38th World Conference on Applied Science, Engineering and Technology

38th WCASET-2021

27th & 28th October, 2021
Manila, Philippines

Institute For Engineering Research and Publication

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Editorial

We cordially invite you to attend the **38th World Conference on Applied Science, Engineering and Technology (38th WCASET-2021)** which will be held on **27th & 28th October, 2021** - virtually conference. The main objective of **38th WCASET-2021** is to provide a platform for Researchers, Students, Academicians as well as Industrial Professionals from all over the world to present their research results and development activities in relevant fields of Science, Engineering and Technology. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

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

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

Since August 2021, the Organizing Committees have received more than 110 manuscript papers, and the papers cover all the aspects in Electronics, Computer Science, Information Technology, Science Engineering and Technology. Finally, after review, about 49 papers were included to the proceedings of **38th WCASET-2021**.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **38th WCASET-2021**. We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.

Acknowledgement

IFERP is hosting the **38th World Conference on Applied Science, Engineering and Technology** this year in month of **October**. The main objective of 38th WCASET-2021 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points, and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader.

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

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

At the very outset I complement the conference organizers for organizing a conference on a topic that is very contemporary and relevant in today's scenario. Since the onset of COVID pandemic the world has seen innumerable changes taking place in the field of science and engineering, the way organizations are being managed across the world, the way government policies changed overnight, the way health services saw a drastic change, the way goods and services are being offered, the way assembly lines of major automobile companies across the world retuned themselves to manufacture ventilators, artificial respirators and surgical masks. The theories which used to be true became redundant all of a sudden. The WCASET 2021 conference is being organized with an intent to provide a common forum to the researchers, industrialists, and academicians wherein they can put forth their ideas, discuss and present the developments taking place all across the world. The organizers of the Conference deserve applause for their commendable initiative.

It is indeed a pleasure to share that Rama University, India has been rendered an opportunity to be the co-host in the 38th World Conference (WCASET 2021) organized by Institute For Engineering Research and Publication (IFERP) on 27th and 28th Oct, 2021. As session chair I'm looking forward to the generation of newer ideas, sharing of knowledge across international boundaries by the delegates participating in the conference.

Prof. (Dr.) Vaishali Dhingra
Dean, Faculty of Commerce & Management
Rama University

Keynote Speakers

Dr. Binu C. Yeldose
Professor, Department of Mechanical Engineering
Amal Jyothi College of engineering
Kerala, India

Dr. Pokkuluri kiran sree
Head & Professor, Department of CSE
Shri Vishnu Engineering College for Women
Andhra Pradesh,India

Dr. Vitantonio Roma
Head of Geotechnical Engineering Department
TEAM Engineering Spa
Italy

38th WORLD CONFERENCE ON APPLIED SCIENCE, ENGINEERING AND TECHNOLOGY

27th & 28th October, 2021 - Manila, Philippines

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Selangor, Malaysia

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ABSTRACTS

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Institute For Engineering Research and Publication [IFERP]

38th World Conference on Applied Science, Engineering and Technology

27th & 28th October, 2021 – Manila, Philippines

Factors influencing the use of Deep Learning for Medicinal Plants Recognition

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Abstract

Medicinal plants are very essential in maintaining the physical and mental health of human beings. For providing better treatment, Identification and classification of medicinal plants is essential. In this research paper, main objective is to create a medicinal plant identification system using Deep Learning concept. This system identifies and classifies the medicinal plant species with high accuracy. In this system, five different Indian medicinal plant species namely Pungai, Jamun (Naval), Jatropha curcas, kuppaimeni and Basil are used for identification and classification. The dataset contains 58,280 images, includes approximately 10,000 images for each species. The leaf texture, shape, color, physiological or morphological as the features set for leaf identification. The CNN architecture is used to train the collected dataset and develop the system with high accuracy. As result of this model, 96.67% success rate in finding the corresponding medicinal plant. This model is advisable to use as early detection tool for finding the medicinal plant because of its best success rate.

Keywords

Deep Learning, Medicinal Plant Identification, Neural Networks.

Investigation of Centralized and Distributed Coverage Hole Discovery Approaches in Wireless Sensor Networks

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Salaja Silas, Associate Professor, Department of Computer Science and Engineering, Karunya Institute of Technology and Sciences, India

Abstract

In wireless sensor networks (WSNs), stabilizing coverage of the objective zone by the sensor nodes is very important in critical applications. But, some sensor nodes die during the system activity because of energy controls which may possibly disrupt the inclusion of the objectivezone which makes a coverage hole an issue. Coverage holes may appear in sensor networks due to limited battery life, the presence of obstacles and physical damage to sensor nodes. The loss on region of interest can be measured by detecting the area of the coverage holes and the location of failed node causing the coverage hole. This paper explains distinctive existing coverage hole detection, classification techniques and different comparison measurements for the performance examination. The examined methods contributes the universal perspective on holes obviously and calculates the magnitude of holes very precisely contrasted by the typical coverage hole recognition techniques.

Keywords

Wireless sensor networks, Hole Detection, Coverage Hole, Computational Geometry, Hole healing.

Climatic Impact on Planning Scenario of Heritage-Built form, Attaining Thermal Comfort & Sustainability Through Passive Planning Strategies in Hot & Arid Climatic Zone of Rajasthan

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Abstract

The urge of energy in the buildings is exponentially increasing with each passing day as the development in the stream of architecture is shooting up at an extremely pace. It is notable that the recent climatic changes are predominantly linked to man's activities and the concerns pertaining to over consumption of natural resources have reached to an extreme level where it has begun to affect the overall global environment The infusion of passive architectural techniques involves the combination of design principles pertaining to solar & wind energy parameters. The Indigenous properties of materials are applied to ascertain that the building remain warm during winter and cool in summer, Therefore, ensuring a comfortable environment all throughout the year. Domains of existing planning strategies are studied and discussed from the case of Bikaner-old city havelis, which depicts the perfect role model to deal with planning scenario in hot & arid climate zones. In this paper it is elaborated and expressed that how the ancestral residential buildings should have responded to climate through its orientation, design, material used and passive cooling strategic applications to gain outmost energy efficiency & sustainability in built form. Thus, relating its importance to revive the concept of environmental sustainability in present built forms.

Keywords

Climatic impact , built heritage , passive cooling , sustainability

Cultivation & Yield Performance of Mushroom on Various Environmental Effects with Eia & Industrial Waste Management

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Dr. Anand Babu K, Head of Department Civil Engineering , SVVV Indore

Abstract

The mushroom industries are turned up so rapidly in recent years as the demand from the public is getting increasing day by day. It gives beneficial effects to the crop owner also and requires less space with high production rate. As we know in India the Mushrooms are next highest agriculture crop. The positive point with our country is the availability of agricultural waste and the climatic conditions; they both are quite good for the growth of mushrooms. By using this we can recycle the agro waste which is generated nearby 620 million tons per annum, also by doing this we can fill up the nutritional gap which is developed amongst the huge population in India. The paper also evolve process related to mushrooms production along with the experimental work by taking the different soil conditions along with changing humidity, culture, temperature, water from diff sources like surface, subsurface, treated, non treated, recycled water etc. for the growth of the mushrooms. This is also proposed to evaluate all the data and can prepare EIA sheet with the divergent impact on the environment. This work will bring fruitful outcomes to consolidate process cultivation for various scenarios under various conditions & its impact on cultivation and management aspects for further results to help towards clean and less affected environment with sound growth of mushrooms in least investment for the economic growth of the country.

