addresses the long-standing aim of distinguishing trash conception patterns in assorted positions. The information gathered by the system may be utilized to develop more effective waste management strategies and preserve a cleaner atmosphere.

Keywords

Garbage intensive care, Garbage apartheid, Smart Compost silos
A Review of the Pros, Cons, and Future of Electrical Vehicles

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Abstract

The major goal of this paper is to provide a comprehensive review of effect of electrical vehicles on human life, environment, global economy. The socio-economic development depends mainly on the existing transportation sector in the country. At present, the vehicles which use either petrol or diesel have domination in this sector. Research says that the transport sector is responsible for about 24% of the total CO$_2$ emission. The emissions and exhaust from these vehicles are directly affecting the climate and the pollutants are resulting in the reduction of the air quality which would have adverse effects on human health and the ecosystem. In lieu of which various governments are now moving towards promoting electrical vehicles as a first resort for reducing the carbon emission. There has been a lot of study happening on the concept of electrical vehicles since the past few years, which has projected a mixed review of its usage. The major goal of this paper is to provide a comprehensive review for the researchers involved in developing electrical vehicles.

Keywords

Battery, BEV, Cost, Environment, EV, HEV, PHEV
Power Quality Improvement Using Shunt Active Filter


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Abstract
The entire world is moving towards the use of power electronics based equipment, because of their higher efficiency, longer life time and highly reliable. With the greater use of these solid state switching devices, they can inject harmonics into the system by drawing non-sinusoidal current from the source. These harmonic current can reduce the quality of power and affects the power system and equipment. Now-a-days all the digital systems are of sensitive electronic circuits, when harmonic current flows it can cause damage to the equipment. The various power quality issues that arises are voltage sag, swell, current harmonics etc. But current harmonics is the major power issue that can damage the entire system. So in order to reduce these issues, Shunt active filter is introduced into the system. In this paper shunt active filter is placed in parallel with the non-linear load. Instantaneous PQ theory method is implemented to produce reference currents and hysteresis current control method is used for producing pulses to the inverter. Simulation is carried out for the system with shunt active filter and also without filter. For both the cases total harmonic distortion THD analysis is carried out.

Keywords
current harmonics, hysteresis control, Instantaneous PQ theory
Landslide Detection


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Abstract

The Landslide Detection uses remote sensing data, GIS technologies, and an artificial neural network (ANN) model to analyze landslide danger and risk. Landslide locations can be determined by interpreting aerial images and conducting field assessments. Using GIS and image processing, topographical and geographical data as well as satellite pictures are gathered, analyzed and built into a spatial database. To evaluate landslide hazards, these parameters are combined with an artificial neural network. The back-propagation training approach is used to calculate the weight of each component. The artificial neural network is proved to be an excellent tool for landslide hazard assessments, and GIS data is used to rapidly evaluate the huge volume of data. A risk analysis is also carried out using the DEM, the distance from the hazard zone, the land cover map, and the damageable items at risk. The DEM was utilized to demarcate the catchments and as a mask to extract the landslide area's greatest danger zones. GIS map overlaying methods were used to create the risk map. This data is used to calculate the danger to people, property, and current infrastructure, such as the transportation system.

Keywords

Landslide, Machine learning, GIS, ANN, Topographical data, Geographical data.
Green Building: A Futuristic Solution to Reduce Global Warming - A Review


