

45th World Conference on

APPLIED SCIENCE, ENGINEERING & TECHNOLOGY

29th & 30th December 2023 || Goa, India





Organized by Institute For Educational, Research and Publication (IFERP)



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Editorial

We cordially invite you to attend the 45th World Conference on Applied Science, Engineering and Technology (45th WCASET-2023) which will be held on 29th & 30th December, 2023 in Goa. The main objective of 45th WCASET-2023 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 October 2023, the Organizing Committees have received more than 252 manuscript papers, and the papers cover all the aspects in Electronics, Computer Science, Information Technology, Science Engineering and Technology. Finally, after review, about 102 papers were included to the proceedings of **45**th **WCASET-2023.**

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of **45**th **WCASET-2023**. 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.

Welcome to Goa Conference 2023 - WCASET



45th World Conference on Applied Science Engineering And Technology (45th - WCASET) is organized by IFERP on 29th - 30th December 2023 at Goa. WCASET will explore the new horizons of innovations from distinguished researchers, scientists and eminent authors in academia and industry working for the advancements in Applied Science, Engineering and Technology from all over the world. 45th WCASET aims to bring together Academicians, Scientists, Research scholars and Students, to share and disseminate information on knowledge and scientific research works related to multidisciplinary topics and confers the practical challenges encountered and the solutions adopted. The conference will create a path to establish a research relation for the authors and listeners with opportunities for collaboration and networking among the universities and institutions for promoting research and developing technologies

Message from Managing Director



A. Siddth Kumar Chhajer Managing Director & Founder IFERP, Technoarete Groups On behalf of IFERP & the organizing Committee, I express my hearty gratitude to the participants, keynote speakers, delegates, reviewers and researchers.

The goal of the **45**th **WCASET** is to provide knowledge enrichment and innovative technical exchange between international researchers or scholars and practitioners from the academia and industries in the field of engineering, science & technology. This conference creates solutions in different ways and to share innovative ideas in the field of Science, Management, Engineering & Technology. WCASET provides a world class stage to the Researchers, Professionals, Scientists, Academicians, and students to engage in very challenging conversations, assess the current body of research and determine knowledge and capability gaps.

45th **WCASET** will explore the new horizons of innovations from distinguished researchers, scientists and eminent authors in academia and industry working for the advancements in Applied Science, Engineering and Technology from all over the world. WCASET hopes to set the perfect platform for participants to establish careers as successful and globally renowned specialists in the field of science, engineering & technology.

A. Siddth De

A. Siddth Kumar Chhajer Managing Director & Founder IFERP, Technoarete Groups



Message from Chief Executive Officer



Rudra Bhanu Satpathy CEO & Founder IFERP, Technoarete Groups IFERP is hosting the 45th World Conference Applied Science, Engineering and on Technology this year in month of November The main objective of 45th WCASET- 2023 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.

Rudra Bhanu Satpathy CEO & Founder IFERP, Technoarete Groups





Mr. Madhusudhan Rapole

CEO & Founder Oorja Energy Eng'g Services Pvt. Ltd. Hyderabad, India

Mr. Madhusudhan Rapole is the Founder & MD of Oorja Energy His expertise is in cleantech heating, cooling and ventilation solutions. He is a pioneer in introducing many new technologies at a commercial scale in India. These technologies include Radiant Cooling, Geothermal Cooling, Solar and Waste Heat based Cooling.

Education

• Stanford University Graduate School of BusinessStanford University Graduate School of Business Stanford Seed Transformation Program, Business Administration and Management, GeneralStanford Seed Transformation Program, Business Administration and Management, General

The Seed Transformation Program is a yearlong, on-the-ground leadership program for established founders and CEOs in emerging economies focused on growing their businesses and increasing the positive impact they have in their communities. The Seed Transformation Program is a yearlong, on-the-ground leadership program for established founders and CEOs in emerging economies focused on growing their businesses and increasing the positive impact they have in their communities.

• TERI University

Adv. PG in Renewable Energy Eng'g, Renewable energy technologies like Solar, Geothermal, Wind etc.Adv. PG in Renewable Energy Eng'g, Renewable energy technologies like Solar, Geothermal, Wind etc.

- Indian Institute of Foreign Trade, MBA, International Trade
- Osmania University, Bachelors of Engineering, Mechanical Engineering
- Kendriya Vidyalaya, High School, Science



Dr.Vivek M.Nanoti

Director of Engineering- LTJSS Priyadarshini Group of Institutions Ex - Principal Priyadarshini Institute of Engineering & Technology (PIET) Nagpur, Maharashtra, India

• Countries Visited : For Academic meetings & Conferences -

Scotland, England ,Portugal, Germany, France, Belgium, Israel, Netherlands, Malaysia, Singapore, Poland, Dubai, Istanbul , Nepal , Moscow, etc

• Head , SILICE project at PIET (collaborative venture with European Union & Israel) worth Rs 50 Lakh

• Head JEAN MONNET PROJECT worth Rs 21 Lakhs

• Head , ENHANCING GREEN ECONOMY IN ASIAN COUNTRIES(EGEA) Project worth Rs 54 Lakh (EU funded) with partners from European Universities and Nepal.

Education

• Institute of Science , Nagpur, M.Sc (Physics) Ph. D (Materials Science), Materials Science

Kathmandu Institute of Applied Sciences KATHMANDU NEPAL TRAINING / COURSE DEVELOPMENT ON GREEN ECONOMY TRAINING / COURSE DEVELOPMENT ON GREEN ECONOMY

•Activities and societies: MODULE DEVELOPMENT ON GREEN ECONOMY

 Instituto Superior Técnico, Certificate course, Managing Social Hubs

• Kalinga Institute of Industrial Technology, Bhubaneswar Certificate course, Social Innovation • Technische Universität Berlin, Certificate course, Social Innovation and Social Entrepreneurship

Completed 4 Courses on ..

Creativity, Social Innovation Social Entrepreneur, Communication

Buisness Dev Process for Social Enterprises & Social Start ups

Managing Social Hubs

Developing Sustainable Hubs & Evaluating Social Inpact and outputs

By actually visiting following Universities INSTITUTO SUPERIOR TECHNICO, LISBOA UNIV OF APPLIED SCIENCES VERN ZAGREB UNIV OF EDINBURGH BUISNESS SCHOOL,

TECHNISCHE UNIVERSITAT BERLIN

Tel-Hai College, Certificate course, Creativity communication social innovation

University of Edinburgh Business School, Certificate course, Business development process & Social Start ups

University of Lisbon, Certificate course, Social entrepreneurship

VERN' University, Certificate course, Managing social hubs

• SOMALWAR HIGH SCHOOL RAMDASPETH NAGPUR, SSC & HSSCSSC & HSSC



Mr. Lalit Gautam

Chief Executive Officer Sensegrass Inc Paris, France

Lalit is a dynamic and young entrepreneur, who founded his first startup at the age of 23 and bootstrap, and now at the age of 29 He Founded four startups and three are funded with an Exit.

Lalit has shown his problem solving and analytical skills since his college days and started working on some global issues like climate change and textile waste. Lalit is more concerned about social issues in India and developing nations and he believes Exponential Technology can be an important tool to solve such problems.

Since he started his entrepnuer career Lalit helped more than 50 social impact startups and entrepreneurs as a mentor and start-up consultant and helped them to raised funds. Lalit is a public speaker as well and has spoken on varieties of topics from the Future of SDGs to Civic education in the Arab world, unsustainable business model importance in startups to Human IQ vs Future of AI, etc at various platforms including UN HQ in Geneva.

Lalit is the first and the only entrepnuer awarded by three European governments with an innovative startup visa and funds for his work and represented India and his work in the UN twice. Raised funds from angel to VC, grants to public funds. Lalit has won multiple fellowships including the Ashoka changemaker exchange, Bosch fellow, SOCAP, and He is part of many international youth organizations like world merit, make sense, and mentor in the various incubator and Global shaper in World Economic Forum. Lalit is an Indo American youth leader for the 2019 and ASEAN Youth leader for the year 2019 as well.

Lalit writing two books on the topic of Startup-"How to win the hardest marathon- Startups" and "Life after the Arctic". Lalit is the Robert Swan Arctic expedition fellow as well.



Dr. Fernando Ortiz - Rodriguez

Full Professor Universidad Autonoma de Tamaulipas, Mexico

About

- 16 years in strategic positions.
- 16 years in project management.
- 17 years in software design and development.
- 14 years as a technical leader in software implementation.
- 8 years of experience integrating applications on .Net, C, and VB.
- 16 years managing multifunctional teams.
- 16 years in software development for problemsolving.
- 10 years as a knowledge engineer.
- 16 years in IT and business process design and process mapping.
- 16 years in Budget planning and management.
- 16 years in personnel management.
- 18 years in international projects.
- 11 years in strategic planning and marketing
- 16 years in scientific research activities.

Education

•Universidad Autonoma de Tamaulipas, Doctorado en Gestión Estratégica de Negocios, Doctorado Homologado

• Charter University, Doctorate In BA, Information Sciences

• Tecnológico de Monterrey, Master's Degree in Information Technology Administration

 Universidad Politécnica de Madrid , Artificial Intelligence and Computer Science (Doctorate Program)

• Universidad Politécnica de Madrid , Business Information Systems (Doctorate Program)

• Universidad Autonoma de Tamaulipas, Bachelor's Degree in Administrative Computer Science

• Universidad Politécnica de Madrid, Graduate Diploma of Advanced Study, Artificial Intelligence and Computer Science



Dr. Madhurima Dasgupta

Assistant Professor (Sociology), School of Humanities, Management and Social Sciences, The Neotia University, Kolkata, India

Dr. Madhurima Dasgupta is presently an Assistant Professor of Sociology at The Neotia University, WB. She completed her PhD from Jadavpur University which is ranked 4th by NIRF on 2023. She has more than 10 years of teaching experience in both public and private colleges and universities and 10 years of research experience. She was invited as Resource person in 26 public and private colleges including Key Note Speaker at International Conference. She has served as SESSION CHAIR in 6 International Conferences. She has around 30 publications in UGC CARE and WEB OF SCIENCE JOURNALS including Book chapter in TAYLOR AND FRANCIS ONLINE. She has received Best Teacher and Best Woman Faculty Awards AND Best Professor Award and is among top 100 Professors recognized by FOXCLUES PVT LTD. She has presented papers and participated in several National and International Conferences and Faculty development programs. She's a notable academician in Sociology. She has been recognized as Best Educationist by EXCELLENCE BOOK OF RECORDS.

Message from Keynote Speaker



Satya Bir Singh

Professor Department of Mathematics Punjabi University, Patiala, India

Warm Greetings from Dashmesh Khalsa College, Zirakpur (Mohali), Punjab, India.

As a Keynote Speaker, it is my great honour and pleasure to invite all to participate in "45th World Conference on Applied Science, Engineering and Technology (WCASET-2023)" which is scheduled to take place on the 29th & 30th December, 2023 in Goa, India in association with Institute for Engineering Research and Publication (IFERP), the Academic Partner Dashmesh Khalsa College, Zirakpur (Mohali), Punjab, India.

The purpose of this conference is to provide a stage for researchers and practitioners from academia and industry to deal with state-of-the-art advancement in their respective fields. I welcome all the keynote speakers, eminent dignitaries, session chairs, presenters and delegates to this conference. At this juncture, I add my best wishes to organizers for a successful and fruitful conference. I thank the organizers for giving me an honour and opportunity to be part of this distinguished gathering and wish for a grand success of the event. I am pretty sure that this conference will be interesting and fruitful and I hope that you will very much enjoy it and benefit.

Message from Keynote Speaker



Dr. Vandana

Assistant Professor Dept. of Mathematics Dashmesh Khalsa College, Zirakpur (Mohali) Punjabi University, Patiala, Punjab, India

Dear Colleagues and Participants

As a Session Chair, It's my pleasure to be a part of "45th World Conference on Applied Science, Engineering and Technology (WCASET-2023)" which is to be held on 29th & 30th December,

2023 in Goa, India in association with Institute for Engineering Research and Publication (IFERP), the Academic Partner Dashmesh Khalsa College, Zirakpur (Mohali), Punjab, India. First, I feel very happy to welcome all of you to this December gathering to share feelings, ideas, and expertise of various fields of subjects' knowledge and obviously the recent advances in these fields of knowledge.

As we know there is no end of 'knowledge and its applications'- so the very purpose of this conference is to explore more and more through exchanging our domain with others. Research and innovations are two basic elements of a positive thought process as research converts knowledge to societal wealth whereas innovation turns the knowledge to societal benefits, so, we must create a 'Eco- System' which generates and accelerates these two elements of thought process whereas Conference is the foundation of this Eco-system. So, dear participants please use this conference to its fullest potentials to make it further novelty workforce. Whole heartedly I appeal all participants to go ahead with this novel process of conference. I thank to the organizers for their great effort to make this event stimulating and successful. I also thank to all participants and wish you all the best for this Endeavor.

Thanking you all once again,

Message from Session Speaker



Er. Jimmy Gupta

Assistant Professor and Structural Engineer Lovely School of Architecture & Design, and School of Civil Engineering Lovely Professional University, Punjab, India

Dear Colleagues and Participants,

Warm Greetings from Lovely Professional University, Phagwara, Punjab, India.

It is my great pleasure to welcome you all to "45th World Conference on Applied Science Engineering and Technology (WCASET-2023)" which is to be held on 29th & 30th December, 2023 in Goa, India in association with Institute for Engineering Research and Publication (IFERP), the Academic Partner Dashmesh Khalsa College, Zirakpur (Mohali), Punjab, India. I'm enormously delighted to participate in the same and feel really honored and privileged to serve as the Session Speaker of the conference.

This conference provides a platform to bring together not only national/international researchers, academicians, research scholars, graduate or postgraduate students but also industrial people from several fields. This endeavor will embark on a whole process of making new dimensions in the field of education and research. The conference would not have been possible without the enthusiastic participation and hard work of the organizers and IFERP team and there is the great contribution of the team members of academic partner, Lovely Professional University. I'm grateful to all the authors who trusted the conference with their work, and thank them for sharing their views on current research topics. Special appreciation to team members for reviewing a number of articles/papers and offering advice to upkeep and enhance the quality of work for this conference.

I would like to express my huge appreciation to all the participants and listeners for their valuable contribution in this conference. I once again thank the organizers for giving me an honor and opportunity to be part of this distinguished gathering and wish for a grand success of the event.

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Towards Measuring Generativity in Software Platform Ecosystems: Establishing a Conceptual Architecture

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Abstract

Pervasive digitization, data richness and hyperconnectivity have led to the emergence of platform ecosystems as a dominant organization form. These platform scale through direct and indirect network effects and add scope and substitution possibilities by providing affordance to a heterogeneous group of users to add novel modules a phenomenon referred to as generativity. Generativity is defined as combinatorial innovation produced by the interaction of social and technical elements of an ecosystem. The current literature lacks a clear instrument to measure platform ecosystem generativity as a socio technical construct, a gap that limits empirical studies of the phenomenon and impedes developments that can leverage generativity as a first-class design element. Based on a synthesis of literature and viewing generativity as a socio technical construct arising due to an additive impact of platform properties, evolutionary possibilities and formation of generative relationships among ecosystem participants we develop a conceptual architecture specifying the components, actors, properties and interactions to identify generativity antecedents in a platform ecosystem. As part of continuing research, we propose to develop the model to a comprehensive measure for platform generativity thereby filling a gap in the current literature.

Index Terms

digital platforms, software platform ecosystems, generativity, generative properties, generative relationships, generative evolution, mobile software ecosystem, platform architecture, platform governance, socio technical systems, platform ecosystems, ecosystem architecture, ecosystem governance, app store, boundary resources

The Impact of Noise on Employees' Performance, Satisfaction, Stress Level, and Concentration in Open-Plan Corporate Offices

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Abstract

Noise is defined as any sound that obstructs or interferes with a person's ability to accomplish their job duties, whether it be background noise or noise from a loud workplace. An open-plan office is a workspace that makes use of available space rather than isolating staff members in offices or cubicles. An essential factor that influences both well-being and focus with relation to functional performance is noise, especially in enclosed spaces. The purpose of this study was to examine the impact of noise on employees in an open-plan workplace regarding focus, task performance, concentration, and interpersonal communication, by conducting research using previous studies relating to the effect of noise on workers' performance and well-being in an open-plan working environment. Moreover, through conducting an experiment to measure the concentration of employees in Emaar Misr headquarters in open space and private offices, as well as a survey to conclude which of the two spaces is more convenient for employees. The results mainly showed that most of the employees working in an open-plan office dislike the concept as well as experience a high level of stress, lack of concentration, loss of performance, lack of comfort, and experience health issues. Furthermore, by applying concentration experiment it concluded that there is a direct relation between noise and lack of concentration in the workplace.

Keywords

Noise; Open-plan working office; Performance; Physical health; Concentration; Stress level; Employees.