Keywords

EIA, Cultivation, culture

Implementing a Wireless Sensor Network with Multiple Arduino-Based Farming Multi-Sensor Tool To Monitor a Wider Farm Area Using Esp32 Microcontroller Board

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Azriell V. Bautista, Mapúa university, Manila, Philippines

Abstract

The Philippines is an agricultural country and in today's commercial agriculture, technology plays an important role in the development of different sectors of farm management, especially in resource utilization. This paper focuses on implementing a deployable wireless sensor network with multiple nodes centered in an ESP32 microcontroller board, wherein each sensor node has its own multiple sensors using the ESP-WIFI-MESH protocol, which arranges the sensor nodes in a scalable, self-forming, self-healing, and autonomous mesh network topology for wide farm-area monitoring. The input needed for this research are the plant growth parameters which include soil moisture, temperature, humidity, and relative sunlight; they will be obtained by the various sensors connected to a sensor node. The output is a collection of historical data to be displayed to and analyzed by farmers or other relevant groups. A node separation distance of up to 100 meters can be achieved. The paper also includes calibrations and testing to improve the capabilities of each node.

Future Gold Price Prediction Using Ensemble Learning Techniques and Isolation Forest Algorithm

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Abstract

Previously, Gold is a mineral with unique characteristics that draw people's attention for a variety of reasons, including its high demand in jewellery. In addition to other forms of payment, gold was utilized to finance commercial transactions all over the world. Moreover, Gold is a national financial asset, and different states preserved and grew their gold holdings, indicating that they were affluent and forward-thinking. Across the globe, central banks keep precious metals such as gold for loans and other requirements of the people. In India and other parts of the globe, gold can be used to offer as a compliment. Gold prices are heavily influenced by global commodity demand and supply. Inside this article, we are going to predict the gold rate for the next 30 days and also the find the predictions of the financial year 2020-21, next fiscal year 2021-22 and until the middle of the following fiscal year 2022-23 using Ensemble Learning technique and Isolation Forest Algorithm. We used information from the internet to create predictions using the Ensemble learning method and unsupervised based approach. In this paper, we have forecasting the predictions of gold rate using different algorithms which will give better accuracy based upon above techniques.And also by applying these techniques in the whole gold dataset, we are going to compare the accuracy using ensemble and isolation forest algorithms which will give better results at all.

Keywords

Gold, Random Forest Algorithm, fiscal year

Optimization of Bio-Based Mixture of Canarium Luzonicum and Calcium Oxide as Coating Material for Reinforcing Steel Bars

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Abstract

Philippines was moderately vulnerable to corrosion and to prevent this problem, surface coating should be applied. The main objective of this research was to develop and optimize a bio-based mixture of Pili Resin and Lime as Coating Materials. There are three (3) factors to be considered in choosing the best coating material such as Chemical adhesion, friction and the bearing/shear against the steel bar-concrete interface. Fortunately, both proportions of the Bio-based coating materials (50:50 and 65:35) does not have red rust formation complying with ASTM B117 but failed in terms of ASTM D 3359. Splitting failures of concrete were observed in the Unconfined Reinforced Concrete Samples. All of the steel bars (uncoated and coated) surpassed the Minimum Bond strength (NSCP 2015) about 203% to 285%. The experiments were about 1% to 3% of the results from the ANSYS Simulations with and without Salt Spray Test. Using the bio – based and epoxy coatings, the normal splitting strengths were declined. However there has no significant difference between the results. Thus, the bio – based coating materials can be used as an alternative for the epoxy coating materials and it was highly recommended for Low – Rise Building only.

Keywords

Canarium Luzonicum, Calcium Oxide, Corrosion, Finite Element Simulations, Epoxy Coated Steels

Machine Learning based Hybrid approach for Email Spam Detection

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Abstract

Spam e-mail is one that told the conspicuous crises in this growing world today and had caused a huge financial failure. Surprisingly Though the methoords and techniques for this crisis are usually being refreshed regularly, the current system is not that much sensitive. The results of those approaches and techniques do not seem to be wise at the current time also email spam is developing in Association with an appealing degree of growth. Like this, only a lot of profitable fishing recognization innovations Are the threat of phishing emails is expected to be eliminated. In this document, we will first look at the construction of the email so the email addresses. I Will try to have a different approach all over this paper with the data management ocr, Associated degree ANN to find spam email. To assess the suitability of ANN we got a tendency to use a Kaggle data set that has a less proportion of spammed emails and real emails. The beta Outputs show that the positive yield of ANN appear at the ratio of 97.5 8% then the FPR is 0.03 3% higher perfection and low perfection of FPR promises that the modification Could be able to distinguish in the phishing emails with high likelihood. And even modifying can authenticate emails as A's near Agar as could also be extracted below the circumstances. Sach promising outcomes is best than this recognization technique. And it collectively works on the HTML-based templates emails that are hard to find and makes sure the suitability of ANN in typical spammed emails.

Keywords

Artificial Neural Network, Optimization, Spam, phishing attack, OCR, Template Email recognization, Hybrid approach, Database Management

Integrated Nutrient Management on Honeydew Melon (Cucumis melo)

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Abstract

A study on Honeydew melon using integrated nutrient management was conducted at the experimental area of the Institute of Agricultural Technology, Isabela State University, Cauayan City from January to April 28, 2018. Specifically, it aimed to: Determine the performance of honeydew melon applied with different treatments, and assess which combination of treatments obtain a highest return on investment.The study was laid out in a Randomized Complete Block Design with three equal replications. The treatments were as follows: T1– FR- Based on soil analysis, T2 – 20% FR + Vermiwash + Foliar Fertilizer, T3 – 40% FR + Vermiwash + Foliar Fertilizer, T4 – 60% FR + Vermiwash + Foliar Fertilizer, T5 – 80% FR + Vermiwash + Foliar Fertilizer, and T6 – 100% FR + Vermiwash + Foliar Fertilizer .Based from the results of the study the longest vines at harvesting were obtained at T6 – 100% FR + Vermiwash + Foliar Fertilizer and T5 – 80% FR + Vermiwash + Foliar Fertilizer.

Application 100% FR + Vermiwash + Foliar Fertilizer produced the heaviest weight of fruits and weight of fruits per sampling area and thicker fruit flesh.In terms of fruit diameter, sugar content, texture and aroma of the Honeydew melon the application of T6 – 100% FR + Vermiwash + Foliar Fertilizer and T1– FR- Based on soil analysis obtained the highest mean values.

The application of integrated nutrient management as strategy in Honeydew melon production is recommended because it improved the fruit yield .

Keywords

Integrated Nutrient management, enzyme, sugar content, cucurbits, flesh, texture.

To Study the Rise of Anime Addiction in Teens and Young Adults

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Preethi S, Bachelor of Business Administration

Afreen Khanum, Bachelor of Business Administration

Abstract

The research study examines anime addiction in teams and young adults. The primary purpose is to discover the impact of anime addiction in teens and young adults. The objective is to find why anime is popular compare to other cartoons. The study was conducted using quantitative research method. Data was collected through direct survey via questionnaire. These questions were responded by 30 individuals of age groups between 18 to 24, who are avid anime watchers. In the end the objective of the study were met well.

Keywords

Anime addiction, teen and young adults, Japanese cartoon.

Attribute Based Access Control in Cloud IAAS Case Study

Dilawar Singh, ASET, Amity University

Dr. Sweta Sinha, ASET, Amity University

Dr. Vikas Thada, ASET, Amity University

Abstract

One of the main difficulties that have compromised cloud figuring and caused its sluggishreception is security. Since clouds have assorted gatherings of clients with various arrangements of safety prerequisites, limiting the clients' gets to and shielding data from unapproved gets to have become the most troublesome errands. To address these basic difficulties, in this paper we initially formalize Attribute Based Access Control (ABAC) and propose another entrance control model, called Attribute-Rule ABAC (AR-ABAC), for cloud registering to meet basic access control necessities in clouds. Our model backings the attribute rules that arrangement with the relationship among clients and items, just as the ability for getting to objects dependent on their affectability levels. The characteristic principles indicate an understanding that figures out what sort of qualities ought to be utilized and the quantity of properties considered for settling on access choices. Furthermore, our model guarantees secure asset dividing between potential untrusted occupants and supports diverse access authorizations to a similar client at a similar meeting.

Keywords

Cloud Computing, ABAC, Authorization and authentication.