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Abstract

Global warming is becoming an international issue from past few decades because of its severe adverse effects on environment. Green building concept is one of the possible solutions to reduce Global warming effect. Recognition of the benefits of green building is important, the psychological barrier and misconception must be eradicated in all the developing countries to make sure to plan and construct a more energy and water efficient structure towards a sustainable and a developed country. In this paper, we throw light on the construction and management of structures, pleasing the necessary sustainability factors depending on the eco-friendly materials used (green paints, varnishes, glasses etc), smart infrastructure, methods of construction and labour facilities. Green buildings are not just about the materials used but moreover, it is the infrastructure and energy management techniques. Solar power generation and energy utilization, rain water, runoff, grey water collection and usage-design and treatment methods, setting up sewage treatment plant, water treatment plants, continuous air and water quality (pollution control, pH of water, turbidity characteristics etc.) monitoring, water supply, energy utilization EV charging ports are some of the main sustainable infrastructure techniques to be adopted for a future NZEB (Net Zero Energy Building). Concepts like IoT (Internet of Things) digital transformation in the construction and management of structures leads to an electronic based user-friendly, low-cost energy aware autonomous lighting, ventilation and water supply system in a building. One of the most important sectors of the society is public health that needs to be improved. But the need to improve the environmental qualities, and provide a better and safer environment for the future generations is considered a key topic in the world today. Now a days green building constructions is not only fulfilling the concept of sustainability but also become a futuristic solution to reduce Global warming through reduction in carbon emission at different stages of construction.
Digital and Collaborative Tools Integration in Teaching: A Basis for Training Implementation

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Abstract

One of the areas affected by this 2019 Novel Corona is education. Educators had stopped the conduct of face to face classes since it had been instantly cancelled wherein obliging many schools to immediately convert to different teaching modalities had been adopted. Integration of digital and collaborative tools in the delivery mode of teaching is needed in order to engage students in active learning.

This study aimed to conduct a training needs assessment among the ISPSC Educators to assess their level of knowledge along digital and collaborative tools in the delivery mode of teaching as a basis for a training implementation.

Respondents include 150 ISPSC Educators from among the 6 campuses of Ilocos Sur Polytechnic State College. Data were collected, tallied and analyzed to answer the problem raised in the study. The weighted mean was computed to analyze and interpret the training needs assessment among the ISPSC Educators.

Finding suggested that this study enabled the ISPSC Educators to leverage their technology skills prioritizing the use and integration of digital and collaborative tools to engage students in active learning. The level of knowledge based on the training needs assessment resulted in a weighted mean of 1.72 interpreted as "No Knowledge" which means ISPSC educators must undergo training on different digital and collaborative tools integrating it in their mode of teaching delivery.

The study findings are useful to ISPSC Educators intending to integrate the digital and collaborative tools in their teaching mode of delivery to better maintain the engagement of students in collaborative learning.

DIGITAL AND COLLABORATIVE CONCEPTS

• Digital and Collaborative tools → application; • Integration → the use of technology in teaching; • Teaching Delivery→ refers to style and strategy using application software; Training Implementation → the conduct of training of digital tools to educators.

Keywords

Digital and collaborative tools, integration, teaching delivery, training implementation.
Experimental Investigation of Convolutional Neural Networks (CNNs) For Lemon Fruit Classification by Transfer Learning Technique


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Abstract
Before exporting fruits, quality control is extremely important in the fruit industries. The most crucial step in the quality assessment process is to classify the fruit as fresh or spoiled. Convolutional Neural Network (CNN) is the most recent technology used for classification based on images. Henceforth, in this work, the performance of eight widely used CNNs, namely AlexNet, DenseNet, GoogleNet, Inceptionv-3, MobileNetv-2, ResNet-18, SqueezNet, and VGGNet-19, was evaluated and compared for fruit classification, utilizing the Lemon fruit data set. To classify the lemon fruits into three categories of Good-Quality, Medium-Quality, and Poor-Quality, 1000 fully connected layers in each CNN were substituted with three fully connected layers. For comparison, all of the CNNs were trained using the Transfer Learning technique with learning rates of 0.1, 0.01, and 0.001. The VGG Net-19 architecture was found to have a validation accuracy of 92.6% for a learning rate of 0.001, which is the best compared to others for our data set.