Evaluation of corrosion in steel reinforced concrete using COMSOL Multiphysics

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Abstract

Reinforced concrete is one of the most used materials in the field of buildings and industrial construction. Thus, its destruction by corrosion involves significant financial losses. In this context, a continuous concern in the field of research is finding innovative solutions for the protection against corrosion of reinforcements with low economic impact and reduced environmental impact [1]. The failure of structures with reinforcement is due to the increase in the layer of corrosion products (rust or oxide jacking). The rust demands the structures with a force leading to their displacement and, finally failure [1]. Thus, the purpose of this research is to investigate the corrosion of steel reinforcing bars in mortars. The mortars were prepared with different concentrations of waste from the field of building demolition. Based on the experimental data an evaluation of corrosion in steel-reinforced concrete was made using COMSOL Multiphysics. It investigates formed oxide jacking and its effect on the failure of two types of concrete, at different waste concentrations [2,3].

Prominent Bioinformatics Tools for Detection of Single Nucleotide Polymorphisms

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Abstract

Single Nucleotide Polymorphisms (SNPs) are the most common type of genetic variation in the human genome and play a significant role in understanding various aspects of genetics, evolution, and disease. SNPs are found to be responsible for more than half of the human inherited diseases. Accurate and timely detection of SNPs plays a significant role in prevention, detection and treatment of diseases. In this study, some of the prominent tools for SNP detection are studied and implemented.

Keywords

Single Nucleotide Polymorphisms, SNPs, Genetic variation, SNP detection

Forecasting Compressive Strength of Zeolite-blended Concrete Via Regression Analysis in Python

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Abstract

Concrete has replaced brick and stone as the preferred building material for most construction projects due to its combination of durability and affordability. The durability of the concrete largely hinges on the properties of the cement used during its production. Enhancing both the environmental and financial benefits of concrete can be achieved by incorporating Pozzolanic mineral additives like fly ash and GGBFS. It is a widely recognized fact that the utilization of pozzolan can diminish the presence of calcium hydroxide in cement paste and increase the permeability of the concrete.

Crystalline zeolites, composed of alumina silicates with uniformly sized pores and spaces, play a pivotal role in this context. The pozzolanic attributes of zeolite are attributed to the volatile SiO_2 and Al_2O_3 it contains. During the cement hydration process, calcium hydroxide is generated and reacts with CaOH2, leading to the formation of calcium silicate hydrate gel. This, in turn, fortifies the microstructure of the concrete, rendering it impermeable.

In an effort to raise awareness about potentially hazardous substances, particularly those found in car fire extinguishers, zeolite-blended concrete have been utilized.

The objective of this study is to determine if the addition of Natural Zeolite has any impact on the strength properties of concrete. Innovative predictive formulas for strength have been developed using Python's multiple regression analysis. Laboratory experiments involving concrete blended with zeolite confirm the accuracy of the predicted outcomes.

Keywords

Regression Analysis, Python, Zeolite, Concrete etc.

Interrelationship of strategy perspectives: a study in the context of IBM and Dell

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Abstract

Strategy must be under constant review; a demanding process in which objectivity and thoroughness are extremely difficult to achieve. Obviously, it requires high degree of executive skill to encourage and manage the process of strategy review. A "multi- perspective review" of strategy is important (internal as well as external), as those procedures and actions the firms had (knowingly or unknowingly) followed will definitely act as guidelines for future actions (for continuous improvements, product/ market expansions and diversifications).

This paper establishes the specific patterns of strategy formulation for a group of successful firms; it also provides the strong links between the various causes and means of strategy evolution. It is possible that pertaining to a single strategic incident, a number of perspectives can be relevant; it is uncertain what the exact drivers of such decisions are. But in any case, the ultimate aim of any strategic decision (and its related perspectives) is to enhance the shareholder prospects; whether the same comes through the enhancement of core competencies, transaction cost benefits or cost leadership advantages, is immaterial.


Evaluation of effectiveness of Microlearning method among undergraduate students- a way of mindful education style

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Abstract

Background: People experience stress in different ways (headaches, trouble sleeping, anger, stomach aches, sadness). Stress management will help you deal more effectively with the stressors in life. They typically include behaviors that improve physical health, such as nutrition and exercise, but may also incorporate strategies that improve cognitive and emotional functioning. The stress-reduction approach based on mindfulness practices has recently enjoyed an explosion of interest from a variety of healthcare and epidemiological researchers. E-Learning is training, learning, or education delivered online through a computer or any other digital device. Microlearning is a form of continuous training and learning in which complex chunks of information are broken down into simplified sections that are taught over a period employing the benefits of repetition.

Aim: Evaluation of effectiveness of Microlearning method among undergraduate students.

Objectives: To introduce Microlearning method among undergraduate students

Methodology: UG Final year BAMS students of MGAC was selected for the study and equally divided in two equal groups A and B.In Group A, topic was taught by CBME method while in Group B it will be taught by Microlearning and CBME method. Senior and experienced faculty were chosen. Sensitization of teacher and final year BAMS student were done.

Results: Result will be drawn on the basis of the observations.

Conclusion: Conclusion of the study will be drawn on the basis of statistical data calculated.

Keywords

Microlearning method, stress, Undergraduate students.



Drying of Orange Peel Using Solar Energy Supported and Infrared-Combined Spouted Bed Dryer

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Abstract

The aim of this study is to determine the optimum operating conditions of the designed infrared assisted spouted bed dryer, to provide a sustainable and cost-efficient solution for drying operations by supporting it with solar cells to reduce energy consumption of the dryer and to contribute to the application of renewable energy sources to food drying systems. Orange peel was selected as the drying material representing the food wastes and the effect of drying conditions were studied. The drying experiments were conducted in an infrared-assisted spouted bed drier at three different temperatures (50, 60, and 70 °C), air flow rates (1.0-1.5 and 2.0 m/s), and infrared powers (900-1200-1800W). Convective drying was performed for three different temperatures (50, 60, and 70 °C) at 1.5 m/s air flow. Microwave drying experiments were also conducted out with three different microwave powers (90-160-350W). Drying kinetic curves in both convective and infrared-assisted spouted bed drying processes showed a period of falling rate. However, in the microwave drying method, an initial, very short constant drying phase followed by a falling rate period was observed. In comparison to other drying methods, the convection drying method was found to require more energy. The lowest moisture content (5.21 %, wb) and the water activity (0.122 \pm 0.002) values were observed at 70°C- 1 m/s- 1800W infrared-assisted spouted bed dried orange peels. The most proximate color characteristics to those of unprocessed orange peel were achieved through the employment of the infrared-assisted spouted bed drying technique.

Keywords

spouted bed drying, solar energy, infrared drying, drying characteristic.



Experimental investigation, modeling and Optimization for laser machining of AISI 304 material

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Abstract

Laser cutting is used for mainly all advanced manufacturing processes due to its high production rate. It is observed as the quality machining process for narrow and complex cuts with high geometrical accuracy for any kind of materials. In automotive sector, there are huge applications of AISI 304 material due to its high strength property. In this work, an attempt is made to identify the optimum parameters for precise machining of AISI 304 material of 25mm thickness. Input parameters selected are laser power, cutting speed and gas pressure for the improvement of kerf width and formation of dross height. Machining is performed using 6000W laser machine implementing experimental plan received from design expert software. Box Behnken Design method of response surface methodology with 17 trial runs is considered. Mathematical calculations are carried out using analysis of variance. Models created are used for predicting output parameters and further optimization. Desirability based optimization is used to minimize responses simultaneously by optimizing input parameters. Cutting speed is found as most significant factor for both kerf width and dross height.

Keywords

Kerf width, Dross height, Cutting speed, Gas pressure, Laser power



Experimental Investigation of Process Parameters of CO2 and Fiber Laser Beam Machining on AL6061

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Abstract

An Aluminium alloy 6061 is widely used for engineering applications due to its inherent properties. Because there is no tool wear, vibrations or cutting force, the Laser Beam Machining process is distinguished by good machining quality, environmental sustainability, and cost effectiveness. This paper presents an experimental investigation of influence of process parameters of CO2 and Fiber laser beam machining of AL6061 for 8 mm material and comparison of both. The process parameters namely laser power, cutting speed, and gas pressure are considered. The response characteristics namely surface roughness, kerf taper angle, kerf width, dross height and striation are considered for experimentation. Response Surface Methodology (RSM) approach is used for experimental design. Box-Behnken Design (BBD) method of Response Surface Methodology (RSM) is used to plan the experiment. The series of experiments are performed on 17 samples according to the experimental plan. An experimental model are developed for all output parameters and analyzed using analysis of variance (ANOVA).

Index Terms

Aluminium alloy 6061; Box-Behnken Design; Laser Beam Machining; Response Surface Methodology.



3D Polarized QAM Modulation for Wireless Communication

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Abstract

A novel 3D polarized Quadrature Amplitude Modulation (QAM) modulation scheme for wireless communication is proposed. By exploiting the joint polarization, amplitude, andphase characteristics, we achieve improved Bit Error Rate (BER) performance, enhancing the reliability and spectral efficiency of wireless communication systems, making it particularly valuable in the context of 5G and beyond. The 3D polarized QAM modulation scheme utilizes horizontal and vertical polarizations in addition to amplitude and phase to transmit information. The third axis represents the polarization state, with two points on the constellation diagram representing vertical and horizontal polarizations. The x-axis denotes the phase of the signal, while the y-axis represents the quadrature component of the signal. Simulations were performed in MATLAB using 32 QAM and 64 QAM. The results clearly demonstrate that the 3D polarized QAM scheme outperforms 2D QAM in terms of Bit Error Rate (BER). Furthermore, the results were evaluated while considering the Rayleigh fading channel, which significantly improves BER performance compared to 2D QAM.

Index Terms

BER, QAM, 3D Modulation, 5G etc.



Anti-inflammatory Activity of Curcumin gel for the treatment of Periodontitis: in-silico and in-vitro characterization

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Abstract

Local delivery of curcumin in the form of site-specific periodontal formulations can open up novel pathway for the treatment of periodontal disease. Effectiveness of such delivery system is dependent on the sustained release of curcumin from the device in a soluble form and its penetration into the base of periodontal pocket and adjacent connective tissue. However, Curcumin finds limited clinical applications in oral environment due to its poor aqueous solubility, poor permeability, high metabolism, and instability. Nanotechnology could address these pitfalls of Curcumin by allowing its delivery in a solubilized and bioavailable formulation amenable for periodontal application. Aim of the present work is to develop and design Carbopol based gel formulation of curcumin for the curing of periodontitis. Carbopol 934P was used for the preparation of gels. The gel formulated were evaluated for various properties such as Compatibility, Drug content, Viscosity, and in-vitro drug released. The drug polymer compatibility was confirmed by DSC and FTIR analysis. Among the formulation F3 shows the desired properties for treatment of periodontitis. The specificity and binding affinity of curcumin to major inflammatory mediators such as, cytokines/ chemokines and signaling factors were evaluated using molecular docking. In-silico study confirmed a strong affinity of curcumin to various inflammatory mediators (ERK, PKC, P38 MAP Kinase, NFkB and Lipoxygenase). P38 MAP Kinase shows good docking score (-9.3) with curcumin as compared to other inflammatory mediators i.e., ERK (-8.0), PKC (-7.9), NFkB (-7.0) and Lipoxygenase (-8.9) Overall results suggest that, curcumin in this inventive drug delivery system is an excellent candidate for the treatment of Periodontitis.

Index Terms

anti-inflammatory mediators, Carbopol 934P, Curcumin, docking studies, In-silico, Periodontitis.



In Silico therapeutics investigations of bio-active phytoconstituents from Chamaecostus cuspidatus (Nees & Mart.) C. Specht & D. W. Stev. against Peroxisome proliferator-activated receptor gamma (PPARG) protein of type 2 diabetes mellitus

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Abstract



Abnormalities in the body's ability to control and utilize sugar as fuel results in type 2 diabetes mellitus (T2DM). Targeting the transcription factor peroxisome proliferator-activated receptor gamma (PPARG) protein, which controls the expression of proteins critical to the progression of type 2 diabetes mellitus (T2DM), is an intriguing approach for the treatment of T2DM. Therefore, the current study focuses to predict out more effective natural compounds for better treatment. Chamaecostus cuspidatus (Nees & Mart.) C. Specht & D. W. Stev., belongs to family Costaceae, commonly known as insulin plant has been taken for the study. Phyto-compounds were collected from the published literature, followed by in silico ADMET toxicity checking and molecular docking study against the PPARG protein at its specific binding sites. Quantum computation study was performed to check the reactivity of the ligands and normal mode analysis (NMA) employed for studying and characterizing the selected protein's flexibility and stability with network analysis. Anti-diabetic drug Biguanides (Metformin) was taken as standard drug. From this study, Kaempferol resulted with highest binding affinity of -7.1 kcal/Mol, with lowest band gap energy that forms one conventional hydro bond with His466 which is being suggested as a new drug molecule for T2DM treatment.

Keywords

ADMET, quantum computation, molecular docking, normal mode analysis, T2DM



Salary exploration in Data and Analytics Roles: An EDA Case Study (2020-23)

Geetika

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Abstract

The growth and advancement in recent years in the field of Data & Analytics has inspired and motivated a significant amount of people to enter this field. As the demand in these roles continues to rise, it is crucial to understand the aspects that help in the professional growth in this field. This research paper is based on an Exploratory Data Analysis Case Study of the available data of employees in the field of Data and Analytics in the years 2020 to 2023. In this study, we explore various factors such as experience leverils, types of employment, re-mote work percentagers, company sizes, job titles and many more with the help of descriptive statistics and data visualization using Python. Analyzing these factors can guide the Data & Analytics professionals in making informed decisions to enhance their career prospects and financial outcomes.

Index Terms

Data preprocessing, Data visualization, Descriptive Statistics, Exploratory Data Analysis (EDA)



Solar assisted electro-flocculation based micro algae harvesting system

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Abstract

Microalgae typically thrive in a highly dilute aqueous environment, requiring a separation process from the surrounding water for recovery. Electro-flocculation stands out as an efficient and straightforward technique for harvesting microalgae. Previous studies conducted at the laboratory scale involved multiple experiments to fine-tune the harvesting process, focusing on optimizing the duration and voltage settings to enhance efficiency. Based on these findings, an electro-flocculation harvesting system has been developed, which incorporates two solar panels connected in series, capable of generating maximum output voltage of 60 Volt and a current of 6.9 Ampere. This system operates under an average solar insolation of 5.35 kW/m2/day when placed on a tilted surface during sunny days.

The system employs four aluminum plates, each measuring 4 mm in thickness, as electrodes. The total harvesting time required to reduce the optical density of microalgae from 0.98 to 0.16 was 4 hours. The achieved harvesting efficiency of this system was up to 86%. Additionally, the system exhibits an average power output of 0.315 kW when measured during operation.

Keywords

Microalgae harvesting, Solar, electro flocculation, optical density, algal biomass.



Swing Generated Electricity: A Path to Sustainable Future

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Abstract

It is critical to look into alternative methods of power generation due to the rising energy demand caused by population increase and development. In order to generate electricity, the project's main goal is to employ a swing, which is frequently used by kids to play. A horizontal beam is rotated by the motion of the swing, and this rotation is then transmitted to a free wheel by a sprocket that is attached to the beam. A chain drive is used to turn the swing completely from its angular movement. A shaft connected to the free wheel turns an electrical generator by turning a motor setup. A commutator then transfers the generated electrical energy to a battery for storage. A sustainable and easily available source of electricity is possible with this novel approach, which offers the potential for power generation through routine activity. It will lower the amount of energy needed to illuminate the landscape at night. For the construction of the swing, the paper includes design calculations and results. Project includes the usage of a dynamo, LED light, a bicycle wheel (chain and sprocket), and plummer block.



A Note on Soft L-Paracompact Spaces

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Abstract

In several fields of topology and analysis, specific refinement methods and locally finite or closure-preserving criteria that act as paracompactness tools have been essential to the progress of studies. This paper introduces Soft L-paracompact spaces, a generalization of soft paracompact spaces. The notion of soft L-finite refinement and soft L-Lindelöf space are introduced and their basic results are investigated.

Keywords

Soft L-topology, Soft L-open coverings, Soft L-closed covering, Soft L-finite refinement, Soft L-Lindelöf space.





Educational Videos in Focus: A Summary of Key Findings

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Abstract

People now have access to vast amount of multimedia information thanks to technological advancements and the quick expansion of consumer electronics, making it challenging to effectively consume video material among the thousands of options accessible. Educational Videos, due to their vibrant images and clear explanations, have become essential in today's classrooms. This work is streamlined by the Educational Video Summarizer, which condenses video content to make it easier to understand essential ideas and to meet the needs of different learners. Through automated video summary, this research presents a novel method for improving the usability and effectiveness of educational content. To ensure that learners can quickly understand the most important ideas and insights, this study suggests a method that uses machine learning techniques to analyse lengthy educational videos into concise summaries. The suggested summarizer identifies key video portions and produces coherent summaries by combining content analysis, natural language processing, and video processing. This will enable to maximise learning time, accommodate different learning styles, and broaden access to education by giving users quick and easy to understand summaries of instructional content. By providing a method to increase the efficacy of video-based learning in an increasingly digital educational environment, the research aims to contribute to education as well as technology.