Development of a Compost Tea Brewer Machine

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Carolyn Grace G. Somera, Faculty, Department of Agricultural and Biosystems Engineering, Central Luzon State University

Abstract

This study was carried out to develop and evaluate the performance of compost tea brewer machine. The specific goals were to solve the problem of previous design of compost tea brewer machine with regards to inability to maintain aerobic condition of compost tea during brewing process, inability to extract available nutrients and microorganisms available in compost and design problems which result to difficulty in properly cleaning the machine. The developed machine was evaluated in terms of quality of compost tea produced. Three settings of the rotational speed of the mixing vessel (1rpm, 3rpm, and 5rpm) were evaluated on brewing compost and its influence on the quality of compost tea produced. Data gathered were analyzed using Random Complete Block Design and Least Significant Difference was used for comparison of treatment means. Blocking was done on each batch of produced vermicompost used in the study. Results showed that 5rpm setting of vessel mixing vermicompost gave a good quality of produced compost tea (dissolved oxygen of 6.43mg/L, electrical conductivity of 1.530mS-cm-1, pH level of 8.27, total bacterial count of 7.02log10 CFU/mL, total NPK content of 900mg/L and seed germination index of 133.97%) which is above the minimum values set in this study. Based on the compost tea brewer machine's cost of Php 43,033.00 with a capacity of 100 Liters of compost tea per brewing process, cost analysis indicated a breakeven of 45 brewing cycle per year and payback period of 2.4 years.

Multilayer Perceptron Model for Document Image Binarization

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Abstract

This paper proposes a machine learning-based binarization of degraded document images. Binarization is taken as a hard classification task where image pixels are categorized to either background or foreground classes using a trained binarization model. The binarization model is developed by training multi-layer perceptron by backpropagation with fuzzy-based features which have both local and global properties. The features are extracted from document image binarization contest (DIBCO) 2009-2018 datasets. Ground truths of the data sets are used as targets. The features used are: fuzzy membership grades, local standard deviation, local contrast, local entropy, and pixel gray level which have local properties. The proposed method was tested on images from DIBCO 2009-2018 bench mark data sets using objective evaluation metrics: precision, recall, F-measure, PSNR, pseudo F-measure, and distance reciprocal distortion. The proposed method posted good performance with average of evaluation metrics: precision (93.77 %), recall (90.06 %), F-measure (93.34%), PSNR (20.06), pseudo F-measure (94.41%), and distance reciprocal distortion (3.32). Comparison was also made with top 3 ranked algorithms submitted to DIBCO 2009-2018 contests, state-of-the-art, and other benchmark algorithms and found to compare very well with them.

Career Grooming Through Skill Development as Prerequisite Weapon to Succeed In Challenging Job Market Resulted by Pandemic

Dr Jagannath Ghosh, Guest Faculty (MBA Department), Sidho Kanho Birsha University, West Bengal

Abstract

Recent emergence of COVID resulted deep negative impact in job market in our country. Above 4 million working youngs have missed jobs (majority of apprentices, interns, formal and informal sectors and self employed people). Above 150 million young stars were deprived from education, training and job simultaneously. Also new vacancies are about ceased by reducing activities of organisations causing long run employment crisis and candidates are immensely struggling for work. Except healthcare, almost all sectors became sick especially construction, retail, farming, manufacturing, sales, service sectors (travel, tourism, transportation, hospitality mainly) and applicants suffered during his crisis due to closure of opening, lay off, unpaid leave or salary cut. This exploratory research investigates that in this injured job market and cut throat competition, life saver of aspiring job applicants is career grooming by skill development. This descriptive text explains these and finds their indispensible relation with employment in contemporary age. Career is a candidate's formal successive journey through education, training and jobs in progressive way which should be groomed in active and purposeful way. Grooming includes development and updating. It needs planning, support, effort, expert intervention and resources. Skills are practical abilities for performing task with efficiency in stipulated time. It is an art and expertise acquired in different domains and is of certain types with many elements as per demand of era. Hard skills are quantifiable professional or technical capabilities (craftsmanship) in specialized study or training area. In contrast and complimentary to that, Soft skills are personality based non-technical core proficiency (irrespective of study or job area) and favourable individual trait to adjust and sustain by fruitful conduct. Social skills are caliber to communicate and socialize. Life skills are behaviour based competency to attend daily challenges. Transferable skills are efficacy for varied work atmospheres. Generic skills are attitude or thinking oriented proficiency. Labour skills are occupational mastery for economic gain. People skills are artfulness of convincing behaviour and relationship building through solid interactions. Skilled professionals are groomed, productive, responsible and problem solver for any assignments and perfectly fit for workplace. This conclusive paper argues that at present, only sufficiently skilled candidates are appointed due to globalization, technological advancement, market competition and learned clients. Survey by Society for HRM found that about 75% employers get difficulty to find skilled candidates. This normative study recommends that skill gaps should be identified and Skills should be acquired by education, training, practice, experience etc. Skills ought to be shown in Bio-data, Cover letter, Interview etc to prove groomed and job ready career and thus to get recruitment priority reminding optimistically that few sectors like healthcare, A.I, digital marketing, e-commerce, pharmacy, I.T, education technology etc would be booming trough Indian as well as Multinational companies.

Keywords

Pandemic, Applicants, Job, Career, Skill

The Role of Education in Dealing with Technology: Both Negative and Positive Impacts

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Abstract

At present, technology has rapidly advanced. Its influence does not merely affect the field of information and communication, but even a human's daily life falls under control of the Powerful Technology. The situation is becoming much worse when a technology-made AI, or in other words, a robot or iron-human, will take real human's place in working in office, factory, field and so on. A human is forced to change his paradigm and life-style to abide by technology, otherwise his life will be in dismay and he will be left behind as disparate and valueless, or even useless. Amidst the advancement of technology, there arise critical concerns, 'Whether or not the advanced technology partially contributes to declining morality.' and 'How education in terms of both institutions and persons will deal with such unavoidable situation.' The article Is an attempt to answer the question via both educational administration and Buddhist approaches. In the former standpoint, the 21st century skills are brought into discussion side-by-side with the five separated generations of world population, as well as the E-learning system. As regards the Buddhist standpoint, Buddhism holds that the application of technology will generate either advantages or disadvantages, depending upon the 'QUALITY' of its users themselves, i.e. human beings. Humans are both the inventors and users of the technology. Naturally, technology is neutral, neither good nor bad, by itself. Should the technology users be good, it is sure that it will be used for the benefits of human beings, and if they are different, it will be harmful to all humans and all other living, or even non-living, beings. Buddhism is, of course, the great solution to the problem since its education or training system focuses on the Three Training Principles, namely, Precept or Sila, Meditation or Samãdhi and Wisdom or Paññã. Sila controls men's physical and verbal behaviors, Samadhi controls their mental behaviors and Paññã, which is perfectly treated and trained by both Sila and Samãdhi, will realize the truth of all things, thus leading to the absolutely appropriate or beneficial use of the technology. The more humans are trained under these three Buddhist principles of training, the more useful the application of technology will become.