Keywords
Convolutional Neural Network, Fruit classification, Fully Connected Layers, Transfer learning
Nanobots (Nanorobotics)- An emerging Paradigm in Future medicine and Therapeutics


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Abstract

Nanorobotics is the application of robots and computer systems for controlling, directing sensory feedbacks and processing of information of functional systems at a nanometer scale. Nanobots are tiny machines in a size of 10-9 made up of DNA of bacteriophages. Molecular targeting by nano engineered devices is an emerging trend in targeted drug delivery at respective site thereby reducing side the side effects and increasing bioavailability of drugs. The present paper provides insights to recent advances and applications of Nanobots in medicine, therapeutics and medical field. With the growing trend in regenerative medicines and nanomedicine and Biomedical applications, nanobots will lead the global market upcoming years. According to the data published by Global Industry Analysts Inc., (GIA) nanobots market is expected to grow by US$309.5 Billion by 2026, with a CAGR of 21%. Nanobots are considered to future pioneers for medicine and therapeutics.

Keywords

Nanobots, Molecular targeting, regenerative medicines, Biomedical applications.
Design of Single Stage & Two Stage Conversion of PV System for VSI Fed Induction Motor Drive under Varying Temperature and Irradiance using LabVIEW

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Abstract
In this paper, the comparison of the single stage and two stage conversion of PV system under varying the temperature and irradiance using labview are proposed. Due to clean energy and less impact on the environment, now a day’s solar energy is preferred most and represented by PV (photo voltaic) cell. PVcell, inverter and induction motor have been designed using labview and the converter is designed using NI multisim. The simulated result shows the characteristics like torque, speed, current and flux by varying temperatures and irradiance. These results are presented and validated.

Keywords
PV cell, converter, inverter, IM modelling.
Novel wearable sensor device for continuous monitoring of cardiac activity during sleep using Arduino

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Abstract
The miniaturization and energy optimization of sensors opens up new possibilities in the field of sleep research. The sensor is designed to realize high resolutions measurements up to 48 hours constantly. Wearable sensors are capable of recording vital parameters during sleep in a simple and unobtrusive manner. In order to analyze sleep architecture and sleep disorders, continuous monitoring of movements and cardio respiratory parameters in high resolution is of central importance. In this project a novel wearable sensor device Heartbeat is presented, which is able to continuously monitor movements and cardiac parameters at the wrist. Measurements during sleep show that up to 98% of the pulse intervals are correctly detected. Furthermore the comparison of the heart rate variability (HRV) parameters between IPG and the gold standard of ECG demonstrate the potential of the sensor as a valid tool for ambulant sleep analysis. The preventive body guardian was used for monitoring heart rate and respiratory rate, via single–lead electrocardiogram recordings, together with physical activity. We measured data collection rates, compared device readouts with conventional measures, and monitored changes in HR measures during the amphetamine challenge. Completeness of data collection was good for the Actiwatch (96%) and lower for the BodyGuardian (80%). A good correlation was observed between device and in-clinic measures for HR. Manual reviews of selected ECG strips corresponding to HR measures below, within end above the normal range were consistent with BodyGuardian measurements. The BodyGuardian device detected clear HR responses after amphetamine administration. Wearable digital technology shows promise for monitoring human subjects for physiologic changes and pharmacologic responses, although fit for purpose evaluation and validation continues to be important prior to the wider deployment of this devices

Keywords
sensors, digital technology, heart monitoring, respiration, wearable technology
Predicting Learner’s Academic Performance Using – Deep Neural Network

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Abstract
The pandemic has brought huge challenges in the education sector which was addressed by the Department of Education through the Learning Continuity Plan. Predicting the academic performance of the learners at the early stage could help the administration, faculty, and other stakeholders to help the learners by giving an intervention or remediation ahead of time to mitigate the number of learners at risk of failing or dropping. Most studies conducted are focused on the college or university level. There were no studies conducted on using machine learning - deep neural networks to predict the performance in the academics of the SHS learners at the local level. Therefore, this study focused on predicting the academic performance of the senior high school to minimize failures and dropping out among learners. This study sought to know the level of accuracy of the model used in predicting the academic performance of the learners. The performance of the model was measured using the coefficient correlation R and the Mean Squared Error (MSE). Also, this study used a Deep Neural Network to understand and process data. An algorithm such as the Lavenberg–Marquardt was used for the training rule and Feed-Forward BackPropagation was utilized by the network.