Index Terms

NLP, video summary, interactive, learning, education.



In-Silico Vaccine Design for Feline Panleukopenia Virus (FPV): A Multi-Epitope Approach

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Abstract

Feline panleukopenia virus (FPV), commonly known as feline parvovirus or feline distemper virus, is a possibly deadly microbe that generally infecting cats, particularly those that have not received vaccination. Infection against FPV is suggested as a preferable medication of cat health care. Regardless of having accessible molecular information on this virus, no definite vaccination have been developed at this point for the administration and evasion of FBV diseases in cats. Revealing this, the current study focused to design a multi epitope-based peptide vaccination against FBV, utilizing a combination of B-cell and cytotoxic T-cell epitopes from VP1, VP2, and NS1 proteins of Feline panleukopenia virus, followed by molecular docking with TLR and immune simulation studies. We retrieved the amino acid sequences of VP1, VP2, and NS1 proteins from the UniProt database. The linear B-cell and cytotoxicity T-cell epitopes from target proteins were predicted and analyzed for antigenicity, and allergenicity properties. The epitopes which shows no antigenicity, and allergenicity properties were selected further for our study. The selected epitopes were then constructed by utilizing the primary structure of vaccine construct by utilizing suitable linkers (EAAAK, GPGPG, and AAY), and the 50S ribosomal L7/L12 (Locus RL7 MYCTU) protein was used as an adjuvant added to the N-terminal end of the vaccine construct. The final vaccine construct represented 314 amino acids length. The physicochemical, antigenicity, and allergenicity properties of the vaccine construct were undeniably observed to be good. The 3D model of the vaccine construct was anticipated using I-Tasser, and refined by Galaxy refinement tool. The vaccine construct found to be stable and possible interactions with toll-like receptors based on molecular docking and immune simulation analysis. The codon optimization of vaccine construct and in silico cloning uncovered that the proposed vaccine construct was profoundly cloned in pET plasmid of Escherichia coli by utilizing Vector builder tool. Importantly, sequence analysis of the immunogen construct revealed no significant similarities with feline proteins, mitigating the risk of undesirable immune responses. These findings indicate that the designed immunogen construct exhibits promise in preventing feline panleukopenia (FPL) in cats. However, further in vitro and in vivo experiments are imperative to validate the vaccine candidate's efficacy and safety. Such studies represent essential steps in the battle against FPV, ultimately safeguarding feline populations from this devastating disease.

Keywords

Feline panleukopenia virus, VP1, VP2, NS1, molecular docking, immune simulation, in-silico cloning.



IoT Based Disable Friendly Room Control System

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Abstract

The goal of home automation for the elderly and disabled is to enable older persons and people with disabilities to live safely and comfortably at home. For older persons and people with disabilities who would rather remain in the comfort of their homes than go to a healthcare facility, home automation is increasingly a viable choice. This industry targets older persons and people with disabilities while using a lot of the same technology and apparatus as home automation for security, entertainment, and energy conservation. More than 21 million persons in India have disabilities of some type, according to the Census of 2001. This translates to 2.1% of the total population. There are 12.6 million disabled people in the country. This paper presents an IoT-based disable friendly room control system using a NodeMCU relay board, a Bluetooth module, and the MIT App Inventor app. The system allows people with disabilities to control their surroundings more easily, such as turning on and off lights, adjusting the temperature, and opening and closing doors.

Keywords

Home automation, Smartphone, Bluetooth, hci



A Review Paper on Design & Development of Colour Decoding Fertilizing Agri- bot

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Abstract

This research paper focuses on the design and development of an automated wireless colour-decoding Agri-spraying system. The primary objectives include eliminating manual labour, reducing time-consuming processes, mitigating bacterial contamination risks, and providing an efficient and autonomous solution to the agricultural sector. The system's goals encompass labour cost reduction, enhanced time management, and the adoption of precise spraying techniques tailored to various crops' needs. Utilizing advanced technology, this project aims to revolutionize agricultural practices, offering an autonomous and efficient solution in line with modern farming demands.

Keywords

Automated Agri-spraying, Wireless Colour Decoding, Agricultural Automation, Labor Reduction, Time Efficiency.



Design and fabrication of QFH antenna and installation of low-cost ground station

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Abstract

High-quality satellite images are essential for creating accurate and up-to-date databases in the growing field of geospatial technology. To obtain these images, a stable and reliable ground station is required. This paper describes the successful installation and operation of the first iteration of a ground station for data and image acquisition. The paper reports that the ground station is a key component of the system for creating a polished database and for further image and data processing. Ground stations play a vital role in geospatial technology by enabling the acquisition of high-quality satellite images that can be used for a variety of purposes, including mapping, surveying, navigation, and disaster management. Ground stations offer a number of advantages over other methods of acquiring satellite images, such as cloud-based services. For example, ground stations can provide more reliable and consistent access to satellite data, and they can also be used to acquire satellite images of specific areas with high spatial resolution. The successful installation and operation of a ground station for data and image acquisition demonstrates the feasibility of using ground stations to acquire high-quality satellite images for a variety of applications.

Keywords

geospatial technology, satellite images, ground station, data acquisition, image processing, database creation



Electric Power Distribution and Management System Audit of a 4-storey School Building in Davao City

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Abstract

This study evaluated the electric power distribution of a 4-storey School Building in Davao City. The researcher aimed to determine the present electrical load distribution, voltage drop calculations, and connection of the building, identify the maximum current per conductor at the main and sub-feeder circuits, determine the short circuit interrupting capacity, and conduct a coordination study. Moreover, to know if the building complies with the Philippine Electrical Code or PEC standards for its electrical system's main and sub-feeder circuits in terms of the type and size of wire used. The study used the electrical installation audit per the standard of the PEC and identified the PEC Table's set of standards for the allowable ampacity of insulated copper conductors, and it suggested that any circuit branch must have 80 percent of the maximum ampacity and 20 percent spare current capacity for future load increases. The study's findings indicated that the PEC's referenced standard needs to be met by any main and sub-feeder circuit lines of the electric power distribution system of a 4-storey School Building as it surpassed its maximum current capacity. These findings emphasized the need to make sure that electrical systems are designed, installed, and maintained per PEC standards and regulations. Failure to do so could seriously compromise everyone's safety, reliability, and energy efficiency of buildings and the well-being of the occupants. Overall, this study contributes to electrical standards and practices and is a good resource for decision- making in the building power system and energy management of a building.



Exploring the Integration of Remote Sensing and GIS Methods in Surveying

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Abstract

This paper is dedicated to the synthesis of existing research on the fusion of remote sensing and geographic information systems, with a specific focus on methodological approaches. The initial section provides an overview of the study's background, followed by an examination of the fundamental principles of remote sensing and geographic information systems. Subsequently, a practical approach to integrating remote sensing and GIS is explored. The synthesis underscores the mutual benefits of combining remote sensing and GIS. Notably, it highlights a significant surge in the demand for the amalgamation of remotely sensed data with GIS-based data, encompassing environmental and socioeconomic information.

Index Terms

GIS, GISc, images, integration, remote sensing, and spatial data



Battery Thermal Management System: A Comprehensive Review

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Abstract

This paper presents a comprehensive review of battery thermal management strategies, addressing critical gaps in existing literature and providing new insights to guide future research. A meticulous database search was conducted, encompassing the period of a long time, to ensure the inclusion of recent advancements. The selection criteria encompassed peer-reviewed articles that specifically focused on battery thermal management systems in EVs. The review synthesizes findings from a diverse range of studies, covering various cooling strategies such as forced air cooling, liquid cooling, thermoelectric cooling, and phase change materials. Key parameters like cooling efficiency, battery aging, and safety were evaluated across different methods and sources. The results of our comparative analysis provide concrete evidence of the superiority of certain cooling strategies over others in specific contexts. Notably, liquid cooling emerged as a promising solution for high-performance EVs, while phase change materials showcased potential for improving battery longevity. The review adds novel insights by considering the integration of computational fluid dynamics (CFD) and artificial neural networks (ANN) for optimization design, an aspect largely overlooked in previous reviews. The emphasis on battery aging and safety, along with the demonstration of practical applications and experimental validations, sets this review apart.

Keywords

BTMS-Battery Thermal Management, systems, Battery Thermal Model, SoC-State of Charge, SoH-State of Health, Charging and Discharging, Cooling System, Efficiency



Advanced Method for Wastewater Treatment

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Abstract

Wastewater is the wastes removed from residences, institutions, and commercial and industrial establishments, together with such groundwater, surface water, and storm water as may be present. Increasing volumes of domestic, hospital and industrial wastewater are being produced in cities around the world. Cities in developing countries lack resources to treat wastewater before disposal. Even where expensive wastewater treatment plants are installed, only a small percentage of the total wastewater volume is treated before discharge resulting in rivers, lakes and aquifers becoming severely contaminated. So there is great need to treat waste water. The contaminants in wastewater are removed by physical, chemical, and biological means. The individual methods usually are classified as physical unit operations, chemical unit processes, and biological unit processes. Although these operations and processes occur in a variety of combinations in treatment systems, it has been found advantageous to study their scientific basis separately. Two emerging treatment technologies, including advanced oxidation processes (AOPs) and UV irradiation hold great promise to provide alternatives for better protection of public health and the environment and thus are reviewed in this paper. Advantages and disadvantages of these technologies are compared to highlight their current limitations and future research needs.

Index Terms

water treatment, wastewater treatment, membrane filtration, ozonation, advanced oxidation processes, UV irradiation.



Engineering Aspects of Natural Disasters

Himanshu Kolhe Sanchay Kohad Aditya Shende Snehal Kamble

Abstract

Engineering research needs related to the second national assessment of future directions of research and applications for more sustainable natural disaster management are presented. The evolution of codes and practices within the context of hazards management is described. Next, an overview of the state of the art in current engineering practices is presented by type of infrastructure. The bases for engineering. Design in terms of reducing loss of life and economic damages as a basis foe engineering design. Engineering research needs for promoting more sustainable hazards management are enumerated

keywords

Disaster management, standard codes, safety measures



Pros and Cons of the Effect of Storage on Quality of Some Fruit Vegetables: A Mini- Review

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Abstract

Fruit vegetables are vital sources of vitamins, minerals, and they contain antioxidants beneficial to human health. However, the composition of the vegetables is affected by complex factors during the postharvest stage some of which is the storage. Postharvest is one of the essential stages of produce and fruit storage is one of the alternative strategies to store fruit vegetables to avoid food wastage from cold storage, but there are significant changes in the physicochemical and antioxidant properties. Under room temperature conditions is usually the storage condition for tropical regions, such as the Philippines. During storage, the impact changes could be a negative or a positive. A negative impact observed during storage is weight loss, color changes, and a decrease in firmness, flesh thickness, pectin, starch content, and antioxidant capacity. Despite the significant decrease in some of the physicochemical properties, there are advantages of holding the fruits for a longer period of time, such as an increase of β -carotene, total soluble solids, and total sugar. Moreover, shrinkage of the fruit affects the acceptability of the consumers.

Keywords

antioxidant properties, physicochemical, fruit quality, storage quality



Navigating to Net Zero: Big Data, AI, and Benchmarking as Catalysts for Sustainable Transformation in Canadian Dairy

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Abstract

This talk aims to explore the transformative role of big data analytics, artificial intelligence (AI), and benchmarking in achieving net zero emissions in the Canadian dairy industry. It is widely acknowledged that agriculture, and dairy farming in particular, significantly contributes to greenhouse gas emissions. However, the path to reducing these emissions is complex and multifaceted. This talk will delve into how cutting-edge technologies and business strategies can synergize to create sustainable and efficient dairy farming practices. Firstly, we will discuss the current emission levels in Canadian dairy farming and the national targets for emission reduction. The focus will then shift to the utilization of big data analytics in understanding and managing farm-level emissions. This involves collecting and analyzing vast amounts of data from dairy farms to identify emission hotspots and develop targeted strategies for reduction.

The role of AI will be highlighted, particularly in optimizing farm operations to reduce waste and increase efficiency. AI-driven predictive models and automation can significantly reduce the carbon footprint of dairy farms by improving feeding efficiency, waste management, and energy use. Furthermore, the talk will explore how benchmarking can facilitate the adoption of best practices across the industry. By comparing performance metrics and emission levels across farms, benchmarking serves as a powerful tool for continuous improvement and accountability. Finally, the talk will present real-world examples of Canadian dairy farms that have successfully integrated these technologies and strategies, demonstrating that achieving net zero emissions is not only vital for environmental sustainability but also viable as a business model.



Structural, magnetic, magnetocaloric and magnetotransport studies in nanocrystalline La_{0.7}Sr_{0.3}MnO₃

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Abstract

In the present investigation, we present the structural, magnetic, magnetocaloric and magnetotransport behavior of sol-gel synthesized $La_{0.7}Sr_{0.3}MnO_3$ manganite. X-ray diffraction together with Rietveld refinement confirm the phase purity of the synthesized sample. The ferromagnetic to paramagnetic transition temperature of the synthesized sample was found to be 346 K. Furthermore, isothermal magnetization versus field measurements have been used to examine the magnetocaloric effect and it was found to be 1.14 J/kg-K for the nanocrystalline sample. Critical exponent analysis has also been performed on both the samples to establish the universality class. The nanocrystalline sample exhibit a distinct metal to insulator transition, which shifts towards high temperatures with increasing magnetic fields. Below metal-insulator transition temperature, the samples fit well to the combination of resistivity due to grain or domain boundaries, electron-electron scattering process and electron-phonon interaction. The resistivity data above the metal-insulator transition temperature is well described using variable range hopping models. A negative magnetoresistance of - 28% has been observed for the nanocrystalline sample. These results make nanocrystalline $La_{0.7}Sr_{0.3}MnO_3$ a suitable candidate for multifunctional applications.

Keywords

Magnetocaloric effect, manganite, magnetotransport, Rietveld refinement



Teaching and practices on disaster management in schoolteachers: A case study of costal Karnataka high school composite pre-university teachers

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Abstract

The impact on climate changes is significant result of floods, sea level rises, storm surges in coastal Karnataka which has become a threat for the infrastructures and larger habitats in future. Therefore, increasing disaster resilience has become a major priority for coastal cities. At the same time, recent development in information and communication technology, ubiquitous sensors, and advanced data science allow us to generate insights that were unimaginable before and can assist in better managing coastal disaster risks. In this paper, using an infrastructure resilience lens, we critically review a set of academic literature that focus on the new development of smart systems in coastal disaster management and a set of use cases that focus on their practical application in different coastal cities. We find that smart city technologies such as internet of things (IoT) and crisis informatics have significant potential and have been increasingly used in academic studies but their city-scale applications in coastal disaster management have been limited. We discuss the challenges and opportunities of using smart city frameworks for increasing disaster resilience of coastal communities.

Key Words

Climate Changes, Communication Technology, Ubiquitous Sensors, Advanced Data Science



Current Advances in Government Policies to Foster Clinical Research in India

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Abstract

Clinical research is a process that detects any issues related to the drug, the assessment regarding the possible outcome, understanding the differences and to prevent side effects with respect to the protocol of the treatment. Sometimes clinical research is not only sufficient to discover all the major and minor side effects, but also to find if any interactions or contraindications have been found in between experimental drugs and other medications. Asia, which is having highest population started contributing towards clinical research recently after globalization and is moving faster in competition to USA or Europe. While Asian countries like Japan and Singapore have contributed more, countries like India have just started a few years back. Government of India has set various measures to push the clinical research. In this article we have discussed about certain policies by Government to foster clinical research in India.

Keywords

Clinical Research, India, Government policies, recent updates, regulatory framework.



Selection of Car Engine using Multi-Attribute Decision-Making Method

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Abstract

The car engines, which may be employed in many car types, have a tremendous potential to power a vehicle. It is one of the most crucial components that allows the car to run and is utilised to transform the heat energy of the gasoline-burning into mechanical effort. A few key and fundamental engine parameters, such as the power of the engine, torque, number of cylinders, oils in litres and car price should be taken into account when choosing the ideal automobile engine. The current effort focuses on the best approach for ranking engines utilising complicated proportional evaluation and analytical hierarchy process to choose the best engine for vehicles. After the selection, kryote turbocharged diesel engine is the best engine option found. The strategies mentioned above can be used in conjunction with the others to solve technical and management problems in the best possible manner.

Index Terms

analytical hierarchy process, car engines, complex proportional assessment, selection.



Adoption Barriers of Ecommerce in Small and Medium Sized Enterprises (SMEs)

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Abstract



The present study aimed to identify and perceive obstacles, e-commerce in operation during COVID-19, and government regulatory during the MCO. The study was conducted via telephone interviews with owners and managers of businesses from different areas in the community in Sabah. Snowballing method has been used to conduct the in-depth interview. The impact of COVID-19 on online and offline businesses, which could offer an indication of how much better an online model would perform compared to offline businesses. A better thought concerning this can raise the chance to distribute some resources towards adopting online businesse.