Keywords

Education, Technology, Negative, Positive, Impacts

Security Enhanced Forward Compatible Integrated Asynchronous GPON and XGPON using Pseudo User Scheme

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Hardeep Singh, Department of Electronics and Communication Engineering, Thapar Institute of Engineering & Technology, Patiala, Punjab, India

Abstract

Security of the proposed Passive Optical Network is increased manifolds without any interference with the transmission line by co-transmitting Pseudo User Cross-Correlation based Diagonal Double Weight Codes, making detection obscure at eavesdropper receiver

Keywords

Passive optical networks (PON), Diagonal double weight (DDW), Pseudo user scheme (PUS), Continuous wave (CW), X Gigabit passive optical networks (XGPON), Optical network unit (ONU), Single mode fiber (SMF), Spectral amplitude coding optical code division multiple access (SAC-OCDMA), Optical line terminal (OLT), Bit error rate (BER), Downstream (DS),Upstream (US)

Evolution of Catchment Hydrology Modelling- Perspectives and Concerns

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Abstract

The extremely heterogeneous nature of the catchments and the impediments encountered with measuring techniques make it impossible to determine all hydrological parameters while analysing catchment hydrology. The simulation of the catchment hydrology to get the better picture of the all hydrological processes occurring at different scales - macro or micro, incited the development of the hydrological models. The selection of the parameters present in the model, whose optimization is required to create coherence between simulated and real values, is required for effective use of a hydrological model. A range of models including empirical, concept-based and physically-based models haven been devised so far. The empirical and concept-based models have a big constraint that they lack the spatial representation of a hydrological process. In order to account for the spatial variability extant in a catchment, these models have been linked with GIS and remote sensing user-friendly interfaces to account for geographical variability of a watershed, making it easier to store, handle, and show spatial data. Physically based models take spatial variability into consideration, however mathematical modelling becomes a laborious task owing to the intricacy of their model structure. Considering above computer-aided tools based on human decision-making are required to cope with real-world phenomena that are constantly subjected to ambiguous, noisy, and confusing data.

Keywords

Empirical Models; Physically Based Models; Conceptual Models; Remote Sensing; ANN; Fuzzy Logic

Dissolution of Carbonate Reservoirs: A Concise Review of Associated Factors for Enhanced Oil and Gas Recovery

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Abstract

Hydrocarbon resources in carbonate rocks are extensive worldwide. On estimate, 60% of the world's oil and 40% of gas resources are contained within carbonate reservoirs. Carbonate rocks are widely distributed in Malaysia, particularly Central Luconia Province. Meanwhile, it remains challenging to accurately estimate porosity in carbonate reservoirs due to the heterogenous natures of carbonates. These variations make complicated both reservoir evaluation and eventual hydrocarbon recovery. The heterogeneity in carbonates is caused due to various diagenetic processes which impact porosity on the rocks, positively or otherwise. Among all diagenetic processes, dissolution is of peculiar importance for its positive impact on porosity and reservoir quality. Thus, dissolution has been recognized as the main controlling factor for porosity development. Previous studies have documented carbonate rock dissolution mechanism for oil and gas reservoir characterizations and field developments, in Malaysia and elsewhere. However, experimental evaluations of dissolution impact on Malaysian carbonate reservoirs have not been comprehensively described. Existing studies are based on speculations from rock depositional history and environment predictions. Thus, there are still insufficient empirical reports to explain how dissolution controls Malaysian carbonate reservoirs' porosities. Therefore, in this study, we present an abridged review of topics concerning dissolution of carbonate reservoirs to provide a roundup reference for future studies on the subject.

Evaluating the Climate Change Model with a Mathematical Approach Involving the Cesaro Summation

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Abstract

There are numerous changes occurring daily with respect to climate. There are various factors affecting the climate. Mathematical models are framed and studied to evaluate climate change and also trying harder to curb the climate change in an optimistic way. Mathematical approaches are protracted to numerous applications in real life circumstances. With this global pandemic there are certainly positive and negative impacts on climate as well as human beings. Pandemic has left a mark on all the biotic and abiotic factors where we can directly or indirectly state that changes in climate affect the respiratory system most and also the impacts on COVID do leave a strong impact on ruining the lungs."Lipot Fejer" was a Hungarian Mathematician who gave us Fejer Kernel which is used to express the effect of Cesaro Summation on Fourier series. The process of understanding these two concepts goes on and still is motivating and productive area of research. Cesaro Summation is very forward-thinking technique to analysis diverse problems concerning sequence and series. It is related in trigonometric series and Lebesque - Riemann intervals.

Keywords

Climate change, Cesaro Sum, Fejer KernelModel, Fourier series, Pandemic, COVID-19.

A Study on Healthy Indoor Environment Quality (IEQ): Green Commercial Buildings in Malaysia

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Abstract

The paper presents a comprehensive review of indoor environment impact toward occupant's health in the building. IEQ encompasses indoor air quality (IAQ), which focuses on airborne contaminants, as well as other health, safety, and comfort issues such as aesthetics, potable water surveillance, ergonomics, acoustics, lighting, and electromagnetic frequency levels. IEQ improvements to an existing building can occur at any point during the use of a building. Delivering a quality indoor environment is a complex task that involves indoor air quality, minimal noise disturbance, comfortable temperature accompanied by healthy relative humidity, sensible levels of occupant density and measures aimed at protecting mental health. Thus, advanced environmental control techniques and are now being developed to better manage IAQ in health care facilities, including improved particulate control, air disinfection systems, moisture control, and pressurization strategies. The advancement in controls technology, systems integration has allowed HVAC and other building systems to inter-operate and perform at greater efficiency levels than ever before. The quality indoor environment can result in increased occupant satisfaction, enhanced performance and productivity, reduced liability, marketing advantage and lower operations and maintenance costs. The objective of this paper is to comprehend the significance of IEQ in the design of green buildings, to identify the IEQ elements of the green commercial buildings and to study on healthy factor based on information derived from the reviewed literature on IEQ in green buildings.

Keywords

Indoor environment quality, green building, thermal comfort, healthy

Modern Developing Trends on Battery Charging Technology in Electric Vehicle: A Review

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Abstract

If we go through charging technologies of Electric vehicles there are different types defined in the literature, and also a tool in practical applications. The constant dropping of oil resources and the uprising tail of gaseous pollution, Due to which there are many countries started realizing the importance and moving towards the new energy source vehicles. Among the pitch technologies of electric vehicle (EVs) development is one battery technology. Currently, we are known for the ongoing situation of petroleum product availability. As seems through future reference make trouble to our present fast-growing lifestyle. Consequently, vehicle manufacturers have grown their production and research of Electric vehicles. Battery charging technologies showcase the immense market opportunities not even in India also around the globe. Currently, society seems to various adoptions of battery charging technology. The major key aspect of this paper is to represent a literature review on the current ongoing and proposed EV charging battery technology. In a quarter of power levels, power flow directions, converters, and control strategies of charging. A review of different charging procedures is introduced as well, specifically; the aim is to describe an efficient way of fast charging techniques with sustainably cell cycle life. Currently, the government of India implies different Tax Benefits for V2H, subsidies for PHEVs, charging stations becomes immense, and GHG emission law more intense. The GST rate of EV is bring down to 12%.The state government excused SGST. The road tax in EV is completely exempt in first few years; this amendment in Motor Vehicle Act and battery charging technology can act as an enabler.

Keywords

Electric vehicles, Battery charging technology, Battery pack, Rechargeable battery, Li-ion battery.

Development of Fabricated Laboratory Scale Extruder Machine for the Production of Rice-like Grains from Cassava *(Manihot esculenta Crantz)* Dough.

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Abstract

Developing a laboratory scale extruder machine in producing rice-like grains from cassava dough was done to enhance the efficiency, recovery, and profitability in contrast to manual batch production using pasta maker. Three screw speeds (40 rpm, 50 rpm, and 60 rpm) were evaluated to determine the optimum performance of the machine. The optimum performance was based on the result of the machine capacity and the physical properties of grains (size, width, shape, color, and hardness).

The fabricated extruder machine has an efficiency that ranged from 88.38% to 93.86% with overall cassava dough recovery of 78.13%. Thus, the efficiency was enhanced by 2.33% to 8.67% while the overall dough recovery was improved by 160.43% based on the capacity and throughput using the fabricated extruder machine in comparison with 86.37% efficiency and 30% overall recovery of the manual operation using pasta press. The optimum performance of the machine is at 40 rpm screw speed with a desirability of 91.7%.

Furthermore, the economic analysis and value engineering of the machine showed that the machine is economically viable with Internal Rate of Return of 45.87% for a period of 10 years and demonstrated a performance value that was greater than the cost of machine fabrication.