The result of the study shows 98% accuracy as illustrated in the regression plot and the distance between the predicted output and the target output was very close as demonstrated in the regression plot. The researcher concluded, that the model used achieved a high level of accuracy in predicting the academic performance of the learners of BCNSHS and is recommended for future use among stakeholders.
Detection of Violent Incidents from Video Footage of CCTV Cameras


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Abstract
In the current time, most of spots like store, public nursery, shopping centers, college grounds, and so forth are under video observation. There is a need to give fundamental security and screen surprising oddity exercises at that places. The significant downside in the customary methodology, that there is need to perform manual activity for 24*7 and furthermore there is conceivable outcomes by human mistakes. These paper centers around irregularity discovery and action acknowledgment of people in the recordings. PC vision has advanced somewhat recently as a vital innovation for a long time supplanting human oversight. We present a proficient technique for distinguishing inconsistencies in recordings. Ongoing utilizations of neural organizations had shown guarantees convolutional layers object identification, acknowledgment, particularly pictures. Test results on testing datasets show the prevalence of the proposed technique analyzed over the cutting edge in both casing level and pixel-level in oddity recognition task.

Keywords
Computer vision, Convolutional, Neural Network(CNN), CCTV, Unusual Objects
Analysis of Sentiments

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Abstract

In today’s world, sentiment analysis stands as the prominent research topic in demand under the Natural Language Processing (NLP) and the fundamental objective of this research topic is to spot out the emotions and opinions of the customers or users through a text basis. Numerous research works have been carried out in this field through diverse models, sentiment analysis is still considered a challenging problem with so many conflicts to be solved and some of the existing challenges are due to the slang words, new accents, grammatical and spelling mistakes etc. This paper plans is to make a literature review using different machine learning algorithms with various data. The current literature review is to survey nearly 20 contributions, which covers different types of applications being used for sentimental analysis. Firstly, the analysis focuses on illustrating the contributions of each work and observes the type of machine learning algorithms that are used. Moreover, the analysis also concentrates on the identification of the type of data used. Then the utilized environment and the performance measures covered in each work is evaluated, and finally with proper research gaps and challenges helps to identify the non saturated application for which the sentimental analysis is needed the most in upcoming research.

Keywords

Sentiment Analysis; Application oriented Analysis; Machine Learning Algorithms; Performance Analysis; Research Gaps and Challenges.
Poverty Level Characterization Using Different Classifiers

K. Pramilarani, Dr. Anidha Arulanandham, A. Hemchand reddy, K. Hemanth, B. Vinay praneeth

Abstract
Poverty has become a tenacious root cause of many socio-economic problems. One of the major reasons for poverty in India is high population rate. In order to reduce poverty, the government has to lay down few best policies. Usually before designing the policies, a survey is conducted by considering only the direct parameters like income or consumption levels. But only direct parameters are not sufficient to categorize households into levels of poverty. Hence, we classify the poverty levels using indirect parameters like education, number of adults in household, house condition and many more parameters. Our approach is designed in such a way that (i) a subset of features is extracted which are important to classify poverty class (ii) inspect how the extracted subset of features affect the class, and at last (iii) we use few machine learning models and check which model performs better. By using Proxy Means Test (PMT) we examine poverty classes within a multidimensional feature space, instead of examining poverty classes within a classically used single dimension perspective.

Keywords
Multidimensional feature space, feature engineering, poverty classification, machine learning, feature selection.
Triple-band Fractal UWB Antenna Using Offset Feed for WiMAX and Satellite Applications

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Abstract

In this work, the design of basic rectangular patch and fractal based rectangular patch antennas are designed, simulated and investigated for Ultra-wide band (UWB) applications. In addition to UWB, the proposed antenna is resonating at three frequencies. The proposed antennas are designed on FR4 laminate-based substrate with dielectric constant of 4.4 fed by 50-ohm impedance microstrip offset feed line. Two regular fractal slot configurations such as square and rectangular have been inserted randomly to the patch to modify the reference antenna characteristics and decrease the patch area. This new proposed antenna configuration is investigate in terms of the antennas different parameters including return loss (dB), VSWR, radiation patterns, and gain (dBi). The proposed antenna is achieved an average gain of more than 4.97 dBi with UWB. The advantage of the proposed design is low cost, single layer design and Triple-band with UWB.