Index Terms

About four key words or phrases in alphabetical order, separated by commas.



Empowering Year-End Sales: Predictive Model for Targeted Gold Membership Campaign Using Machine Learning Algorithm

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Abstract

Optimizing customer involvement and resource allocation is critical in the field of marketing to retailers. This study tackles the difficulty a superstore faces when organizing a year-end sale and launching a gold membership offer that is only available to current customers at a discounted price. Predicting favorable client responses to the offer and figuring out the key variables influencing these responses are the study's two main goals. Utilizing data analytics and machine learning, the study examines datasets that have been provided, which include consumer attributes, purchasing history, and other relevant variables. Important factors that influence consumer reactions are made known, including demographics, historical purchasing patterns, and involvement levels. A predictive model is then built to determine the likelihood of a positive reaction from a customer. This methodology facilitates efficient consumer groups, which directs focused marketing tactics and lowers campaign expenses. The results showcase the importance of data-driven decision-making in modern retail marketing and provide useful insights for businesses looking to maximize marketing campaigns and improve consumer engagement, loyalty, and sales performance.

Index Terms

Predictive Modeling, Customer Response, Data Analytics, Customer Segmentation, Retail Marketing, Machine Learning, Customer Behavior.



Analysis of different types of fins of solar air heater

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ΔĽth

Abstract

Solar air heaters play a crucial role in harnessing renewable energy for space heating and industrial applications. Efficient heat transfer within these systems is vital for maximizing their performance. In this study, we conducted a comprehensive analysis of three distinct fin cross- sections, namely triangle, square, and arc, each with a size of 12mm, within a solar air heater. The system's bed had a length of 1000mm and a width of 300mm. Computational Fluid Dynamics (CFD) simulations were employed to investigate the heat transfer characteristics, thermal performance, and flow patterns associated with these different fin geometries. Our findings reveal that the choice of fin cross-section significantly impacts the efficiency of solar air heaters. The CFD analysis demonstrates that while all three cross-sections enhance heat transfer compared to a flat plate, each exhibits unique thermal behaviour. The triangle cross-section shows superior heat transfer performance, followed by the square and arc shapes. Moreover, the flow patterns within the system were influenced by the geometry of the fins, affecting heat distribution and thermal uniformity.



Portable Vegetable Dehydrator

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Abstract

Utilising a portable dehydrator system to dry fruits and vegetables reduces wastage and retains nutrients that are beneficial to health.

This project's focus is on building a portable fruit and vegetable dehydrator

In designing the portable dehydrator, proper design considerations such as functionality, cost, and availability of materials were taken.

In the experiment, we used dehydrator with two trays and a heating element: Peltier Module heater (12V, 5 A), heat sink, and Exhaust fan, dehydrator body measuring 11"*10"*10" was used in experiment.

Keywords

Portable dehydrator - vegetables and fruit - moisture content - heat



Online Learning Analysis with Students Emotions using ML and LA

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Abstract

Many universities now employ online learning as a practical option. One of the challenge in online teaching and learning is that student's understandability is not identified. So this work concentrate on students understanding level prediction on online learning through machine learning and learning analytics. Students typically show their emotions through their facial expressions, voice, and behaviour. This paper recognized the student's emotion through face expression detection and then followed the learning analytics in order to predict the understanding level of students and to take decisions on the online learning system. A facial expression database is created. It consists of two subsets: a video clip database and a picture database, and it include the typical emotional face expressions. The database contains 1,274 video clips and 30,184 photos from 82 pupils. The performances of the SVM classifier in facial expression are presented. The results of testing this with the SVM algorithm and a 54.67% accuracy rate produced which is not up to the mark.

Keywords

Online learning, Learning analytics, Machine learning, Educational data mining, facial emotions, E-learning.



Blockchain-based Electronic Health Record(EHR) System

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Abstract

A blockchain is a network of computers that manages a collection of unchangeable data records with a chronological mark. It has the ability to eliminate the issues plaguing the sector and transform healthcare by keeping the valetudinarian at the forefront of the medical system, ensuring improved security, integration, and anonymity of stored patient records. The healthcare sector is renowned for being delicate and complicated. Electronic health record (EHR) systems are devices that allow the recording of health data and ensure the maintenance of digital records in many healthcare settings. Sadly, there are issues with these systems' data management, integrity, and security. This study highlights how crucial it is to protect people's privacy while also safeguarding and keeping track of sensitive data when it comes to blockchain.

Keywords

Blockchain, smart contract, Ethereum, metamask, solidity, healthcare



Comprehensive Analysis of Spoken Language Identification system on Indian Languages

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Abstract

Language detection is the initial step whenever we work on speech recognition systems. Spoken language identification (SLID) is an emerging and advanced research area for the period of Multilanguage human computer interaction based on voice command (HCI). Language identification system applications are spread around in various domains and fields with an increasing advancements being recorded in the sub-domains like machine learning, artificial intelligence and deep learning. The field spoken LID has started gaining momentum for under- resourced languages in the last decade, most importantly because of the advancement in various accepted multi language speech corpora database. However, research progress has been recorded in this domain, but to our knowledge's best, not various attempts are made to analytically review both feature extraction method (multilingual), datasets used and synthesis of Indian under-resource language collectively. This paper's initial attempt is to provide an in-depth comprehensive analysis and review of the language identification LID. Deep analysis and study is performed to broadly specify the distinct challenges being faced for under-resource and co- switch influences for current SLID systems developed for these languages. Many other important aspects of SLID research, involves the vast demonstration of the dataset and maintained speech corpora, the important contributions made in this domain by researchers, including the previous work consisting of statistical modelling to the current techniques emphasizing on various neural network architectures were discussed. Lastly, all challenges being faced and the future directions to be implemented for the solution were discussed in detail. This deep analysis will provide an access to all the current research work on spoken LID been made or work accomplished by some research enthusiasts from the sub domains of this field.

Keywords

SLID: Spoken Language Identification LPC : Linear Prediction Modelling, LPCC: Linear Prediction Cepstral Coefficient, MFCC: Mel Frequency Cepstral Coefficient, DWT: Discrete Wavelet Transform, PNCC: Power Normalized Cepstral Coefficient, PLP: Perceptual Linear Prediction, RASTA: Relative Spectral Transform



Shwass an IoT-based Mechanical Ventilator

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Abstract

The whole world is going towards advanced technology. A huge need for advanced and user-friendly technology in the healthcare field is the prime importance to everyone. To address the lack of conventional ventilators, whose availability is insufficient in an emergency, low-cost mechanical ventilators have been created. But to control these ventilators, one must approach the ventilator within an ICU or patient's room. This many times disturbs the patient. Also, if the patient is suffering from a deadly spreadable disease (e.g., COVID-19), it becomes difficult for the doctors to control ventilators by approaching the patient's room. We faced this issue during the COVID-19 time. To overcome these issues, Shwass an IOT-based wireless ventilator is developed. This system is simple to operate as well as saves doctor's time. Also, we tried to develop the system user-friendly system. This can save time as well as provide an advanced healthcare system in the healthcare field.



Internet of Things, In-Store Purchasing Behaviour Example from Turkey

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Abstract

When we look at concepts such as technological change, the speed of the internet and changing consumer behavior from a broader perspective, we see that the concept of "industry" underlies this change. Today, in addition to Industry 5.0, concepts such as artificial intelligence, robot technology, sustainable energy, metaverse, and internet of things are rapidly becoming widespread. Industry 4.0, which aims to bring together industrial activities and information technologies, consists of two main components. The first component is new generation software and hardware, and the second component is the Internet of Things. Internet of Things is an internet-connected smart system equipped with sensors and processors, where all devices are used to exchange data and information with each other. These intelligent systems can be used in various aspects of everyday life, including production processes, energy networks, patient monitoring systems, recycling processes, communication, transport, intelligent buildings, shopping, and so on. In recent years, consumers have also utilized the Internet of Things in various areas such as QR code payments, smart shelving systems, stock information control, and particularly in retail. In this study, the behavior of consumers in using the Internet of Things is used in Turkish consumers purchasing behavior in the store.

Index Terms

Consumer Behaviors, Industry 4.0, Internet of Things


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Manufacturing Flexibility Measures, The Critical Factors Adoption and Its Roles Towards the Sustainability of the Enterprises Considering Different Uncertainties

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Abstract

The purpose of this paper is to highlight the importance of flexibility measures considering many uncertainty issues influencing manufacturing flexibility and to explore their role towards the sustainability of this sector. Using the investigative design ,a series of groups were formed and the interactions with them were finished .Personal as well as indirect interactions happened to get their actual experience and some suggestions were accepted. Using the chronological design inputs from the academic, researchers, entrepreneurs and direct contact persons working that era were done using the questionnaire. In this phase the list of factors was measured based on the degree of importance in the manufacturing flexibility acceptances. Being qualitative in nature ,the research study suffers from the different types of sectors and their direct /indirect involvement in the flexibility measures. Based on the questionnaire response it was decided to segregate the available data as per sector decided. The large-scale data will be helpful in identification and validation of the factors and their interrelations. The paper identifies a flexibility measure affecting the flexibility acceptance. It will be helpful in standard development strategy and assure the methods for quantitative evaluation in manufacturing flexibility area.

Index Terms

manufacturing flexibility, uncertaintity, adaptation



Long-term experiment on gas concentration distribution in an open dairy barn

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Abstract

Agriculture and livestock farming are recognized for emitting significant amounts of atmospheric pollutants. In detail, dairy barns have a crucial role in the climate change and air quality with effects on animal and human health and biodiversity of ecosystems. The objective of the study was to examine the distribution of ammonia (NH3), methane (CH4), carbon dioxide (CO2) and nitrous oxide (N2O) at various sampling locations (SLs) in an open dairy barn situated in the Mediterranean area. The investigation took place in an open cubicle free-stall dairy barn in Sicily (Italy). Photo-acoustic spectroscopy was employed to measure NH3, CH4, CO2 and N2O concentrations at twelve sampling locations in the barn. Data were acquired during one year from September 2021 to August 2022. Data concentrations at different SLs were organized into a dataset and statistically analysed by applying the one-way analysis of variance (ANOVA). The results show the gas concentration distribution during one year of data highlighting differences between the gases analysed in relation to the position of SLs for the specific barn typology and managment.





Design and analysis of microstrip Patch Antenna for X band for 10 GHz for different substrate material FR4, Rogers 5880 and Arlon 255

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Abstract

The proposed microstrip patch antenna, designed for different substrate materials FR4, Rogers 5880 and Arlon 255. The substrate material is with specifications, FR4 dielectric constant is 4.3, rogers 5880 dielectric constant is 2.2, arlon255 dielectric constant is 2.55 are used for the designing. The designing parameters for Fr4, rogers 5880 and arlon 3D modeling is different. Different parameters of MPAs are measured radiation efficiency, input impedance is calculated. The radiation efficiency achieved is greater than 90%.

Keywords

Microstrip patch antenna, X band, Arlon 255, FR4, Rogers 5880 substrate material, 10GHz.



Real Time Indoor Safety Monitoring System For Covid-19 Using Raspberry Pi

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Abstract

In recent years, the entire world is affected by the impact of a novel corona virus that has resulted in the COVID-19 pandemic. In India, this impact is still rising and leading to a significant crisis in health care systems. Numerous measures are taken to reduce the virus spread, like wearing a mask and checking the human body temperature, etc. But these measures are monitored personally and may not be possible in large crowd areas like shopping malls, movie theaters, etc. This paper proposes a Raspberry pi-3- based automated monitoring system with deep learning that can provide access after checking the human body temperature and wearing the mask. The proposed system works with MLX90614 non-contact temperature sensor and Open CV based system for face mask detection which is mounted on a single module to allow or deny entry. Hence, our proposed system works effectively for entry monitoring in large crowd areas.





Role of Artificial Intelligence and Risk-Taking Behavior in the adoption of Blockchain technology in Small and Medium Enterprises

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Abstract

This research delves into the factors influencing the uptake of blockchain technology among small and medium-sized enterprises, incorporating the influence of artificial intelligence with the moderating aspect of risk-taking behavior. Initially, 135 managers from SMEs were selected as the sample for this cross-sectional study, utilizing a random sampling method. Employing ordinal regression, the study examines the collective impact of internal and external variables on the intention to adopt blockchain technology. The findings indicate that: (1) familiarity with artificial intelligence positively and significantly affects the adoption of blockchain technology; (2) the perceived advantage of artificial intelligence has a positive and significant effect on the adoption of blockchain technology; (3) the perceived ease of use of artificial intelligence positively and significant effect on the adoption of blockchain technology; (4) risk-taking behavior moderates the relationship between familiarity with artificial intelligence and the adoption of blockchain technology. Despite the study's limitations, such as a small sample size, the insights into blockchain technology adoption have practical implications for enhancing SMEs' competitiveness. The unique contribution of this study lies in its exploration of SMEs using both artificial intelligence and blockchain technologies in their business operations, emphasizing the significance of considering key variables affecting the adoption of blockchain technology in conjunction with artificial intelligence.



Information and Communication Technology in Teacher Education in 21st Century India

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Abstract

The information Technology (IT) action plan (1998) adopted by Government of India took the first comprehensive view of computers in school education to create an IT literate and IT skilled society. These initial encouragements by different organization lead a foundation for better growth of Information and Communication Technology (ICT). The programme of teacher education relates closely to the ICT curriculum, and particularly to the stage of development that schools have reached with respect to ICT and the present study is details the current status of ICT in teacher education programmes and NCFTE's views and objectives on ICT applications. And suggested how ICT could be effectively used in the teacher education programmes so as to enhance the competency of the 21st century student teachers at all teacher training institutions. It is no longer possible to conceive of teacher education without ICTs. It is imperative for the teacher education institutions to wake up and reorganize their curriculum to accommodate the changing face of knowledge. It is identified that, there is not a single ICT facility, which is present in every teacher education institution, non-availability of facilities like educational software pertaining to school subjects on CDs, slide projector, networking in computer lab, dial-up/broad band internet access, LCD projector, language learning software with headphones, electronic versions of common encyclopaedia in all the teacher education institutions in 21st century India.

Keywords

India, Information and Communication Technology, Teacher Education, Student Teachers, Teacher Educator



Realtime Pothole Detection

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Abstract

Potholes pose significant risks to road users and can lead to accidents, vehicle damage, and increased maintenance costs. Real-time detection of potholes plays a crucial role in proactive road maintenance and ensuring road safety. This paper proposes a method for real-time pothole detection using the YOLO (You Only Look Once) object detection algorithm. By leveraging the efficiency and accuracy of YOLO, our approach enables rapid identification and localization of potholes in live video streams. We employ a

dataset of annotated pothole images and fine-tune a pre- trained YOLO model to specifically detect potholes. The trained model is then deployed to process video frames in real-time, extracting features and predicting bounding boxes around potholes. To validate the effectiveness of our approach, we evaluate the detection performance on various video sequences captured from different road conditions. Experimental results demonstrate the capability of our system to accurately and efficiently detect potholes, providing real-time insights for proactive road maintenance and timely repairs. The proposed pothole detection system using YOLO has the potential to enhance road safety, reduce accidents, and optimize maintenance efforts by enabling early detection and mitigation of pothole-related issues.

Keywords

Yolov8,Realtime Detection



Social and Affective factors affecting English Communication Skills of Technical students in India

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Abstract

English communication skills have become utmost significant for the people of all backgrounds. This study is based on the valuable information obtained from India Skills Report 2023 published by Wheebox having AICTE as its institutional partner. To develop career opportunities, it is not just technical skills but overall personality development skills which matter a lot. The employability ratio among males and females was 47.20% and 52.80% respectively as per the report. Considering the work place requirement, a wide range of skills are essentially to be developed of the learners such as English Communication Skills, Digital literacy, critical thinking, emotional intelligence, leadership skills and many others. Social and affective factors affect their English communication skill considerably. In short, it has been revealed that the soft skills are to be delivered to the candidates for a balanced growth in the whole career. This study will look into social and affective factors affecting their English language learning skills and overall attainment skills to revamp the overall employability skills (as per a rapid evidence assessment report submitted by EEF at the Department of Education at University of Oxford in July 2020). As per the chapter 7 of Economic Survey report of based on Indian budget 2019-20, the demographic dividend will be at peak in 2021 with an expected population of 59 percent in the age group of 20-59 years. The outcomes of this research will be immensely beneficial to the students, academicians, policy makers and curriculum developers in designing specialised outcome oriented English Language courses to improve employability success ratio of the students enrolled in the technical courses.