Study of Vulnerable Road User Accidents on Various Roads in Haryana

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Abstract

This study is conducted for road accidents analysis of the main component of VRUs i.e. two wheeler in the Rohtak city roads, India for the period of last four years 2016-2019. The collection of accident data and analysis shows date, month and time, types of injury as well as location is done. The distribution of road accidental deaths and injuries are studied. However the accident pattern shows extreme cold weather conditions and working hours have higher accidents as compare to good weather condition. Most of the accidents are on urban areas and less are in rural areas. A city level road accident scenario shows slight variation in fatalities and major injuries across states in last four years. Two wheeler road accidents have recorded the span with the help of police stations and RTO office Rohtak. The total numbers of accidents are about 290 for the city Rohtak, with total of 74 fatalities. The majority (22%) of the total accidents was in the day of Friday and then followed by Monday (16%). Out of total 43% of injury are of fatal in nature in the single year 2019, which is highest within study period of which 32 persons died on the spot. Highest numbers of accidents victims (74%) are seriously injured in the year of 2019 whenever the death percentage is considers as 43% of total.

Keywords

Vulnerable Road User, Fatal Accidents, Victims

Smart Parking System Using IOT

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Abstract

The idea of IOT is becoming more popular in our surrounding. It's been used in smart cities to automate things. Smart cities particularly aim to use the resources efficiently and integrate it with productivity and reliability to increase technology strength. IOT can be used in many complex situations and one major problem faced by the people in smart cities is of parking as with increasing number of vehicles and scarcity of parking facility and traffic congestion. There is a demand for smart parking system, which solves this problem. This Smart Parking System Using IOT not only reduces the work for the users, it will also be useful for the parking slot owners. They could track the entry and exit of the vehicles in their slots. The consumer will save more time by booking spot prior to his/her arrival at the spot and it will reduce their time for searching the slots. From the management's point view it would help in decreasing the manpower requirement used for maintaining such parking lots and would also help them use their resources more efficiently. Although ample amount of research works are there on the development of smart parking in literature, but most of them don't address the real time collection of parking charges. In this paper, we proposed a smart parking system using IOT which continuously monitor and update user with the available parking slot, and we have integrated a payment system where user can pay their parking charge while they leave. This would be the most efficient system for the people facing heavy traffic in their cities, thus this system is used for quick usability of the users to check for their slots and book it if needed.

Keywords

IOT, arduino, Ethernet Shield, Sensors

Farmers' Rights Protection on the Bioethical Issues of Genetically Modified Crops

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Abstract

Crops that have been genetically modified (GM) using cutting-edge biotechnologies will spur economic growth and benefit the general public. The legal framework currently in place addresses the procedural aspects of GM technology, which aim to strike a balance between the growth of biotechnology industries and the need to protect people and the environment from harm. It makes use of risk assessment and risk management concepts to get the job done. The preservation of fundamental human rights necessitates an examination of the ethical implications of genetic engineering. GM technology and farmer's rights are the focus of this paper, which examines the bioethical issues involved and makes a case for incorporating bioethical considerations into the decision-making process. An overview of biosafety regulatory frameworks for genetically modified crops will be provided. An emphasis is placed on secondary data in this normative study because of the legal approach. To that end, this paper will provide policymakers and other relevant stakeholders with an ethical framework for making decisions that affect farmers' rights.

Effect of Orientation and Arrangement of Sacrificial Piles as Scour Countermeasures on River Bridge

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Abstract

Scour is the detachment and transfer of bed material from beds and banks of streams, and from the vacant spaces in the bridge foundation due to the flowing current of water. It leads to severe damages and at the end bridge fails. Scour at bridge embankments causes various loss of accessibility, cost of maintenance, and disconnection between cities, that is why a design engineer predicts maximum local scour during bridge design otherwise the structure demolishes. There are many techniques to countermeasure scour such as cables, gabions and sacrificial piles etc. In the present study an experimental approach using the sacrificial piles in different arrangement and orientation in front of a bridge pier as countermeasures against scouring is tested. An open channel with glass sides and concrete bottom is used. The bridge pier and sacrificial piles were circular and the riverbed was sandy. The discharge was constant throughout the experiment equal to 0.020 m 3 /s , two sacrificial piles were placed in front of the pier in different arrangements (D – D8) and orientation (30, 45,60 and 90 degree) for each scenario. Sacrificial piles showed satisfactory results in mitigating the scour depth by deflecting water action. The arrangement with distance 1D and angle 30 is proved to be maximum scour depth while D6 and angle 90 degree for minimum scour.

Keywords

River Bridge, local scouring, sacrificial piles , scour countermeasures

Green Environmental Entrepreneurship: An Innovative and Eco-Friendly Way towards Successful Nation

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Abstract

The growing worldwide challenge on weather extrade and sustainable improvement has brought about a paradigm shift within the Indian markets. However, the shortage of sources, ecological issues and survival are the problems which might be identified with the aid of using marketers. Entrepreneurship refers to the idea of growing a commercial enterprise at both national and international level. Green environmental entrepreneurship also referred to as ‘ecopreneurship' is described because the system of entrepreneurship implemented on the way to create agencies clears up environmental issues and promotes function sustainably. Small and medium size establishments are the spine of country’s economy because they aid in contributing to the GDP and also generate new employment avenues. Passionate marketers are the one to stock these establishments who then assemble and capitalize these establishments to make them commercially successful enterprise. Green marketers provide the supply for starting and maintaining green services and products, imparting greener manufacturing techniques and constructing green jobs. The possibilities and demand for green entrepreneurship is on the rise as multiple commercial enterprises are rerouting towards ecopreneurship ; the government of India too has launched many initiatives and schemes to support ecopreneurship in India. The reason for rise in ecopreneurship is due to concern towards environmental issues like global warming, pollution, depletion of natural resources, ozone layer depletion and various other man made catastrophes that have cause caused disruption in the atmosphere. Due to a conscious awareness on saving the planet, even the consumers have now taken a greener turn to choose eco friendly products. The inclination of consumers towards green products has improved the scope for the growth of green market. This green market is a rising marketplace as it provides adequate possibilities both locally and globally to promote green design, green manufacturing, green delivery chain and plenty of other environmental benefits.

Keywords

Entrepreneurship, green environmental entrepreneurship, sustainable improvement, green market, green product, consumers, challenges and opportunities of green entrepreneurship

Ethical Issues among Professionals in the Private Construction Sector: A Contractor's Perspective

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Abstract

The construction sector plays an important role in ensuring that a country can compete healthily with each other in order to achieve a developed country in the future. Addressing the ethical issues among professionals is important in ensuring successful project completion besides meeting quality requirements, completing on time and being carried out within the budget. A questionnaire data from 203 respondents involving the contractor's professional from the Malaysian private construction sector was collected. The finding of this study indicated that the ethical issues among professionals focusing on the contractor perspective for the private sector have a direct and negative impact on the construction project. The study's outcomes confirmed the significance of corruption, negligence, unfair conduct, favouritism, and fraud was the most important unethical among the professional that needs to be paid attention to and optimised. This study will provide useful information to all stakeholders in dealing with ethical issues, especially among professionals involved in each construction phase. The preventive measure must be taken and considered accordingly in resolving these ethical issues in ensuring success in the construction project management and determining the success of project completion within the cost, quality and time expected.

Theoretical and Numerical Perspective of Geofoam Granular Column (GGC) to Accelerate Soft Soil Consolidation

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Abstract

Soft soil problems are sometimes encountered in building or pavements structures design. One of the common methods is to accelerate consolidation to avoid excessive settlement and increase the bearing capacity of the soil. The aim of the study is to investigate the possibility of GGC (Geofoam Granule Column) as a reinforcing material to accelerate consolidation settlement. GGC is Expanded Polystyrene (EPS) beads to form geofoam granules column. Geofoam is often used for various purposes, such as embankments, pavement, slope stabilization, and others. An investigation of the effect of GGC was carried out to determine the magnitude of the discharge capacity and changes in strength that occur in soft soil after installation. Discharge capacity is strongly influenced by the density of GGC. The result of the permeability, consolidation, triaxial, and the direct shear of the surface material test have shown the GGC is new alternative material as soil reinforcement. A case study was conducted using the FEM application to investigate changes in soil conditions in the field.