Keywords

UWB, Fractal Structure, Communication applications.
Analysis of Impact on Online Education during the Pandemic


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Abstract
After about a hundred years, the world has witnessed another world-wide pandemic situation in the year of 2020. This time the pandemic was caused by a deadly virus named Corona, also known as Covid 19. The first case of Covid-19 infection was reported in India on 27 January, 2020. Due to this outbreak, physical classes in schools and colleges were stopped by the time of March 2020. The effectiveness of online education is still a concerning question for an evolving country like India. This study is based on the feedback obtained from a hundred students studying in different educational backgrounds. The paper studies the continuation of online education process after the outbreak in India. In the end this investigation will reveal the effects of online education during the pandemic with the help of chi-square test.

Keywords
Online class, Covid-19, Pandemic, etc.
Reactive Power Compensation of Wind Generator and Harmonic Elimination in Distribution System Using DSTATCOM

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Abstract

This paper presents reactive power compensation and elimination of harmonics when non-liner loads are connected to the system and wind generator integrated to grid. Wind system when integrated to grid absorbs reactive power and hence reactive power compensation is required. A non-linear load connected to the system induces harmonics which needs to be compensated. For the compensation of reactive power and harmonics in the system, compensation device DSTATCOM is used in distribution network here in this paper. To control DSTATCOM, unit vector control theory which is very simple was used. Model of the system with wind system integration and connected non-linear load was built and simulated for results using Matlab/Simulink. Results of source current without and with compensation were shown along with load and source current THD comparison.

Keywords

wind system, integration, distribution system, harmonics, reactive power, compensation.
Hybrid Runner Root Algorithm for Energy Management in Solving Economic Load Dispatch Problem of Power System

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School of Computer Science & Engineering, SMVDU, Katra, JKUT, India

Abstract
The progression in energy management lead to the development of advance optimization solving techniques that are used to decipher the complex economic load dispatch problem (ELD) of power system along with approved set of environmental parameters. Further, it also leads to enhancement of a synthesis structure of a system that helps to lessen the overall operational cost of electrical system. The main concern of this paper is to resolve the fuel cost problem of power marketplace by application of hybrid intelligent optimization technique. The proposed method is Invasive Weed Optimization Runner Root Algorithm (IWORRA) that is inspired from the intelligence based biological behavior of plants that look for their source of energy which inspires the development of algorithm in order to solve the economic load dispatch (ELD) problem of power system. The proposed technique is a competent in solving the complex behavior of energy management for hybrid power system along with hasty calculations. Further, the proposed biological optimization technique has potential of wily the various parameters competently as compared to other conventional optimization techniques. In this study, the designed method is applied on 6 and 15-unit bus systems and the results obtained by proposed IWORRA method are being compared with existing conventional technique. By comparing the performance of this hybrid technique with other optimization techniques, the IWORRA method is competent to attain the best value of the total fabrication cost of electricity market.

Keywords
Economic load dispatch (ELD), Runner Root Algorithm (RRA), Invasive Weed Optimization (IWO), Global optimization, Nature inspired algorithm
Comparative Analysis of Procedures and Solutions to Improve Energy Efficiency of Massive MIMO


Abstract

The blustery growth of high data rate applications leads to more energy consumption in wireless networks to satisfy service quality. Therefore, energy-efficient communications have been paid more attention to limited energy resources and environmentally friendly transmission functioning. Countless publications are present in this domain which focuses on intensifying network energy efficiency for uplink-downlink transmission. It is done either by using linear precoding schemes, by amending the number of antennas per BS, by power control problem formulation, antenna selection schemes, level of hardware impairments, and by considering cell-free (CF) Massive-MIMO. After reviewing these techniques, still there are many barriers to implement them practically. The strategies mentioned in this review show the performance of EE under the schemes as raised above. The chief contribution of this work is the comparative study of how Massive MIMO EE performs under the background of different methods and architectures and the solutions to few problem formulations that affect the EE of network systems. This study will help choose the best criteria to improve EE of Massive MIMO while formulating a newer edition of testing standards. This survey provides the base for interested readers in energy efficient Massive MIMO.