Conceptual Framework to Assess Buying Rationale of Consumers Towards Electric Vehicles

Vaibhav Jain

Abstract

In recent years, there has been a rapid increase in the adoption of electric mobility. The global electric car fleet eclipsed 5.1 million vehicles in 2018, increasing by 2 million during the year and doubling the number of electric car sales. This increase in adoption has been a result of numerous policy initiatives, improvements in the advancement of electric vehicle technology, and broadening horizons of the consumers concerning electric mobility. However, we are also at a critical juncture in the race to mass adoption of electric mobility. During this time, our efforts should not be weakened, observing the current positive trend but intensified given the uphill battle still awaits as conventional car technology reaches its maximum efficiency, the electric technology is only in its starting phases. Researchers and academicians have, for years, studied how to increase the adoption of electric vehicles. While these studies give us many required insights and understanding about the market and the consumers, these are mostly based on historical trends. Whereas, the manufacturers and stakeholders of the industry run their own proprietary researches and studies in order to develop the products that the consumer most desires and advertise them in a way that the consumer is attracted towards it, these foresight studies have been eluded from the public and most importantly the policymakers which can use such studies to give the much-needed policy boost at the right place in the right time.

This study aims to learn from these studies by studying the products and advertisements for these products offered by the manufacturers and decrease the foresight and hindsight gap. With an intention to develop a conceptual framework to asses the buying rationale of consumers towards electric

vehicles, we find out what are the various reasons that the consumer buys these vehicles and what motive the manufacturers and stakeholders are banking on the most. Using these, the study recommends specific policy measures that the policymakers can take, Our findings suggest that manufacturers are trying to the image of electric vehicles as just being eco - friendly and are promoting the performance features of such vehicles which aims to shed the prejudices of the consumers towards electric vehicles as being positively (negatively) different to their conventional vehicle counterparts.



Consequence of Circuit Training on Comprehensive Physical Fitness Test Battery and Skill Performance Variable Among School Level Football Players

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Abstract

Background; This study explores the consequence of an eight-week circuit training program on the comprehensive physical fitness test battery and skill performance in school-level football players. By evaluating how circuit training influences various physical fitness test battery and skill performance among school level football players. The research aims to provide insights into the effectiveness of this training approach for enhancing overall physical fitness and playing ability in school-level football players.

Purpose; The purpose of this study is to assess the consequence of an eight-week circuit training program on the comprehensive physical fitness test battery and skill performance in school-level football players. By researcher investigates how circuit training consequence of physical fitness test battery and skill performance to enhance our understanding of its effectiveness in improving overall physical fitness and playing ability in school-level football players.

Participation; To attain this purpose were randomly selected forty boys football players from various schools of Chennai District, Tamil Nadu. The age of the subject ranged between 15 and 18 years.

Methods and Measures; The group randomly allocated into two equal twenty subjects (n = 20) groups. Group I act as circuit training group (CTG) and Group II act as control group (CG). The Group I underwent circuit training protocol has been performed three alternative days of a week during period of eight weeks. The physical fitness test battery and skill performance variables have been examined at baseline and eight weeks. Group II has participated in regular exercise.

Statistics technique; Means and standard deviations (\pm) were used to describe all the data, and the Kolmogorov-Smirnov and Shapiro-Wilk tests were used to see if the data were normal. To make sure there wasn't a big difference between the groups. The effects of exercise were also looked at with a dependent't' test was applied to determine the difference between the means of two groups. To find out whether there was any significant difference between the experimental and control groups. The statistical test was set to be significant if (p < 0.05).

Results. The result of the study shows that, there was a significant improvement takes place on physical fitness test battery and skill performance due to the effect of 8 weeks circuit training and also concluded that, there was a significant difference exists between experimental and control group.

Conclusion. The research findings indicate that an eight-week circuit training program had positive effects on physical fitness test battery and skill performance in school-level football players. These results suggest the program's efficacy in improving overall physical fitness and playing ability provide valuable insights for designing targeted training interventions in school-level football programs.

Keywords

Football Players, Circuit training, physical fitness test battery and skill performance variables.



Enhancing Organizational Performance: The Impact of TQM Principles on the Production Line.

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Abstract

This article examines the Effects of the TQM Principle on the Production Line. Total Quality Management (TQM) is a widely used method for improving organizational performance in a variety of industries. Many studies have been conducted to investigate the impact of TQM implementation on various aspects of performance, such as customer satisfaction, supplier relationships, and employee involvement. The studies also emphasis the necessity of effective implementation and the requirement for suitable quality assurance systems in various industries. Some studies propose combining TQM with other approaches, such as Industry 4.0, in order to improve TQM practices and achieve higher levels of efficiency, effectiveness, and excellence. There is also rising interest in investigating the impact of TQM on small and medium-sized firms (SMEs) and determining the elements that influence green building practices in various industries. Overall, the studies shed light on the importance of TQM and its contributions to increasing organizational performance. However, more research is needed to validate TQM models and frameworks across various business sectors and geographical regions.





An Exploration of Phytochemicals Included in the Ripened Fruit Rinds of Terminalia catappa Linn.

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Guide and Supervisor, Associate Professor, Department of Plant Biology and Biotechnology, Loyola College Tamil Nadu, Chennai

Abstract

Terminalia catappa Linn., is a commonly known as tropical almonds are common tree species found throughout tropical regions. Besides the common use of the kerns of the tropical almonds, the mature fruit rind of Terminalia catappa is being consumed in its raw form by a few Nigerians for its nutritional and medicinal benefits. The biochemical components are critical in making plant parts medicinally beneficial to society. Hence, a special interest in exploring the phytochemicals present in the ripened fruit rind, recorded for their potential to treat dysentery and other microbial infections, seemed to be necessary. The phytochemical analysis was performed on the dried powder of the ripened fruit rind of Terminalia catappa. Four different solvents were employed for the extraction: hexane, ethyl acetate, aqueous, and ethanol. Of the four extracts, ethyl acetate, aqueous, and ethanol extracted most of the compounds. Following this, a quantitative analysis was done to check the number of phenols present in each extract. All of the extracts showed that tannins were more abundant than flavonoids among the phenols.

Keywords

Tropical almonds, Fruit rinds, Extraction, Phytochemicals.



Deconvolution of Complex Luminescent Spectra using First Derivative

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Abstract

The luminescence spectra of materials often exhibit a complex nature characterised by overlapping peaks, resulting in a broadened profile. This complexity is more pronounced in materials of a higher intricacy. Various techniques are employed to deconvolute such spectra, with common methods assuming a Gaussian distribution of peaks. In this study, the luminescent spectra of YVO4, Dy-doped YVO4 (YVO4:Dy), and Ca co-doped YVO4:Dy (YVO4:Dy/ Ca) are deconvoluted. Unlike traditional methods, our approach to deconvolution involves the utilisation of the first derivative of the spectra, eliminating the need for a predetermined curve. This innovative techniques simplifies the deconvolution process, offering a more straightforward method compared to conventional techniques. The application of this method eases the use of spectroscopy in characterising complex spectra, contributing significantly to the field of science and technology. Our method simplifies spectral analysis, making it easier to understand and apply in studying complex materials across different scientific and technological fields. This approach improves the usefulness of spectroscopy for a wide range of applications.





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The Efficacy of E-Learning Platforms and Flipped Classrooms as Transformative Instruments for Enhancing the Teaching-Learning Process in Integrated Teacher Education

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Abstract

In modern education, incorporating technology and novel pedagogical methodologies has instigated a profound transformation in the instructional and educational processes. This study examines the efficacy of e-learning platforms and Flipped Classrooms as transformative instruments in integrated teacher education. Objective of the study: To explore the effectiveness of e-learning platforms and flipped classrooms in improving teacher candidates' understanding of pedagogical concepts. To evaluate the impact of e-learning tools on cultivating technology integration skills among teacher candidates. To assess the effect of e-learning platforms and flipped classrooms on teacher candidates' critical thinking, communication, and collaboration skills. Methodology: The research utilized a mixed-methods design, incorporating both quantitative measures in pre and post-surveys and assessments and qualitative data obtained through interviews and reflections. This research is a quasi- experimental design with a pretest and post-test to compare the outcomes of the two groups. Both groups undergo pre-test assessments to establish baseline knowledge and skills. After the intervention, post-test assessments were conducted to measure the impact of e-learning platforms and flipped classrooms. Surveys: Teacher candidates completed surveys to gather qualitative data on their experiences and perceptions of e-learning platforms and flipped classrooms. Classroom Observations: Observations of classroom sessions were conducted to assess engagement, participation, and collaboration. Focus Group Interviews: Selected participants were invited for focus group interviews to gain in-depth insights into their experiences and challenges. ANOVA, or regression analysis, was employed to determine the impact of e-learning platforms and flipped classrooms for quantitative data. The study identified a positive correlation between using e-learning tools and developing technology integration skills among teacher candidates. Exposure to diverse digital resources, collaborative online activities, and integration of multimedia elements in e-learning modules contributed to increased technological proficiency and Impact on Critical Thinking, Communication, and Collaboration Skills. The interactive nature of online discussions, collaborative projects, and peer-reviewed assessments facilitated the development of these essential soft skills.

Keywords

e-learning platform, flipped classroom, integrated teacher education, pedagogical skills.



Future-Ready Education - A Comprehensive Evaluation of Industry 4.0 Curricula Integration and Student Proficiency

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Abstract

The Fourth Industrial Revolution, often referred to as Industry 4.0, is reshaping industries worldwide, driven by transformative technologies such as IoT, AI, big data, and automation. In this dynamic landscape, educational institutions are faced with the challenge of adapting their curricula to prepare students for the future workforce. This article provides an overview of a study that explores key perceptions and considerations surrounding the integration of Industry 4.0 into educational programs, drawing on mean values obtained from a survey of diverse stakeholders. The major findings of the study inferred that 72% of institutions find that they collaborated with the industries but the collaborations are happening less than 5 industries. Maximum collaboration is happening for Skill Development under corporate social responsibility followed by Placements with 25% towards focused on enhancing student job placements. Also, the findings give clear information that only 8% is emphasizing on domain-specific skill enhancement and a small portion of 3% on research indicates a lesser emphasis on research-related collaboration objectives.

Key Words

Future ready education, Institutional role and Competencies, Training, Student proficiency, Skill sets



The Effect of Asean Financial Services Liberalisation on Economic Growth

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Abstract

In 1997, ASEAN agreed to liberalise the trade in financial services in the region upon the launching of AFAS (ASEAN Framework Agreement in Services). AFAS aims to enhance trade cooperation in service and improve efficiency, competitiveness, and service supply in the region. In 2019, AFAS concluded the 8th round of trade in financial services negotiation, with notable progress from the initial round in 1997. Based on the AFAS agreement, this research measures the level of liberalisation in the AFAS agreement and investigates the connection between the liberalisation level and ASEAN5 countries's economic growth. Using random effects panel data, the ASEAN financial services liberalisation positively and significantly affects economic growth. The results confirm that liberalisation is on track. Then, this research discusses the AFAS achievement, including the introduction of the ASEAN Banking Integration Framework (ABIF) in the agreement. Lastly, learning from the European Union's experience in financial services integration, this research suggests that strengthening cross-border regulation and supervision is important as the way forward after the liberalisation.

Index Terms

AFAS, ASEAN, Financial Liberalisation, Trade in Services



Optimizing Campus Environments for Enhanced Learning Experiences: A Comprehensive Study of CU Campus Dynamics

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Anand Shankar Upadhyay

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Abstract

This study examines the various aspects of improv- ing campus settings to promote better learning opportunities, concentrating on the dynamics of CU's campus. Our study uses a comprehensive approach to investigate the various factors influencing the overall learning environment, acknowledging the critical role that physical and social spaces play in shaping the educational journey. Utilizing surveys, interviews, and observa- tional analyses, the research combines quantitative and qualita- tive methods to collect data on student engagement, academic performance, and satisfaction within the CU campus setting. Through an analysis of the relationship between architectural design, technology integration, and community interactions, our results are intended to offer important new understandings of the critical factors that determine good learning environments. The study also explores the influence of co-curricular activities and innovative pedagogical approaches on creating a comprehensive educational experience. This study adds to the continuing conver- sation on educational facility enhancement by highlighting areas for improvement and making practical recommendations. It also provides useful information for CU and other similar academic institutions looking to establish engaging and supportive learning environments for their students. In the end, the research aims to close the gap between theoretical discussion and real-world application by offering colleges a road map for modernizing and adapting their campuses to the constantly shifting requirements of students in the twenty-first century.

Index Terms

campus, recommendation, academics, learning, integration



Study of Groundwater quality near Kathige village of Davanagere District, Karnataka

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Abstract:

Availability of clean water is of utmost importance. Owing to the shortage of clean d water in recent years, identifying areas of deteriorating groundwater quality is of great importance. This realization has been the reason for the study of groundwater quality near the Kathige village of Davengere dist. The demand for water also steadily grows. In some parts of the country, the current rate of groundwater extraction is depleting the resource faster than it is being recharged. Therefore, understanding the basic processes about groundwater as well as the factors that can affect its quantity and quality is of vital importance in managing this significant resource. Monitoring provides data on groundwater quantity and quality and is an integral aspect of groundwater management. Sampling of groundwater quality over the past few decades. Discharge of agricultural effluents, unhygienic sewerage with improper methods of toilet waste disposal has contributed to a raising alarm on the quality of groundwater. We have taken seven samples by analyzing it with few parameters like Ph, EC, TDS, Ca+2, Mg+2, Na+, Co32-, Hco3-, Cl-, SAR and RSC.





Evaluating User Engagement and Trust in Online News Website

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Abstract

This research paper examines the complexities of user engagement and trust on news websites in an era of digital transformation. It focuses on how users perceive and interact with online news sources amid the rising challenges of misinformation. The study employs a mixed-methods approach, analysing both quantitative user engagement metrics and qualitative feedback from users. Findings indicate that design elements and content quality significantly impact website credibility and trust. Interactive features enhance user engagement but also introduce challenges like misinformation. The paper offers practical recommendations for news organizations and emphasizes the importance of strategies to combat false information and polarization in shaping public discourse.

The presence of interactive features, similar as comment sections, social media sharing, and community engagement, plays a vital part in accelerating stoner engagement. still, they also introduce challenges related to misinformation and echo chambers, challenging a balanced approach in their perpetration.

This paper not only sheds light on the factors driving stoner engagement and trust on online news websites but also provides practical recommendations for news associations and digital media professionals. It underscores the critical part that news websites play in shaping public converse, pressing the need for strategies to combat the dispersion of false information and polarization.

Keywords

Digital Journalism, Reader Engagement, Credibility Assessment, Web-Based News, Audience Trustworthiness



29th & 30th December 2023 || Goa, India

The CFD analysis of a person suffering from Hypertension

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Abstract

This study compares the arterial flow characteristics of people with high blood pressure and those with normal blood pressure using computational fluid dynamics (CFD). Blood flow under physiologically relevant conditions is simulated using patient-specific models based on medical imaging data. The study looks into variables like flow patterns, pressure distribution, velocity profiles, and wall shear stress. The results show a clear distinction between the two cases, pointing to altered arterial flow characteristics and heightened pressure gradients in hypertensive people. The findings help us understand how high blood pressure affects arterial health and could be used to create more precise treatments for cardiovascular conditions linked to hypertension.

Index Terms

CFD; Blood Pressure; Hypertension; Meshing; Medical; Personalized healthcare..



Smart Home Automatic Sliding Window Using IOT

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Abstract

Technology has continued to advance quickly in the twenty-first century and has found greater uses in a variety of areas of life, particularly in the management and observation of processes. The automatic sliding window is an example of how controls and appliances have been automated. Automation does reduce human life's stress, which is what engineering as a subject seeks to do. The fundamental goal of the automated sliding window's design was to use sensors to programmed the window's behavior so that it would change periodically depending on the surroundings. This research provides a thorough explanation of the approach, design, implementation, and testing of the system.

Key words

automation, technology, control, sliding window



Study on performance of Light Weight Concrete (LWC) blocks using Pumice and Cenosphere

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Abstract

In the construction industry, concrete comes beginning due to its affordability and widespread application. One of the drawbacks of normal concrete is its substantial self-weight. This heavy self-weight of construction will lead to in unprofitable structural material. To reduce the self-weight, coarse gravel has been substituted partially / substantially by lightweight aggregate. This study aims to investigate the production of LWC blocks by using cenosphere and pumice and subsequently evaluate their performance in terms of compressive strength, water absorption, wet density, dry density, and thermal conductivity Based on a thorough review of the relevant literature, the goal of this study is to find the optimal volume of cenosphere for fine aggregates and pumice for coarse aggregates in LWC blocks. Here Cenosphere is replaced for fine aggregate in the ratios of 30% from literature review and pumice is replaced for coarse aggregate in the ratios of 20%, 40%,60%, 80%,100%. The strength properties and lightweight properties of various cenosphere and pumice concrete ratios were compared and the concrete with 30% cenosphere and 60% pumice is found as the optimal mix. The optimal mix is found based on compressive strength, wet density, dry density, water absorption, thermal conductivity for amount of density reduced in concrete. This optimal mix has a compressive strength of 21.81 N/mm2 which is lower than conventional concrete and has a water absorption of 3.31% which is higher than conventional concrete and also greater than LWB 40%. It also shows better results in lightweight as well as strength.