Ergonomic Comparison of Sitting and Standing Checkout Cashier Operation

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Abstract

Sitting and standing work postures have been one of the focuses of study of some scholars nowadays in the field of ergonomics, work designs, and industrial systems.

The focus of this study was to ergonomically compare sitting and standing check out cashier operation in terms of pain and discomfort of workers and the ergonomic risks associated with the two working postures. Cornell Musculoskeletal Discomfort Questionnaires (CMDQ) was used to evaluate the pain and discomfort workers experience and the Rapid Entire Body Assessment (REBA) was used to assess the risks associated with the job of the sitting and standing cashiers. The study revealed that the pain is significantly more intense in the neck, forearm, and wrists areas of sitting cashiers while for standing cashiers, pain in the lower extremities of the body like hips, thighs, knees, legs, and feet are significantly greater. REBA revealed that activities like reaching for items and bagging of items poses high risk for sitting counter operators and for standing operators the level of risk is significantly higher in getting the bag process. Based on findings, a semi sitting chair is designed and proposed to address the ergonomic issues for both sitting and standing counter cashiers.

Tracking Clinical Trials and Enhance Security & Control with Blockchain for Medical Record Management

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Abstract

The healthcare system uses a centralized system, where a patient's record is stored in the healthcare provider's database. Internet of Things has made a big impact on the healthcare industry. Its centralized databases are prone to privacy and security risks. This paper proposed research concept based on the blockchain to the healthcare sector for health record access control and providing a way for clinical trials to be tracked with authentic unhampered data in a timely manner. The objectives of the research are to develop a system for patient-doctor interactions using blockchain, enhanced security and control mechanisms for medical record management, to track clinical trials and pharmaceuticals with blockchain, to assess the impact of blockchain on the healthcare industries, to assess the success of blockchain on healthcare industries. Here, we need to develop a blockchain based meta-model to handle the security and privacy issues in healthcare record keeping along with IoT & Machine Learning to trace the impact of medicines, vaccines on patients in clinical trail scenarios. In end of this research, we are expecting a better system where the research and development personnel will have access to real-time data that is confirmed across the other network members involved.

Keywords

Blockchain, Clinical Trials, Security & Privacy, Access Control

Study of Optimal Portfolio Policy Facing Multiple Riskyassets

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Abstract

We study the optimal portfolio policy for a multi- period mean-variance investor facing multiple risky assets subject to proportional transaction costs, market impact or quadratic transaction costs. We demonstrate analytically that, in the presence of proportional transaction costs, the optimal strategy for the multiperiod investor is to trade in the first period to the boundary of a no-trade region shaped as a parallelogram, and not to trade thereafter. For the case with market impact costs, the optimal portfolio policy is to trade to the boundary of a state dependent rebalancing region. In addition, the rebalancing region converges to the Markowitz portfolio as the investment horizon grows large. We contribute to the literature by characterizing the no-trade region for a multiperiod investor facing proportional transaction costs, and studying the analytical properties of the optimal trading strategy for the model with impact costs . Finally, our contribution is to study numerically the utility losses associated with ignoring transaction costs and investing myopically, as well as how these utility losses depend on relevant parameters. We find that the losses associated with either ignoring transaction costs or behaving myopically can be large. Moreover, the losses from ignoring transaction c1osts increase in the level of transaction costs, and decrease with the investment horizon, whereas the losses from behaving myopically increase with the investment horizon and are concave unimodal on the level of transaction costs. Our work is related to mean-variance utility and proportional transaction costs. For the case with multiple risky assets, the optimal portfolio policy is Characterized by a no-trade region shaped as a parallelogram.

Analysis on Mapua University's Happiness Index Using Ahp and K-Means Clustering

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Abstract

The research aims to identify the demographics of the students that communicate a problem or issue that they have with the three basic psychological needs (relatedness, competence, autonomy) that were the main basis for the happiness index questionnaire. Identify the profiles of successfully converted applicants. by identifying the demographics, application of clustering will also help the research. ahp and k-means clustering will be done. After weights have been determined to its corresponding attribute, clusters will be formed to see which respondents will be grouped based on the centroids. An overall mean of 3 is the scored which is reflected by the students. According to the weight of the psychological needs that ought to be satisfied to achieve happiness, the significance is on autonomy and general place, followed by competence. Last on the spectrum is relatedness, general people, and general process. it can be stated that those who belong in the profile could improve their happiness and well-being in the school if the school is able to identify exactly what levels of challenges and from which classes is greatly affecting the students as well as to what extent of knowledge gained from courses do students expect from the school.

IoT-based Smart Irrigation System for Solanum Melongena or Eggplant using Evapotranspiration with Penman-Monteith Equation

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Joseph Bryan G. Ibarra, Mapúa University, Intramuros, Manila

Abstract

In this study, a smart irrigation system is developed in order to automatically irrigate the eggplant, based on the evapotranspiration using the Penman-Monteith equation along with the water postponement algorithm. This study will mainly focus on the effectiveness of smart irrigation systems in maintaining the health of eggplant whilst reducing water consumption compared to the traditional irrigation. Based on the results, the water consumption of the smart irrigation system is significantly different when compared to traditional irrigation whereas the eggplants under the traditional irrigation system consumed a more significant amount of water when compared to the total water consumption of the eggplants under the smart irrigation system. As to the plant parameters, both plant height and number of leaves do not have enough evidence to reject the null hypothesis since the plant height and number of leaves of the eggplants in both setups are similar to one another. However, the number of buds/flowers from the smart irrigation is significantly different from the traditional irrigation wherein the number of flower buds/flowers are significantly greater on the eggplants under the smart irrigation system when compared to the eggplants under the traditional irrigation system.

In vitro and *in silico* Approach to Evaluate the different Medicinal Plants from North Western Himalayas for their Potential as an Efflux Pump Inhibitor against MDR *Salmonella enterica* serovar *typhimurium*

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Abstract

Medicinal plants pay an important role in human life in several ways including as natural therapeutics. The current study was done to detect the phytocompounds from medicinal plants that could inhibit the AcrAB-TolC efflux pump (EP) of *Salmonella typhimurium*. Medicinal plant extracts were prepared using methanol solvent. Synergism was assessed by the agar well diffusion method and EPI activity by berberine uptake and EtBr efflux inhibition assays for *S. typhimurium* strains. Microdilution method and checkerboard assays were done to determine MIC and FICI respectively for a bioactive compound. To validate the phytocompound and EP interaction, molecular docking with 6IE8 (RamA) and 6IE9 (RamR) targets was done using autoDock vina software. Toxicity prediction and drug-likeness were predicted by using ProTox-II and Molinspiration respectively. Methanolic extracts of 6 plants with tetracycline showed synergistic activity (GIIs 0.56-1.35). *Z. officinale* enhanced the antimicrobial potency of berberine (2 to 4-folds) and increased the EtBr accumulation. Furthermore, isolated lariciresinol from bioactive fraction decreased MIC by 2-to 4-folds and ΣFIC varied from 0.30 to 0.55 with tetracycline. Lariciresinol also showed a good binding affinity with 6IE8 (-7.4 kcal mol^{-1}) and 6IE9 (-8.2 kcal mol^{-1}) and also followed Lipinski's rule of five. The data suggest that lariciresinol from *Z. officinale* could be a potential EPI that could lead to effective against *S. typhimurium* and confirmed to be safe for future use.

Keywords

Antibiotics; Efflux pump inhibition; Lariciresinol; Molecular docking; S. typhimurium; Synergistic activity; Toxicity.

Artificial Intelligence applications in Digital Marketing and Customer Intelligence

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Abstract

Nowadays, Artificial intelligence is a significant research discipline in computer science. The field has been actively fast-growing for the previous few years in terms of both research and development. This article presents a comprehensive knowledge map of the intellectual structure of the field of study of Artificial intelligence trends in digital marketing. The data is collected from the SCOPUS and Web of Science (WoS) database in this article. To know the relationship between AI and digital marketing to meet the research gap, study analysis has been performed using "Web of Science" and Scopus databases. Querying the keywords "Artificial intelligence applications" and "Digital Marketing," a total of 239 studies have been found in the Web of Science database from 1999 to 2021.