Keywords

EE, Uplink-Downlink Transmission, Power Control, Linear Precoding, CF Massive MIMO.
Tourism Website Using Virtual Reality


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Abstract

This undertaking "Tourism Website Using Virtual Reality" mostly centers around individuals who love to travel. It is a coordinated round venture for people or gatherings. It is utilized to book a visit from anyplace on the planet by a solitary unique site which will assist the client with thoroughly understanding the spots and visit subtleties with 360-degree sees on a solitary site. Then, at that point, the clients can sign in and book the bundle dependent on their requirements. The client can see the affirmation on their booking page. The most straightforward stage for everything explorers can see the spot practically prior to booking the excursion. VR in the travel industry can put the client at the core of the scene and makes it more straightforward for them to envision themselves at the area. 360 VR centers around this present reality rather than PC produced symbolism. This makes it ideal for the travel industry where it is critical to show clients a genuine area rather than a mockup or a reenactment. VR can be utilized in various ways in the travel industry.
Prediction of Heart Disease using Machine learning Algorithm

Srividhya Ganesan, Dr. Rachana P, S. Venkata Gopi, Tejavardhana Reddy M V, Sujeeth N

Abstract
Coronary illness is a significant reason for death all throughout the planet. The analysis of coronary illness is known to be one of a dreary undertaking. There is a need for an insightful choice emotionally supportive network for sickness. Information mining procedure are frequently utilized for ordering whether a patient is typically having coronary illness. Secret Naïve Bayes is an information mining model which loosens the current customary naïve bayes contingent freedom presumption. The proposed model is that the hidden Naïve Bayes (HNB) can be applied for prediction of coronary illness and would expect 100% accuracy.

Keywords
hidden naïve Bayes, data mining classification, heart disease
Classification Model for prediction of student performance based on family backgrounds

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Abstract

When it comes to a student's academic performance, it's impact on career progression and development is evident. The base for a student's academic performance depends on varied family and academic backgrounds to which they get exposed to. For instance, one student may be able to acquire knowledge and utilize the opportunities provided by the educational institution he or she is exposed to; another would be proactive due to family background and support. Improvising student's academic performance amidst hindrances from varied sources also has become a challenge for today's student group. They find it difficult to overcome the varied hindrances even though they shine in their academic performance. Hence, the need to predict the students' academic performance based on the family and academic background is realized by the researchers in this study and has attempted to analyze the underlying factors and problems.

This study aims at collating the demographic details of the students which is the basis of the study for academic performance and their underlying relationships are analyzed. In addition to the demographic factors other co-curricular and extra-curricular activities to which students are exposed to are also identified as the basis of the study.

The collated data and the formulated hypothesis, based on the factors with the dataset of 450 students are scrutinized and analyzed in this study. With the collected data, Microsoft Azure machine learning tool is used for further analysis and identify the prominent factors that affect a students' academic performance.

Based on categorization, a suitable classification model is planned to be devised by the researchers. This model will pave the way for a student’s academic group and future researchers to tap into the factors crucial to the performance and handle them in a better manner while taking decisions. This would ultimately ensure in positive outcomes in academic performance as a result.