Keywords

Lightweight, Density, compression, porous, thermal conductivity.



An Effective Rule Based approach for extracting aspect terms from online product reviews

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Abstract

Sentiment Analysis has gained substantial attention recently due to its applicability in customer feedback analysis, social media monitoring, and market research. Researchers have applied various text representation techniques to Sentiment Analysis tasks thereby achieving promising results in classifying the text into positive, negative, or neutral sentiment categories. Aspect Based Sentiment Analysis (ABSA) is a key fine-grained sentiment analysis task that tries to analyse and understand people's ideas regarding a product at the aspect level. To manage ABSA in various situations, numerous tasks are offered for analysing various sentiment aspects and their relationships, including the aspect term, aspect category, opinion term, and sentiment polarity. Aspect Extraction is considered to be one of the most challenging task of ABSA. The proposed model presents a rule-based approach for extraction of aspect term fromSemEval14 laptop review dataset.

Keywords

NLP, Sentiment Analysis, Aspect Based Sentiment Analysis, Aspect Extraction, SemEval14.



Survey on intrusion detection systems using machine learning models

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Abstract

One of the most essential parts of network security research is the network intrusion detection system. The function of these systems is to detect intrusive behavior through the use of active defense technology and take emergency measures such as alerting or terminating intrusions. With the rise of machine learning technology, several researchers have been researching different ways of applying it to intrusion detection systems, to improve detection efficiency and accuracy. In this paper literature of machine learning algorithms that have been implemented into intrusion detection systems in the past decade. To test these with related algorithm models such as Support Vector Machine(SVM), Random Forest(RF), Convolutional Neural Networks(CNN), and Recurrent Neural Networks(RNN), this paper selects the CICIDS2017, UGR16 IDS and CIDDS datasets to conduct comparative experiments. The detection ability is tested using indicators such as accuracy, precision, recall, F1 score, and Confusion Matrix. The results from the experiment show that ensemble learning algorithm models are generally better for intrusion detection. In Deep Learning Algorithms, CNN and LSTM(an RNN architecture) are used, out of which LSTM was efficient in detecting new types of attacks, however, due to its complex structure it did not particularly stand out from the Machine Learning and Ensemble Learning algorithms nor could it stand out against CNN. Finally, the main challenges being faced by the intrusion detection field are related to preprocessing for multiple datasets, handling of small datasets, and implementation of incremental learning.

Keywords

Internet of Things, intrusion detection, machine learning, deep learning, ensemble learning, SVM, RNN,LSTM, CNN, RF, datasets, accuracy, precision, recall, F1 score,Confusion Matrix



Orthodontic Retainer Fabrication: DLP based Key Parameters and optimizing Techniques

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Abstract

This article delves into the utilization of DLP 3D printing and Artificial Intelligence (AI) techniques for the production of orthodontic retainers, which have the potential to reduce medical room time. The emergence of 3D printing has made additive manufacturing a promising technique in dentistry. With the inclusion of AI in the 3D printing process, machine learning algorithms have revolutionized the industry, enabling optimization of the additive manufacturing process. These parameters can be adjusted using AI-based approaches like as supervised and unsupervised learning, deep learning, and reinforcement learning. This techniques is showing great potential in dentistry field but has certain limitations in terms of process parameters. Retainer application is final stage of orthodontic treatment. This article examines the many processing parameters affecting fabrication of orthodontic retainer using DLP 3D printing and discusses various machine learning techniques that can be utilised and are helping in enhancing the efficacy and efficiency of additive manufacturing for dentistry.

Index Terms

DLP 3D printing, orthodontic retainer, process parameters, machine learning, optimization



Strategic Fusion: A Comprehensive Approach to Apple Disease Classification Using Ensemble Learning

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Abstract

The apple industry confronts substantial economic losses annually due to diseases and pests, highlighting the critical need for accurate and timely identification. This paper presents a thorough investigation into leveraging ensemble methods to enhance the precision of apple disease detection. The study initiates with the creation of a robust dataset encompassing Healthy, Blotch, Rot, and Scab diseases, involving meticulous data collection and labelling. Employing an ensemble approach, the research combines the strengths of multiple models to address the challenge of distinguishing diseases with similar symptoms. The ensemble comprises a Convolutional Neural Network (CNN) model trained through transfer learning, integrating diverse features extracted from raw images. To combat overfitting, data augmentation techniques, including rotation, zooming, scaling strategically applied. This research not only provides a practical tool for farmers but also contributes to reducing agricultural losses and fostering economic growth by enabling precise and comprehensive diagnosis of apple diseases. This paper gives a thorough taxonomy of the performance of a single pre-trained model and various ensemble learning models to classify apple fruit disease images. With the publicly available dataset, including four classes of apple fruits, the efficiency of the proposed ensemble model is evaluated. The efficacy of a single pretrained model, DenseNet121, shows 90.05% accuracy. In addition, aweighted average ensemble of three models (VGG16, DenseNet121 and InceptionV3) produced an accuracy of 94,24% which is better than other ensemble models.

Keywords

Convolutional Neural Networks(CNN), Data Augmentation, Transfer Learning, Pre-trained models, Weighted Average Ensemble Method



The Causality Influence of Pollutants and Meteorological Parameters on the Mortality and Positivity Rate of COVID-19

Jyotsna

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Abstract

Air Quality Index (AQI) of Delhi is many times higher than the safe limits as prescribed by the Central Pollution Control Board (CPCB) which makes it among the most polluted cities in the World. A viral outbreak of unknown origin ascended in Wuhan, China which was later credited to a novel coronavirus, SARS-CoV-2 (COVID-19) disease. Due to which, it has been declared as emergency of international concern. This research encompasses the influence of AQI, various pollutants and meteorological parameters on the mortality and positivity rate of corona virus (COVID-19) in Delhi. To assess this relationship, conditional causal effect identification algorithm has been employed. From the experimental work, it has been concluded that pollutants which may impact the death and mortality rate of coronavirus are PM2.5, NO2, SO2, AQI and PM10. Therefore, there is a need to enforce measures to control the concentration of these pollutants in Delhi, as they may affect the COVID-19 mortality and positivity rate. Furthermore, the above-mentioned pollutants may be considered an additional co-factor for the prediction of coronavirus death rate.

Index Terms

Air Pollutants, Air Quality Index, COVID-19, Meteorological Parameters, Conditional Causal Effect Identification Algorithm



Skeptism to Trust: how ChatGPT Earns the Confidence of Users

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Abstract

The debut of ChatGPT in 2022 was a crucial event for artificial intelligence (AI), signifying its deeper integration into everyday life. This ground-breaking invention has demonstrated the enormous potential of Artificial Intelligence and large language models, enabling them to function as personal assistants in domains such as healthcare and retail, as well as aiding in brainstorming and other activities. As Artificial Intelligence becomes increasingly ubiquitous, establishing and maintaining trust in this technology becomes ever more critical. Trust is crucial in ensuring the continued advancement and evolution of Artificial Intelligence, but it can also present significant obstacles to overcome. This research paper delves into the insights gained from the survey of 500 people through questionnaires to know about their overall experience with ChatGPT. We explore how trust in ChatGPT may differ from trust in other technologies and distinguish between interpersonal trust and trust in technology. Additionally, we pinpoint essential factors for building initial trust and nurturing sustained confidence in artificial intelligence, with a focus on transparency; explain ability, and ethical considerations as pivotal elements in this dynamic landscape.

Keywords

ChatGPT, Artificial Intelligence, Technology Trust, Data Security



Adomain Decomposition Method for the Solution of Differential Equations: Survey

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Abstract

The Adomian decomposition method (ADM) is an analytic method used for computing the solution to various types of partial differential equations. This method finds application to solve number of real-world problems in the fields of astrophysics, computer engineering, mathematical biology, quantum mechanics etc. This paper surveys the various Adomain decomposition methods used for solving the different types of differential equations. The main focus is to summarize the work done by various authors so that further research could be carried out in the identified areas. Various research articles from esteemed journals have been reviewed for better understanding and a summary both year wise and method wise in the form of table has been presented. This may be fruitful to develop a novel method. The researchers may modify an existing method or they may utilize a hybrid method to develop a novel technique.

Index Terms

ADM, hyperbolic Kepler function, Modified decomposition method, LADM, TSADM

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Surface-Modified Lyotropic Crystalline Nanoconstructs Bearing Doxorubicin and Buparvaquone Target Sigma Receptors through pH-Sensitive Charge Conversion to Improve Breast Cancer Therapy

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Abstract



We have created P/B+D-MBA-based Lyotropic crystalline nanoconstructs (LCNs) in this study, which are a novel fast charge-conversion self-assembled system that functions as a complementary dual drug-loaded delivery vehicle. First, B+D@LCNs and poly (ethyleneimine)-poly (L-lysine)-poly (L-glutamic acid) (PLG) polymer were used to create a pH-responsive charge-conversion system. PLG conjugated p-Methoxybenzylamide (MBA) was then used to modify the surface of LCNs to target sigma receptors and achieve pH-responsive charge conversion. P/B+D-MBA@LCNs were found to be negatively charged in normal tissues but to gain a positive charge in tumour tissues. Following encapsulation, DOX and BPQ in LCNs had a strong synergistic effect that resulted in a 59.39% depolarization of the mitochondrial membrane potential. Zeta potential measurement at various pH values confirmed that LCNs had reversed their charge. Additionally, it was discovered that P/B+D-MBA@LCNs had enhanced pharmacokinetic characteristics. These results imply important ramifications for the combination of charge-conversion polymer and pH-dependent drug release, which may represent a viable drug delivery approach for chemotherapy.



Supramolecular acetal-functionalized pH-responsive nanocarriers for the targeted delivery of Pemetrexed to tumor microenvironment

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Abstract

In nanoscale drug delivery systems, pH-responsive acetal functionalized pillara[5]arene AP[5] crystalsomes were fabricated to reduce the toxicity of pemetrexed (PMX) in off-target sites and deliver the therapeutic doses to the active sites. Herein, the fabrication of pillar arene-based supramolecular nano-carriers based on the host-guest recognition between an acetal functionalized pillar[5]arene (AP[5]) and a viologen salt (MV) is reported. The surface was modified with the targeting moiety biotin by conjugating viologen with biotin (MV-BT). The drug-loaded nanocarriers with targeting moiety were self-assembled into crystalsomes (PMX-BT@CLs), which are utilized as drug-delivery vehicles. The smart nanocarriers are adorned with biotin groups, enabling them to selectively deliver the PMX to cancer cells that overexpress the biotin receptor. The prepared crystalsomes were analyzed through SEM, and HR-TEM for morphology and crystalline structure were confirmed from WAXS. These PMX-BT@CLs render the system acid-labile to release encapsulated cargo during cell internalization, confirmed by confocal laser scanning microscopy (CLSM). In vivo studies, reveal that the PMX-loaded crystalsomes prolong the circulation time in the bloodstream and promote the antitumor effect. The biotin-modified (PMX-BT@CLs) shows an 11.48-fold enhancement in tumor regression due to the targeting effect. This work shows that host-guest motifs have a lot of potential for drug encapsulation and surface modification



A Comparative Analysis of Customer Churn Prediction Models in Python Using Scikit-Learn

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Abstract

In the sector of big-scale groups, the problem of consumer churn has grown into a powerful assignment. As an end result, corporations are actively searching for progressive methods to predict capability patron churn quotes. It has turn out to be imperative to discover the factors that contribute to elevated purchaser churn prices, allowing organizations to take the essential steps to mitigate this phenomenon. The primary objective of our group's efforts is to craft a robust churn prediction model which could help companies in pinpointing clients at the highest chance of churning. To gauge the version's performance, we hired the broadly common accuracy measurement, which gives a dependable measure of predictive accuracy. Impressively, the accuracy price we carried out became 91.2%, signifying the effectiveness of our version. To execute our study, we hired the flexible and available platform of Google Colab. The dataset we used is the Teleco Churn Dataset, simply to be had on Kaggle, an open-source platform that provides a wealth of dataset assets to the general public. This dataset offers a complete compilation of consumer statistics spanning an extended length, serving as the foundational statistics for schooling, checking out, and evaluating our churn prediction gadget. Our version underwent a rigorous trying out system, with an assessment of its performance throughout ten distinct algorithms: Decision Tree, Random Forest, Extreme Gradient Boost (XGB) Classifier, Logistic Regression, Gaussian Naïve Bayes, and Voting Classifier. However, the best results are obtained by applying the XGB Classifier algorithm.

Index Terms

Customer Churn, Churn Prediction Models, Accuracy



Analysis of Truck Crashes on National Highways A Case Study Approach

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Abstract

An abstraction was conducted to investigate the furnishings of road geometric features on the amount of accidents in a National Highway. Crashes became a terrible problem evolving in numerous fatalities, injuries, disabilities and damage to private and public properties. Thus it specifies that there is a high priority need for well-ordered approach to improve road safety. For this study National Highway 16 in the city of Visakhapatnam has been considered as a case study. A stretch between anandhapuram and agnampudi was analyzed. Accident data was collected from nearby police stations. Geometric data for the highway were collected using manual methods and google earth imaginary analysis. The statistical analysis was performed findings demonstrated that number of junctions have a considerable influence on crash frequency. Moreover, the study revealed that heavy vehicle volume has a greater impact on crash frequency. These results have important implications for transportation practitioners seeking to reduce crash frequency at locations in highways, as they can use this information to prioritize effective strategies and countermeasures.





Isotherm and kinetic analysis of Banyan (Ficus benghalensis) fruits as a novel biosorbent

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Abstract

In recent years, there has been a growing interest in investigating plant-based remedies for environmental problems. With the goal of reusing plant-based waste, this research focuses on utilizing the intrinsic capabilities of Ficus benghalensis, also known as the Indian Banyan tree, as a natural bio adsorbent for the removal of Nickel (Ni II) ions from aqueous solution. To investigate its feasibility as a biosorbent, Banyan fruit powder was subjected to various characterization techniques such as Brunauer-Emmett-Teller surface area analysis (BET), Xray Fluorescence method (XRF), Fourier transform infrared (FIIR) spectroscopy, scanning electron microscopy (SEM), and X-ray Diffraction analysis (XRD). The presented work additionally concentrated on batch adsorption studies to investigate the impact of parameters such as PH (2~11), adsorbent dose (2~20g/L), initial metal ion concentration (5~30mg/L), contact time (up to 180 min), and adsorbent size (75,90,150 μ m) on the adsorption process. At optimal conditions (sorbent dosage of 5 g/L, pH of 5.8, Initial metal ion concentration 10 mg/L and contact time of 90 min), the maximal adsorption capacity of the Banyan fruit powder was determined to be 62.0 mg/g. The adsorption process fit both the Langmuir isotherm model (R2 =0.9982) and Freundlich isotherm model (R² =0.9924) and the kinetics were a pseudo-second-order kinetic model (lower fit), according to experimental data extrapolation.

Keywords

Banyan Fruit Powder, Biosorbent, Nickel, Isotherm, Kinetics



Technological Advancements in Green HRM Paving the Way for Sustainable Workplaces

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Abstract

Technological advancements have had a significant impact on the field of Green HRM, transforming the way organizations approach environmental sustainability and social responsibility. With the advent of automation and digitalization, organizations can streamline their HR processes, reducing paperwork, and minimising waste. Technology enables organizations to engage with employees, customers, and wider stakeholders via social media platforms, raising awareness of green initiatives and encouraging participation in sustainability efforts. Remote work arrangements facilitated by digital communication tools allow organisations to operate without requiring daily commutes, office spaces, printed documents. AI powered HR software increases accuracy when analysing large data sets and provides predictive modelling capabilities. Finally, green HRM recognises the importance of circular economy principles, in creating value across entire product life cycles rather than solely focusing only during manufacturing stages, this thinking provides fertile ground for exploring new approaches tackling urgent challenges facing modern workforces such as plastic usage patterns or food waste levels within office environments. By leveraging these advanced technologies, HR department can drive meaningful changes towards workplaces while boosting productivity, reducing costs, and creating positive impacts on the environment and society.

Keywords

Green HRM, Technological Advancements , Sustainability, Circular Economy.