This research study includes an analysis of the latest ten-year dataset collected from the SCOPUS database from 2010 to 2021 using software tools to analyze or measure the fundamental and related works. From this research study, we can conclude that artificial intelligence has become the frontier area in Digital Marketing.

Performance Assessment of Mechatronic Controlled Granular Fertilizer Applicator for Corn

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Abstract

This study was conducted to assess the performance of the mechatronic controlled granular fertilizer applicator for corn. It was composed of two different systems, the seed detection system and the fertilizer application control system. These were evaluated through laboratory experimental simulation for the different systems and as an integrated mechatronic system. The dependent parameters were comprised of hopper capacities, auger angular displacement, and travelling speed with response parameters of Seed detection accuracy, discharge amount, fertilizer metering efficiency. The results revealed that the Seed detection accuracy is + 0.60% and the angular displacement of the designed auger metering device significantly affected the discharge amount of fertilizer with 6.49 grams at 360 degrees' rotation. The mean fertilizer metering efficiency was 93.11%. With the increase of angular displacement of the auger, the discharge amount also increased. The amount of the fertilizer discharge was not affected by the speed of travel and hopper capacity.

Mechanical and Microstructural Properties of Hybrid Bio-Composites Using Microwaved Coconut Fiber and Rice Husk

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Abstract

Hybrid bio-composites are popular due to its remarkable mechanical and environmental properties. However, the drying process to remove the moisture before fabrication can be time consuming. Hybrid bio-composites with the additional physical treatment using microwave energy could enhance their mechanical properties by changing the macromolecular structure much faster. Coconut fiber and rice husk with ratios of 80:15:5, 90:5:5 and 98:1:1 were used as fillers incorporated with poly-lactic acid (PLA) using melt-mixing and hot press technique. These fillers were dried using the conventional oven (60°C for 24 hours) and the microwave oven (2.45 GHz) for 3 minutes. The tensile test revealed that oven-treated fibers with 98:1:1 composition have higher tensile strength (63 MPa) when compared with microwave-treated fibers (58 MPa). However, microwave-treated fibers achieved higher flexural strength (69 MPa) compared with the conventional oven (60 MPa). Moreover, microwave energy increased the hardness of the bio-composites by at least 4% from neat PLA. Microwave-treated fibers recorded less water absorptivity (2%) while the conventionally treated fibers have 5% water absorptivity for the 80:15:5 composition. SEM images verified that agglutination and voids are present with higher content of fibers which resulted in poor adhesion and caused low tensile and flexural strength.

Keywords

Hybrid bio-composites, microwave energy, coconut fiber, rice husk

Determination of After Effects of Using Hand Sanitizers and Hand Cream On Development of Latent Fingerprints with Time Gap

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Dr. Shruti Gupta, Assistant Professor, Amity University

Dr. Sudhir Kumar, Deputy Director of Forensic Science Laboratory, Amity University

Abstract

Many skin formulations, such as hand sanitisers and hand creams, are often utilised nowadays. When applied to the skin, the ingredients of cosmetics and sanitisers can remain on the superficial level, be assimilated into the skin, be metabolised or disappear from the surface by dissipation, sloughing off, or by contact with various materials. This is extremely persuasive in the field of fingerprint detection since the components in hand sanitizer and hand cream can survive on the friction ridge skin and be transported to the surface after deposition. The present study is aimed to determine whether or not the application of these, prior to fingerprint deposition, influences the subsequent chemical detection of fingerprints.

In this study, 560 latent fingerprint samples were collected for the analysis. These samples were grouped in seven timeline-based categories (Without any application as Standard, after application – Gap of 10 minutes, 15 days, 1 month, 2 months, 4 months and 6 months) consisting 80 samples each. Each seven timeline-based categories were further sub-divided in two groups i.e., 40 samples of hand sanitisers and 40 samples of hand creams respectively. The four different conventional methods of examination utilized were: ninhydrin, silver nitrate, iodine fuming and cyanoacrylate.

After examination, individuals who used hand sanitizer compared to those who used hand cream revealed a highly significant difference in the visibility of the ridge impressions, as well as the width of the ridge impressions. The hand sanitizer fingerprints demonstrated an improvement in overall fingerprint development quality when compared to the matching hand cream fingerprints after being aged for various intervals. When compared to hand cream, hand sanitizers improved the quality of latent fingerprints for both fresh and aged prints using the four conventional methods.

Single Pile FEM Modeling: Ultimate Capacity Determination of Bored Piles Embedded in silty-sands using Modified Drucker-Prager Cap Model

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Abstract

Ultimate pile capacity determination is crucial before the structure construction, which can be accurately predicted and studied using the finite element method. FEM is a numerical method that is anticipated to be indispensable in advances in pile analyses, aiming at pile effectiveness and material efficiency. Pile modeling is attainable using FEM for the stability investigation concerning the geotechnical findings. In addition, several constitutive mathematical models have been available for FEM applications to reasonably simulate soil behavior under pressure. This study conducts numerical modeling of eight bored piles of different diameters and lengths embedded in silty-sand soils. Using the FEM software ABAQUS, pile load-settlement curves are obtained to determine ultimate pile capacity, skin friction resistance, and pile base resistance. An elastoplastic model, the Modified Drucker Prager Cap model, is used as a constitutive soil model for silty sand soils. In applying the MDPC model, the cap hardening behavior (hardening parameter) is obtained by having the site soils compression and swelling indices determined using the proposed regression equations in the literature. Piles were modeled successfully, and the results have good agreement with the results of the dynamic analysis test that has been conducted in Davao del Norte, Philippines.

Process Parameter Optimization of TIG Welding by Taguchi method and its effect on Performance Parameter of Stainless Steel - Grade SS316L

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Abstract

Joining of various materials TIG welding process is widely used. The process parameters of TIG welding are most important as they affect the quality of weld, productivity of process and cost required for welding process. This research will give the relationship of process parameters like direct current of welding, supplied voltage, Speed of Welding, gas flow rate, etc. To study performance parameters like weld strength (UTS) in case of Stainless Steel- Grade SS316L for which Taguchi's method of Optimization can be used. Taguchi's Technique can be applied for various TIG welding parameters and can be optimized for desired weld quality. Suitable array is used to determine optimum number of experimentation based on Taguchi's technique. For collecting required data to analyze the welding characteristics of Stainless Steel- Grade SS316L and to go for optimization of welding parameters this method of optimization will be very useful. The results obtained by the experimental values and the theoretical values should be compared to confirm the best weld strength for Stainless Steel- Grade SS316L.

Land Use/Land Cover Classification in Mekong River Basin,Thailand Using Google Earth Engine

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Abstract

Land use/ land cover (LULC) analysis has been greatly encouraged effective management of water resources, especially water-related disaster monitoring and water budget planning. The exploitation of Earth observation satellite images has been applied in order to support LULC classification in large areas or multi temporal assessment. Several techniques and tools have been developed to produce satellite-based LULC mapping, However high performance computing and specific software are the basic requirements for these processing. The Google Earth Engine (GEE) cloud computing platform provides enhanced opportunities for undertaking satellite images processing which the system provides large satellite image archives and libraries for multi-propose processing. This work presents land use analysis of Mekong river basin, Thailand in 2019 applying Earth observation satellite images acquired by optical and Synthetic Aperture Radar (SAR) instruments. Advanced machine learning LULC classification include support vector machine (SVM), random forest (RF) and Classification And Regression Trees (CART) are compared their results. The study has been carried out to identify the best and accurate algorithm for LULC mapping using GEE.

Keywords

land use/land cover (LULC), Google Earth Engine (GEE), machine learning algorithm, water resources management.