Keywords

Predicting student performance, Microsoft Azure, Classification model, student academic performance
VETCURE - An Integrated Healthcare System for Veterinary Care

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Abstract

The world is common for every organism that is born here. But around 9 million pets starve and die each year of being homeless. Many of them die due to improper driving of humans. A lot of animals are dying due to improper care or no caring in the needed situation or delay in treatment for the injured and ill. Many animals starve due to lack of food and exposure to the cold winter. Our project mainly focuses on charity, first-aid, home remedies for the injured, online veterinarian consultation for domestic animals. The majority of NGOs have experienced difficulties in getting funds, consultation, or other required things. Getting a donor is a very hard task, and sometimes dealing with some donor’s conditions can be a big challenge for NGOs to fulfill. This animal welfare system (VETCURE) will help NGOs to find donors easily thereby improving the service to domesticated animals.
Data Leakage Prediction on Social Networks


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Abstract

Millions of human beings utilize social networking services all huge impact on every day existence, with some unfavorable results. Spammers have transformed famous social networking websites into a goal platform for disseminating a big quantity of useless and harmful material. Making an allowance for an immoderate quantity of junk mail. 2Fake users ship undesirable tweets to users a good way to put it on the market services or web sites, which no longer only harm actual customers however additionally waste assets. Furthermore, the capacity of spreading fake data to customers via faux identities has grown, resulting inside the spread of dangerous materials. Twitter has lately been a famous study subject matter in modern-day on-line social networks (OSNs). We have a look at the tactics used to come across spammers on Twitter in this studies. Furthermore, a taxonomy of Twitter junk mail detection structures is obtainable, which divides the techniques into four classes such as user characteristics, content material traits, graph characteristics, structural traits, and temporal characteristics. We agree with that the research given here will function a treasured useful resource for pupils looking for the latest breakthroughs in Twitter spam detection in one region.

Keywords

Spammers, Fake users
Custom Testing Environment Builder


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Abstract

With technology becoming an inevitable part of our everyday life, be it professional or personal work, the downtime of an application or a service can disrupt the workflow of both an organization and an individual. Considering this, organizations are starting to migrate to a cloud based environment and opt for micro services to ensure the availability of the application, make it more scalable. Apart from the availability and scalability, application testing plays a very important part as all the organizations want their applications to have as few errors as possible. In today’s scenario with the huge developments in virtualization, it has now become a core component in almost every organization. Developers, security researchers and tech enthusiasts have started to use virtual machines within their computers to create a more secure, isolated and a mistake tolerant testing environment. But as the available virtual images are based on different operating systems, this makes the entire image heavy as operating systems are often heavy because of all the drivers and other components that they require to function properly. Facing all these difficulties in our everyday usage, we have come up with a platform that creates custom testing docker images that the users can launch using Docker or access through a web shell. By using docker which is a container based virtualization technology, the need for existing operating systems is completely removed and is replaced with base images that are way more lighter and do not require lots of drivers and software to run. Our platform lets users select the tools they use and provide them with a tailor made docker image with just those tools. This removes the need for good hardware resources for developers or learners to test their containers.
Synthesis and optical study of phase-pure Co$_4$Nb$_2$O$_9$

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Abstract
Synthesis of single-phase polycrystalline Co$_4$Nb$_2$O$_9$ and investigation of its optical absorption properties are the two prime features of this article. The reaction temperature of Co$_3$O$_4$ − Nb$_2$O$_5$ ground mixture has been detected using pre-calcination thermogravimetric and differential thermal analyses (TG-DTA). Moreover, the post-calcination x-ray diffraction result confirms the formation of the second minor phase CoNb$_2$O$_6$ of tetragonal crystal structure in a less weight percentage along with the corundum type major desired phase Co$_4$Nb$_2$O$_9$. This additional phase can be eliminated by adding excess Co$_3$O$_4$ stoichiometrically, which has subsequently been verified by x-ray diffraction and Raman spectra analysis. The optical absorption study has been carried out using density functional theory and UV visible spectrum. The Tauc model for direct allowed transition has been applied to the experimental data, and the bandgap is found to be 1.78 eV which shows good agreement with the ab initio bandgap value. A combined study of the deconvoluted absorption spectra and partial density of states has revealed the probability of d-d hybridization and their possible direct forbidden electronic transitions.

Keywords
TGA-DTA; Raman spectroscopy; Band structure; Density of States
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