Performance and Emission studies of RCCI engine using Karanja Biodiesel

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Abstract

As fossil fuels dwindle, the search for renewable alternatives intensifies. This study explores the potential of Karanja biodiesel as a viable replacement for diesel in RCCI (Reactivity Controlled Compression Ignition) engines. Rising global energy demands and depleting fossil fuel reserves necessitate the development of sustainable energy solutions. Karanja biodiesel, produced from Karanja oil, emerges as a promising alternative due to its renewability and environmental benefits. This research investigates the performance and emissions of a RCCI engine fueled by Karanja biodiesel blends and compares them to pure diesel operation. The study employs transesterification reaction to convert Karanja oil into biodiesel, utilizing a catalyst and alcohol. Engine performance parameters like brake thermal efficiency (BTE) and brake specific fuel consumption (BSFC) are analyzed at varying compression ratios (16:1, 17:1 and 18:1) and load conditions from no load to full load. For RCCI operations petrol injection in inlet port is arranged in a regular Direct injection CI engine. Petrol injection quantity is varied with injection timings from 3ms to 5 ms with B20 used for direct injection in single cylinder CI engine. The engine has PC interface to record the readings and smoke meter, 5 gas analyser were used to record the smoke and other emissions and readings noted down. Additionally, emissions of NOx are compared between Karanja biodiesel and diesel fuels. The study reveals that RCCI engines fueled by Karanja biodiesel exhibit lower NOx emissions compared to pure diesel. However, they demonstrate a significant improvement in BTE, indicating greater fuel efficiency. The BTE was 31% with CR 16:1 for RCCI engine and peaked to 35.9% at 18:1 CR for same RCCi engine operation with 5ms petrol injection. Furthermore, Karanja biodiesel blends offer lower SFC values at maximum load, signifying reduced fuel consumption. The study's findings strongly suggest that Karanja biodiesel holds significant promise as a sustainable alternative to diesel fuel for RCCI engines. Its potential for improved fuel efficiency and reduced emissions makes it a viable candidate for transitioning away from conventional fossil fuels.

Index Terms

Biodiesel, Variable Compression ratios, Emission Analysis, Fuel Properties, Performance, RCCI engine


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On the Causes of the September 8, 2023 Morocco EarthQuake Lights

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Abstract

On September 8, 2023 at 23:11:00 local time, an earthquake of magnitude 6.8 struck Morocco's Al Haouz region. The epicenter was at the Ighill town, Al Haouz in High Atlas Mountain range. Several houses have collapsed; others were sustained structural damage leaving thousands of homeless people. At least 2960 of deaths and more than 5674 of injured according to the Moroccan authorities; the vast majority in Al Haouz region and neighboring towns and villages. Indeed, some unexpected natural phenomena occurred due to this seismicity, several fresh water sources that did not exist before began to spring in the High Atlas Mountains located in the epicenter area just after the passage of the earthquake. The earthquake occurred during about two minutes, and it was night, intense blue to bluish-white coseismic earthquakes lights (EQLs) were observed by several eyewitnesses, and a number of security video cameras recorded these EQLs. No pre-seismic or post-seismic EQLs have been reported. So, once again, we have compelling evidences that the earthquake lights really exist thanks to the widespread use of surveillance cameras but until today there is no convincing explanation concerning the mechanism of their occurrence. In this article we present a preliminary study based on videos supplemented by eyewitness accounts, including reconstructed images of recorded EQLs and an analysis of the temporal correlation with seismograms and a discussion of possible explanation.

Keywords

Earthquake lights; EQLs; 2023 Al Haouz Earthquake; coseismic phenomenon.



Integrated Approach for Crop Yield Prediction in Telangana Region Using Ensemble Techniques and ARIMA Model

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Abstract

This paper presents an integrated methodology for accurate and comprehensive crop yield prediction in the Telangana region, spanning the years 1966 to 2030. Leveraging an ensemble approach, our model combines the strengths of Random Forest Regressor at both the state and district levels, providing granular predictions for each administrative unit. Additionally, we employ an ARIMA model to forecast key meteorological and soil parameters from 2021 to 2030. The ensemble predictions are then integrated with historical data, resulting in a holistic forecast for crop yield. The methodology addresses data sparsity by replacing zeros with mean values, enhancing the reliability of predictions. The proposed approach is validated using rigorous metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and R-squared, demonstrating the robustness and accuracy of the model. The study contributes to the field of precision agriculture, offering insights into the complex dynamics influencing crop yield and providing a valuable tool for sustainable agricultural planning in the Telangana region.

Index Terms

ARIMA, Crop yield, Ensemble, Machine learning, Metrics, Random Forest, Telangana.



Exploring Glaucoma Detection: Assessing Current Limitations and Proposing Novel Solutions

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Abstract

Glaucoma, a primary cause of permanent blindness globally, damages the optic nerve and is often unnoticed in its early stages. Symptoms become apparent only after significant progression, resulting in substantial vision loss. Regular eye check-ups are crucial for timely detection to prevent blindness. The primary objective of this research is to create an affordable, user-friendly, and easily transportable solution for retinal imaging using smartphones. The proposed optical attachment, based on the principles of direct ophthalmoscopy, offers a wide field along with clinical-grade resolution, effectively capturing retinal images. The attachment's light emission conforms to established safety norms. The device would capture images in a non-invasive manner. Currently, there is an existing app that uses this technology but is only available in a specific network. This innovation presents a viable alternative to traditional direct ophthalmoscopes, effectively addressing challenges related to examiner bias and examination competence. Its compactness and seamless integration with smartphones show potential use beyond medical facilities, enabling screening and telemedicine, thus broadening access to retinal imaging. This advancement holds significant translational implications, highlighting smartphones as a versatile platform for portable ophthalmoscopy. A substantial dataset of individuals with glaucoma is employed to teach the system to determine whether an individual has glaucoma or not. Optic Nerve Head, Ganglion Cell Complex Thickness, Retinal Nerve Fiber Layer Thickness Visual Field Data, Blood Flow Parameters, optic disk-to-cup ratio, and Clinical Data are among the factors that were taken into consideration when training this dataset. The accuracy of the model is both computed and evaluated by medical professionals.

Index Terms

glaucoma, smartphone ophthalmoscope, early detection, fundus camera



Bi-TransformerNet: A Deep Learning Approach for Scaling Severity of Real-Time Psychiatric Disorders

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Abstract

There has been a substantial increase in the incorporation of EEG signal analysis pertaining to motor imagery (MI) into prefrontal cortex-focused brain-computer interfaces (BCI). Here, deep learning stands out as an essential method for feature extraction from EEG recordings. Two main obstacles stand in the way of using these approaches for EEG signal capture, though: First of all, it usually takes a lot of annotated data to set up a strong learning model. Due to the absence of labels in the majority of EEG signal data, professional manual categorization is a formidable obstacle. Second, it takes a lot of time and a lot of computing power to build a comprehensive learning model from scratch. To overcome these obstacles, we provide a framework for architecturally enhancing feature extraction and classification accuracy for real-time mental condition detection, with a focus on EEG data collection. The architecture is called a bi-directional transformer network. By outperforming current state-of-the-art approaches by 4.82%, the suggested methodology achieves an impressive 99.12% classification accuracy on the DEAP multichannel scalp sleep staging EEG dataset. The very low false positive rate per hour (FPR/h) of 0.42%, together with a sensitivity of 99.10% and a specificity of 99.03%, was attained using a data distribution of 70% for training, 20% for testing, and 10% for validation, all of which contributed to this high degree of accuracy. This model's bidirectional transformer stands out for the vast range of neurological illnesses it can effectively diagnose within a single framework. Its adaptability makes it ideal for a variety of therapeutic applications. The model has reached a major milestone in its development with its strong ability to generalize to new, unknown data, as shown by its efficacy on the DEAP dataset after training.

Index Terms

Computer-aided Diagnosis; Electroencephalogram; Mental Illness; Recurrent Neural Network



Implementation of a cost-effective Internet of Things (IoT) enabled smart irrigation system

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Abstract

Automation of farm activities has the potential to transform the agricultural domain from one that is manual and static to one that is intelligent and dynamic, resulting in higher output with less human supervision. This transformation can be achieved through the use of advanced technologies such as robotics, artificial intelligence, and sensors. These technologies enable tasks such as planting, harvesting, and monitoring crops to be done more efficiently and accurately, leading to increased productivity and reduced labour costs. This project proposes an IOT-based automated irrigation system that monitors and maintains the desired soil moisture content as well as fertilization through automatic watering. The control unit is implemented using a microcontroller with the Blynk application platform. The system employs soil moisture sensors to determine the exact moisture level in the soil. A DHT sensor to measure the ambient temperature and humidity In addition, a rain sensor for rain detection By using these values, which can be directly displayed on a farmer's mobile device, the system is able to use the right amount of water and fertilizer, preventing over- or under-fertilization. Farmers can stay informed about the state of their pumps, valves, rain, temperature, humidity, and soil moisture content by using IOT.

Index Terms

IoT, Smart farming, sensor, soil moisture, fertilizer



A Review : Improve the Productivity of Sales Using Deep Learning Approaches

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Abstract

This article focuses on sales forecasting using a machine learning model to improve accuracy and efficiency in forecasting future sales based on historical data. It also highlights the importance of sales forecasting in decision-making, inventory management, financial planning, and marketing strategies. Sales forecasting is challenging around the world. Machine learning models that improve the day-by-day new launches are very technical. A machine learning model plays an important role in sales forecasting. Forecasting helps businesses plan for the future by providing estimates and future sales for this revenue.

This information is essential to goals, strategies, and making informed decisions about resource allocation, product development, and market expansion. Machine learning plays an important and significant role in improving sales productivity as well as the accuracy and effectiveness of sales forecasting. Deep learning is a subset of machine learning. The neural network, which involves multiple layers, can play a significant role in sales forecasting because of its ability to handle complex amounts of data. Supervised machine learning plays a subdue role in sales forecasting by using historical data to train predictive models for accurate forecasts. These are feature selection for feature creation, cleaning, splitting, and target variable label models to predict sales.



Participatory Banks in the Face of Financial Inclusion Challenges

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Abstract

In this era, the world confronts multifaceted challenges spanning climate, economics, politics, and societal issues, intensified by climate change, natural disasters, and conflicts. These crises demand robust solutions, particularly in reinforcing national economic resilience. Experts concur that resilience enhancement is vital, yet practical mechanisms remain elusive, necessitating innovative approaches.

Amidst this, the Islamic world cautiously proposes an alternative financial model to bolster financial system resilience. This model, "participatory finance," rooted in Islamic Sharia, has demonstrated efficacy in the early 21st century, notably in fostering financial inclusion. It integrates marginalized groups into the economy, facilitating wealth generation and enhancing overall wellbeing. Emphasizing transparency, fairness, and ethics, participatory finance relies on the pivotal roles of governments and Islamic banks. This article highlights the significant contributions of Islamic banks in this context.

Index Terms

Participatory Finance - Products and Services of Participatory Finance - Financial Inclusion - Participatory Banks - Participatory Financing Contracts.



Deep Reinforcement Learning from Human Feedback: Chat GPT

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Abstract

The research paper "Deep Reinforcement Learning from Human Feedback: CHAT GPT" introduces an innovative approach to improve the efficiency, safety, and ethical considerations of reinforcement learning in artificial intelligence (AI) systems is suggested. It integrates CHAT GPT, a sophisticated language model, into the Deep Reinforcement Learning from Human Feedback (DRLHF) framework. CHAT GPT serves as a natural language interface that bridges the communication gap between humans and AI agents, facilitating the integration of human feedback into the reinforcement learning process. The paper explores strategies such as imitation learning, reward modeling, and interactive feedback paradigms, all empowered by CHAT GPT's contextual understanding and generation capabilities. Critical factors affecting the effectiveness of DRLHF with CHAT GPT are analyzed, including feedback quality, modalities, and ethical considerations. Empirical validation across various domains demonstrates substantial enhancements in learning efficiency, task success rates, and safety. This research contributes to the advancement of reinforcement learning by showcasing the transformative potential of CHAT GPT in making AI systems more adaptive, efficient, and ethically responsible across diverse real-world applications.

Keywords

Deep Reinforcement Learning, Human Feedback, CHAT GPT, Artificial Intelligence, Ethical Al



Price Prediction of Pre-Owned Vehicles: A Random Forest Approach

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Abstract

This paper explores the application of AI and Random Forest in car price prediction. It aims to develop a model estimating car market values based on features like make, model, year, mileage, and engine specifications, using historical sales data. The robust Random Forest algorithm handles complex data, missing values, and provides feature importance insights. The research includes methods like Data preprocessing, Feature engineering, Model training, Tuning, and Evaluation. Performance metrics like MAE, RMSE, and R-squared assess accuracy. Results demonstrate high predictive accuracy and generalization to unseen data. Random forest regressor model accurately predicts car prices based on various features where present_price and kms_driven were the most influencing factor for predicting price of car with accuracy of 89.9% as compared to other models.

Keywords

Machine Learning, Car Price Prediction, Random Forest, Mean Absolute Error, RMSE, Feature Extraction, Feature Importance Analysis



Silver Nanoparticle From Phoenix Sylvestris: Biosynthesis, Characterization and Antimicrobial Activity

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Abstract

The approach for synthesising green nanoparticles from leaf extract was found to be cost-effective, environmentally benign, and sustainable. In this work, the synthesis of silver nanoparticles (AgNPs) was carried out using a leaf extract from Phoenix sylvestris as a capping and reducing agent. Greenly synthesised nanoparticles after being verified by UV-Vis spectroscopy were further charactrized by FESEM, FTIR. In addition, agar diffusion techniques were used to assess its antibacterial properties. Surface Plasmon Resonance (SPR) absorption peaks at 462 nm in the UV-Vis spectra, show the formation of AgNPs. FESEM provided additional confirmation of the nanoparticle production. When P. sylvestris leaves extract was analysed using FTIR, it was discovered phenols, alcohols, and alkanes presence that acted as a capping agent during nanoparticles formation. Higher inhibition zones were noted when the synthesised AgNPs were tested for their antibacterial properties against Gram-positive (S. aureus and B. subtilis) and Gramnegative (E. coli and P. vulgare) bacteria.

Keywords

Green nanoparticles, Phoenix sylvestris, FESEM, FTIR, anti-bacterial activity.



Brain Tumor Detection and Classification Using Pre-Trained Deep Learning Models

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Abstract

Brain tumours pose a significant challenge in health- care due to their complex nature and impact on patient outcomes. The application of deep learning (DL) algorithms in medical imaging has shown promise in accurate and efficient brain tumour detection. This paper explores the performance of various pre-trained DL models ResNet50, Xception, InceptionV3, EfficientNetB0, DenseNet121, NASNetMobile, VGG19, VGG16, and MobileNet on a brain tumour dataset sourced from Figshare. The dataset consists of MRI scans categorizing different types of brain tumours, including meningioma, pituitary, glioma, and no tumour. The study involves a comprehensive evaluation of these models' accuracy and effectiveness in classifying brain tumour images. Data preprocessing, augmentation, and fine- tuning techniques are employed to optimize model performance. Among the evaluated deep learning models for brain tumour detection, ResNet50 emerges as the top performer with an accuracy of 98.86%. Following closely is Xception, exhibiting a strong accuracy of 97.33%. These models showcase robust capabilities in accurately classifying brain tumour images. On the other end of the spectrum, VGG16 trails with the lowest accuracy at 89.02%.

Index Terms

Brain tumour, MRI image, Detecting and clas- sifying tumour, Pre-Trained Models, Transfer Learning, Image Segmentation, Data Augmentation



Convolutional Arabic Handwritten recognition system based BLSTM and CTC using WBS decoder

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Abstract

The field of pattern recognition has been significantly challenged by the task of Arabic handwriting recognition (AHR), due to the cursive nature of Arabic script and the morphological similarities among various character forms. Despite the promising results achieved by deep learning techniques, there is a recognized need for architectural enhancement. This paper presents an approach to offline Arabic Handwritten recognition, used a convolutional neural networks (CNN) system based on Bidirectional Long Short-Term Memory (BLSTM) and Connectionist Temporal Classification (CTC). This proposed methodology avoids segmentation issues and enhances the network's temporal modeling and context representation capabilities. The system incorporates the Word Beam Search (WBS) decoder that facilitates accurate and efficient conversion of the model's output. Experimental validation has demonstrated an improvement in efficiency, with the model achieving a 94.58% recognition rate on the IFN/ENIT database. This research represents an advancement in the continuous development of progressively intricate and precise systems for handwriting recognition.

Keywords

Arabic handwriting recognition (AHR), Convolutional Neural Networks (CNN), Bi- Dimensional Long Short-Term Memory (BLSTM), Connectionist Temporal Classification (CTC), Word Beam Search (WBS).



An Energy Efficient Data Gathering Protocol for Heterogeneous Mobile Wireless Sensor Networks

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Abstract

Energy efficiency is a critical concern in modern wireless sensor networks, particularly in heterogeneous setups characterized by diverse device types and capabilities. This survey paper provides a comprehensive overview of energyefficient strategies for managing heterogeneous wireless sensor networks securely through the use of centralized algorithms. Heterogeneous wireless sensor networks comprise a mix of sensor nodes with varying computational resources, energy supplies, and communication capabilities. The survey begins by elucidating the challenges posed by energy limitations in such networks and the imperative of maintaining security in data transmission. It then delves into the central theme of centralized algorithms, highlighting their advantages in optimizing energy utilization while ensuring secure data communication. This survey paper presents a comprehensive exploration of energy efficiency and security considerations in heterogeneous wireless sensor networks using centralized algorithms. Heterogeneous wireless sensor networks, comprising sensor nodes with diverse capabilities and constraints, pose unique challenges for optimizing energy usage while ensuring data security. The survey begins by elucidating the inherent complexities of heterogeneous wireless sensor networks and the critical need for tailored energy-efficient and secure solutions. It delves into the core topics of energy-efficient routing, data aggregation, and security mechanisms specifically designed for heterogeneous settings. Central to the discussion are centralized algorithms, which play a pivotal role in orchestrating energy-efficient operations and safeguarding data in transit. Real-world case studies and practical implementations are examined to highlight the effectiveness of centralized algorithms in enhancing energy efficiency while maintaining robust security. The paper also identifies current challenges and outlines future research directions, providing valuable insights for researchers, practitioners, and policymakers in the dynamic field of heterogeneous wireless sensor networks. This survey serves as an essential resource, offering a holistic view of the latest advancements and best practices in achieving energy efficiency and security in heterogeneous wireless sensor networks through centralized algorithms.