Views of Nanotechnology in Waste Water Treatment

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Abstract

Water is mostly use for industrial and municipal purpose, pollution may be defined in number of ways such as physical properties and chemical properties. Nanotechnology significant advance in field of waste water treatment, it can be define as design, synthesis, characterization, and appli-cation of nano material. Resent progress has been done in nanomaterial for water purification. In chemistry of nanoscale for the treatment for wastewater such as adsorption (nanotube CNT), nanomembrane, bioactive nanoparticle, nano catalyst, biomimetic membrane etc. nanotechnology are being developed to clean industrial water pollutant in ground water thought chemical reaction.

Keywords

Waste water, Nanotechnology, Adsorption (nanotube CNT), Nonmembrane, Bioactive nano partical, Nanocatalyst, Biomimetic membrane

Geometric Representation of Modified forms of some Important Failure Criteria

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Abstract

Elasto - Plastic analysis of a structural system involves defining failure/yield criterion, flow rules and hardening rules. The failure/yield criterion defines the limit beyond which the material flows plastically and hardens/softens or remains perfectly plastic before ultimate collapse. The failure/yield criterion is represented geometrically in three/two dimensional Haigh - Westergaard stress – space to facilitate a better understanding of the behavior of the material. In the present study geometric representations in three and two-dimensional stress - space of a few important failure/yield criterion are presented. The criterions presented are the modified forms obtained due to the conditional solutions of the equation of stress invariants. A comparison of the failure/yield surfaces is also presented here to obtain the effectiveness of each of them.

Keywords

Failure Criteria, Modified Form, Geometric Representation, Hydrostatic Axis, Deviatoric Plane.

Timekeeping and Immediate Monitoring of Employees by Consistently Advocating Time Consciousness and Honesty Using Enhanced Attendance Monitoring System (TIME CATCH using EAMS)

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Abstract

Attendance management methods that use QR codes and face recognition technology to identify and verify an individual's features are widely used in many aspects of people's lives nowadays, notably in pandemic situations where contact-less systems are used. In this paper, the development of enhanced attendance monitoring system using was introduced. Manual calculating generates mistakes and wastes a lot of time, thus being able to compute the attendance percentage and leave credits becomes a big problem. For this reason, an enhanced attendance monitoring system was developed for the timekeeping and immediate monitoring of employees by consistently advocating time consciousness and honesty in Isabela State University – Angadanan, Campus.

The system uses a camera and a QR Code reader to take attendance electronically, and the attendance records are saved in a database. This method, on the other hand, reduces the requirement for fixed materials and employees to retain records.

From the developed system and the gathered data, it has addressed the problem of the conventional way of checking employee's attendance. Results shows that the General Mean of 4.86 shows that the respondents agreed about the functionality of the system based on ISO 25010 and found it to be functional and addresses the issues in the current attendance monitoring system of ISU.

Antibacterial and Pharmacological Evaluation of Withanolides from Datura innoxia: A Chemoinformatics Approach

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Abstract

Objectives: This study was aimed to explore the therapeutic potentiality of Datura innoxia through chemoinformatic and antibacterial evaluation of withanolides extracted from it.

Methods: Pharmacokinetic and pharmacodynamic properties and drug-likeness of the withanolides; Withametelinol A, Withametelinol B, Witharifeen, Withametelin, Dinoxin B, and Daturacin of D.innoxia were analyzed using the SwissADME program. Shrodinger software is used to target and evaluate their antibacterial potentialities through docking studies. Penicillin-binding protein, DNA gyrase, Efflux pump protein, and Quorum sensing regulators of S.aureus and E.coli were selected as target proteins for assessing protein-ligand interaction. All observations were comparatively analyzed with the properties of withanolide A and withaferin A, the best-known withanolides. Most active Dinoxin B withanolide(12500-100000 µg/ml) extracted from leaves of Datura innoxia and confirmed through LC-ESI-MS; is subjected to antibacterial assay following the agar diffusion and macro broth dilution methods against Methicillin-Resistant S.aureus and Multi-Drug resistant E.coli isolated from urine sample of patients. The bactericidal efficacy was confirmed using transmission and scanning electron microscopy.

Results: In-silico studies reveal the therapeutical properties of various withanolides present in D.innoxia. Especially drug-likeness and antibacterial properties of withametelin and Dinoxin B are significantly high and remarkable due to their binding affinity towards cell membrane proteins. Docking studies show efflux pump protein of E.coli and penicillin-binding proteins of S.aureus as the target. Significant antibacterial assay and microscopic evaluation revealed that the MRSA isolates were susceptible to Dinoxin B with a zone of inhibition 21±0.5mm to 24±0.5mm, and the bacteria were susceptible at a concentration rate of ≤12.5mg/ml.

Conclusion: It is to bring awareness of the therapeutical importance of D.innoxia and to preserve this vital plant from getting massively destroyed. As computational studies promote the effective selection of drug molecules, this research also helps to select the best compound for further clinical analysis.

Keywords

Datura innoxia; Withanolides; Chemoinformatic evaluation; Methicillin-Resistant S.aureus; Multi-Drug resistant E.coli.

Innovative Distance, Similarity and Entropy Measures for Interval Valued Fuzzy Soft Set

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Abstract

The soft set was defined by Molodtsav [1999] as a modulus operando for dealing with uncertainties. This does not behave like traditional tools like fuzzy set theory, rough set theory, probability theory, and so on. An interval valued fuzzy set and a soft set are defined as a combination in this paper. Flexible approach distance, similarity measures and based measures entropy measures are also devised. To demonstrate the developed approach, some numerical examples are provided.

Human Brain Tissue Research

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Abstract

Scientist can study human health conditions is through the use of human specimes. This approach is not only scientifically superior to the use of animal specimen it is also more humane. Because of our commitment to advancing science without harming animals .NAVS is exicted to see continued progress being made towaed smarter , human relevant research.

The article focused on a project based in seatle which aims to link patient who are willing to donate brain tissue removed during suirgery with scientists and neurosurgeons. The brain tissue provided through this initiative is then experimented on at an amazingly quick pase . just minutes after surgery , the brain tissue is transported to the research institute. Within an hour after surgery , it is sliced preserved or kept alive for same day experiments. Researchers are interested in learning more about which genes were active more about the behaviour and shape of the cells, as well as learning more about which genes were active in the cells of the brain tissue. The experiments being performed are also helping to explain why some drugs work differently in human brains than they do in mouse brains.For example, some human neurons have h channel proteins, which help cells respond to electrical signals. These proteins are rare in mice, however. These channels can be can be impacted by drugs , which may account for difference observed between the species.

NAVS has long recognized the limitations of using animal models to study neurodegenerative conditions and has been helping fund alternatives for this purpose, using a different approach, one which relies on creating 3D neuronal cultures derived from human stem cells.

Use of human relevant models is providing valuable insight into human biology and disease and is producing results more quicly, cheaply amd humanely than animal models.

The article firther highlighted another important finding note that " imprecise animal models have stymied research on schizophrenia , autism, and alzhemier's disease which is " why studying live , human tissue is so critical.

Readiness of Bicol State College of Applied Sciences & Technology for E–learning Modality

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Abstract

E-learning readiness is one that must be reflected in making use of E-learning programs in an institutions specifically now a days that due to the onset of this pandemic, all has shifted into a technologically driven approaches be it on all academic pursuits. The focus of the study is to determine its preparedness and readiness among learners (214 receivers) and tutors (112 enablers) where it utilized quantitative-descriptive method using questionnaires in determining various students' situations as to the use of gadgets, internet connectivity, convenient time to study, encountered instructor's approaches, materials, as well as manner of communications. Data were gathered and were analyzed using weighted mean. Result showed that learning institution is now remotely prepared and ready in imposing programs as learners adapt to the new modality as it reflected the highest frequency utilized cell phone and 75% have their internet access on their respective homes. Prior to school lockdown, an institution has been implementing such remote learning as it successfully connected with students digitally using Google classrooms. The study recommends for an in depth discussion of an e-learning modality as it continually utilized by the learners and enablers.