Keywords

Centralized algorithms, Sensor nodes, Diverse capabilities, Energy usage optimization, Data security, Complexities, Data aggregation, Security mechanisms, Centralized algorithm orchestration.



Design and Development of Coconut Ultra Low Volume Climbing Sprayer

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Abstract

Harmful pests like Rhino Beetle, Red Palm Weevil, etc. can significantly impact the growth of coconut trees. These pests attack the outer layer of the coconut and contaminate it from within. Due to the tall and slender trunks and narrow spacing of their leaves, accessing the leaves and canopy for pesticide application can be challenging for farmers. To address this problem, the development of a climbing coconut tree sprayer is essential. This sprayer plays vital role in pest control, and therefore, there is a need to develop a coconut ultra-low volume climbing sprayer with spraying mechanism. The conceptual design of climbing sprayer with major components viz., frame, motors, vacuum pumps, pesticide tank, pipes, misting nozzles. The sprayer was calibrated to spray at 30-degree angle. In the first trail, it was tested on 16m tree at 0.25 km/h speed and sprayed the pesticide solution with the pressure of 4.5 kg/m² resulting in a measured swath width of 45 cm. Similarly, it was tested on a 13.5m tall tree at a pressure of 3.5 kg/m² achieving a swath width of 36 cm. The results demonstrate that this climbing sprayer can provide better coverage and reduce the need for workers to climb the trees, thereby decreasing the risk of accidents and fatalities.

Keywords

coconut trees, pest control equipment, spraying, pressure, swath width, coconut climbing sprayer.



Potency of Peptide based Iron oxide Nanoparticles for a Ntiviral Activity Against h1n1 Influenza a Virus

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Abstract

Introduction: Influenza virus is a common human pathogenic agent that has caused serious respiratory illness and death over the past century and in recent year. Influenza virus-associated illnesses cause estimated 200,000-500,000 hospital admissions and hundreds of thousands of deaths annually [1,2]. A new strain of Influenza virus A H1N1, commonly referred to as "swine flu" was found in April 2009, H1N1 virus strain recently has been found to be closely related to the swine flu virus, but with a genetically quite different from the earlier known isolate. [3,4].

Methods: India confirmed its first case on 16 May 16 2009, when a man travelling from New York to Delhi found to be positive for the H1N1 Influenza virus in Hyderabad [5].Therefore we have developed glycine (peptide) coated iron oxide nanoparticles (IO-NPs) with particle size in the range of 10-15 nm against pandemic influenza strain A/H1N1/ Eastern India/66/pdm09 (H1N1-pdm09). Cell viability and anti-influenza activity was measured by MTT assay, plaque inhibition and quantifying viral transcripts using quantitative real-time PCR with Iron oxide nanoparticles in a dose-and time-dependent manner.

Results: 50% cell viability (TD₅₀) was observed at 4.25 pg \pm 2pg of Iron oxide nanoparticles. The percentage of plaque inhibition relative to the infected, The IC₅₀ (50% virus reduction) of H1N1-pdm09 strain (0.5 moi) in vitro in MA104 cells by the plate forming unit(pfu) method was observed at 01pg after 72 h.

Conclusion:The Antiviral activity determined by change in viral RNA transcripts within 24 h of virus infection by RT-PCR, 10 fold reductions(Image) in virus found when treated with Iron oxide nanoparticles Thus; it opens a new avenue for use IO-NPs of against virus infections.

Keewords

Nanoparticles, antiviral, peptide, Influenza virus



Optimizing Resource Allocation in the Manufacturing Industry using Generative Adversarial Networks

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Abstract

The allocation of resources in the manufacturing process is an important factor that directly affects both operational efficiency and productivity. Traditional resource allocation systems often face challenges to adapt to complexity, leading to inefficiencies and increased waste. In response to these challenges, Generative Adversarial Networks (GAN), a subset of reproductive AI, emerges as a revolutionary solution. In manufacturing, GANs are being introduced as a new application. GANs are known for their ability to produce accurate information through adversarial training, offering a unique solution to resource allocation challenges. The inclusion of GANs in this research aims to develop an innovative yet realistic resource allocation strategy to promote adaptive learning and optimization. The paper presents a conceptual model and framework designed to reduce waste and improve efficiency in resource allocation. The conceptual model illustrates the interaction between manufacturing processes, generative AI, and the optimization loop. The algorithms are described to provide a comprehensive understanding of the GAN-based optimization process with emphasis on waste reduction and productivity improvement. The GAN-based approach demonstrates the flexibility to adapt to changing manufacturing conditions, and leads to more efficient use of resources. The findings highlight the potential of GANs to revolutionize resource consumption behaviors, enabling a more efficient, and sustainable manufacturing process.

Index Terms

Generative Adversarial Networks, Generative Artificial Intelligence, Manufacturing Industry, Resource Optimization.



Analysis of Emerging Covid-19 and Other Biological Contaminants in Waste Water and Drinking Water Samples Collected From Punjab, India

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Abstract

Introduction: Risk of developing COVID-19 and other biological contaminants in drinking and waste water were studied. Thus present study evaluates the different parameters to analyze the contamination in drinking water and waste water. Unsafe water sources have an effect on human health and can result in contagious diseases. In current study six samples of drinking water and six samples of sewage waste water were collected for analysis. Three sample of drinking water were collected from Barmajra village of Mohali district and three sample of drinking water were collected from the sewage drain in Jagatpura and rest three waste water sample were collected from sewage drain passing from the Kharar region of Mohali district.

Methodology: To evaluate the water's quality, fundamental physical factors such colour, pH, temperature, taste, turbidity, and TDS were first examined. Bacteriological parameters were tested to check the presence of bacteriological contaminants. Different types of media were prepared to examine for the presence of pathogenic bacteria species, and biochemical tests were conducted to confirm the bacterial species in samples. To determine the levels of E. coli and total coliforms in drinking water and sewage waste, MPN techniques were utilised.

Results: As a result, we learned that E. coli and total coliforms are present in significant amounts in sewage waste water. There are 1100, 1109, 1099, 900, 980 and 990 MPN/100 ml of total coliforms in sewerage waste water, with E. coli counts of 400, 430, 410, 250, 254 and 258MPN/100 ml. The total coliform concentration in drinking water samples is 150, 152, 150, 75, 78 and 77 MPN/100 mL, respectively. 43, 40, 41,7, 9 and 6MPN/100 ml of E. coli, which shouldn't be present in the sample, were found in the drinking water. Now a days it is a severe problem because drinking water samples also contain total coliform and E. coli. When these faecal coliform are found in a sample of drinking water, it indicates that human waste is present in the water. Thus is a serious cause of concern.

Keywords

COVID-19, MPN, Waste water, Drinking water, Coliform, E.coli, Contaminants, pH, TDS, Human faeces.



29th & 30th December 2023 || Goa, India

Big Data Analytics Using Healthcare

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Abstract

As the healthcare industry embraces digital transformation, the integration of big data analytics has emerged as a transformative force. This abstract explores the multifaceted applications of big data analytics in healthcare, ranging from predictive analytics for disease prevention to personalized medicine based on genomic data analysis. The implementation of clinical decision support systems, remote patient monitoring, and population health management is examined for their potential to enhance patient outcomes and optimize healthcare operations. The role of big data analytics in ensuring data security, privacy, and compliance with regulatory standards, such as HIPAA, is also underscored. This paper underscores the collaborative efforts required among healthcare professionals, data scientists, and IT experts to harness the full potential of big data analytics in revolutionizing healthcare delivery.

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Keywords

Big Data Analytics, Healthcare, Predictive Analytics, Clinical Decision Support Systems (CDSS), Population Health Management, GenomicDataAnalysis.



CRP IN Neonatal Sepsis: A Comprehensive Analysis of Its Dynamic Role During the Crucial 1-Month Period

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Abstract

Sepsis remains a critical concern in neonatal care, demanding an intricate understanding of the underlying immunological mechanisms to ensure timely and effective interventions. This innovative study provides a comprehensive analysis of the multifaceted role of C-Reactive Protein (CRP) in the sepsis spectrum during the crucial 1-month period. Leveraging a multi-dimensional approach, including extensive clinical data analysis, advanced immunological profiling, and state-of-the-art molecular techniques, this research present novel insights into the nuanced interplay between CRP dynamics and the evolving immune responses in neonates exposed to sepsis. This study findings reveal a dynamic and context-dependent modulation of CRP expression, shedding light on its intricate involvement in both the early recognition and resolution of sepsis. Through a meticulous examination of CRP kinetics in the presence of diverse sepsis aetiologies, this study delineates distinct patterns and thresholds that enable the discrimination of sepsis severity and prognosis, facilitating the development of tailored therapeutic strategies. Moreover, present study highlights the potential of CRP as a prognostic biomarker, exhibiting promising utility in the prediction of sepsis progression and treatment response, thus contributing to the enhancement of personalized care for neonates at risk. By elucidating the temporal dynamics and functional implications of CRP in the sepsis spectrum, this research paves the way for targeted interventions and precision medicine approaches, ultimately striving to mitigate the burden of neonatal sepsis and improve clinical outcomes during the critical early postnatal period.

Keywords

CRP dynamics, sepsis progression, neonates.



Mechanical properties of concrete incorporating synthetic fibers

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Abstract



The incorporation of fibers into concrete has proven to be an effective strategy for reducing crack propagation, thereby enhancing the flexibility, durability, toughness, and overall strength of the concrete. To investigate this, a comprehensive set of experiments was conducted to evaluate the compressive and splitting stability of fiber-reinforced concrete. Nine batches of concrete were prepared, incorporating steel, polypropylene, and plastic fibers. While the addition of fibers resulted in slight variations in compressive strength, there was a significant improvement in splitting strength across all sample sets. The highest increases in strength relative to the reference mixture concrete were observed as follows: 60% with steel fibers, 52.4% with polypropylene fibers, and 26.9% with plastic fibers. Furthermore, it was noted that concrete samples reinforced with steel fibers with a higher aspect ratio demonstrated superior splitting performance compared to other steel fiber-reinforced concrete samples.

Keywords

Mechanical properties, synthetic fibers, polypropylene, steel fibers, concrete.



Assessing the Effects of Vehicular Traffic Congestion on Employee Productivity: A Case Study in Autobus Tera, Addis Ababa

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Abstract

Traffic congestion is a major urban transportation problem and extremely detrimental issue that affects both developed and developing countries. Suffer from congestion, leading to high operational costs, loss of time, high delay, high travel time and increased fuel consumption. This study focuses on assessing the issue of traffic congestion in Autobus Tera, Addis Ababa and how it affects worker's productive time. The Purposive sampling technique was used when selecting workers who use public transport, like public bus, taxi and ride to arrive and departure in Autobus Tera. Primary data was collected using questionnaire and GPS instrument. Travel time index (TTI) is the ratio of the average travel time during peak period to the travel time during off-peak period. Findings reveal that maximum Travel time index was 7.08. Workers spent about 7.08 times of the average commuting time travel to work place and back to home. About 3 hours and 13 minutes were lost due to traffic jam per day and 21 hours and 9 minutes were lost due traffic jam per week. It was further established that in 8 working days, almost 3 working days were lost due to traffic congestion. The study results prove that the Travel time index (TTI) value in all selected routes greater than 2 this indicates inefficient transport system and the result shows that when people live closer to their workplace, they spend less time commuting. Urban planning decisions that lead to lower travel time index between home and workplace can improve citizens' well-being.

Keywords

Transportation System; Traffic Congestion; Worker Productivity; Travel Time Index.



29th & 30th December 2023 || Goa, India

An Ideational Study on PEB Structural Steel Warehouse in Somalia

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Abstract

Pre-engineered Buildings (PEB) are one of the latest and fastest methods of construction by using steel or concrete which are designed with specific structural requirements. The method is replacing the traditional process of construction in industrial buildings like warehouses, cold storage, fabrication units, etc., Pre-engineered steel buildings are flexible in any requirement of design, and easy to expand in the future. In the Federal Republic of Somalia, Africa, industries like agriculture and livestock farming are the primary sectors of business for the people. Considering the location in Somalia, an ideational study on PEB structural steel warehouse is analyzed and designed with the specific structural properties and loadings. The model of the warehouse is developed using the ETABS software where the basic inputs were taken. The use of tapered columns and rafters is the basic property of Pre-engineered buildings. PEB is considered more efficient, cost-effective, and lighter in weight compared to conventional steel buildings.

Keywords

Warehouse, Steel structure, Cold storages, Pre-engineered buildings.



Virtual Machine Migration with Artificial Intelligence

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Abstract

Artificial Intelligence (AI) significantly aids in virtual machine (VM) migration by optimizing and automating various aspects of the process. AI algorithms analyze workload patterns and resource demands, optimizing virtual machine placement to maximize resource utilization and minimize wastage. It predicts resource usage, performance bottlenecks, and migration opportunities, enabling proactive decision-making and preventing potential issues during migration. It enhances live migration processes, reducing downtime by intelligently managing the transfer of VMs between hosts or data centers while ensuring continuous service availability. AI-based systems can autonomously make decisions on VM migration, considering factors like network constraints, server load, and user-defined policies. Through continuous learning, AI refines migration strategies over time, improving overall efficiency and performance while reducing human intervention. In essence, AI revolutionizes VM migration by introducing intelligence, adaptability, and efficiency, optimizing resource allocation and minimizing disruptions during the migration process.

Keywords

Bottleneck, Carbon footprint, Downtime, Optimization



Predictive Analysis for enhancing assessment in Higher Education Institutions

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Abstract

Predictive analysis or predictive analytics implies the use of data and statistical algorithms in addition to machine learning techniques and predictive modeling for analyzing trends and patterns in existing, historic data. It is further used to make predictions about unknown future events and behavior. As it predicts what might happen in future, it helps identify the risks and opportunities that lie ahead for an organization. Thus better informed decisions may be taken and proactive measures may help improve futuristic goals of the organization. This paper puts forth another area of implementation of predictive analysis in higher education institutions - that is to compare its performance against various benchmarks and enable identify areas for improvement. Thus data-driven decision-making can be put to use for institutional advancement.

Keywords

Predictive Analysis, Higher Education



29th & 30th December 2023 || Goa, India

Sustainable Rural Development in Kachchh through Tourism: Opportunities, Challenges, and Community Empowerment

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Abstract

This research paper investigates the potential of tourism as a catalyst for sustainable rural development in Kachchh, an area distinguished by its unique cultural heritage, landscapes, and diverse ecosystems. The study aims to explore opportunities, challenges, and strategies for community empowerment within the context of tourism development. The primary objective is to analyze how tourism can stimulate economic growth while simultaneously preserving local traditions and empowering communities in Kachchh. Through a comprehensive examination of the region's tourism potential, the paper delves into the multifaceted opportunities that tourism presents, from cultural preservation to economic diversification. At the same time, it addresses the challenges associated with sustainable tourism development, including environmental impacts, social dynamics, and the need for community engagement. The methodology employed for this research is rooted in primary research methods, emphasizing surveys and field visits. By engaging directly with local stakeholders and conducting on-the- ground surveys, the study ensures a thorough understanding of the intricate relationships between tourism, rural development, and community empowerment in Kachchh.

In conclusion, this research contributes to the academic discourse by offering insights into the practical implications of leveraging tourism for sustainable rural development. The findings aim to inform policymakers, practitioners, and researchers about the nuanced opportunities and challenges associated with tourism in Kachchh, providing a foundation for future initiatives focused on fostering, economic prosperity, and cultural preservation through sustainable tourism practices.

Keywords

Rural Tourism. Kachchh, Sustainable Development, Economic development



Transformations in the Pursuits of Ecologically Benign Processes

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Abstract

Procedural renaissance in numerous arena integrated with green chemistry has been emerging unabated as a mandatory obligation. Besides leading to a sustainable research, it is measureable tribute to science & future. Synthesis of potential structures had been a significant intellectual challenge which becomes even intense so as to avoid damages to future. Transformations which incorporate pure green chemistry - green synthetic pathway, green reaction conditions, green chemicals are diverse. These have simple process details- clean, less no. of steps, by products eliminations, low temperatures, easily usable/ reusable catalysts, solvent less/ free media. Many one pot or otherwise accelerated synthesis of target molecules through these methodologies find an edge over energy/material intense conventional routes. These further enhance yields, activity and selectivity of the products. Besides introduction of chirality, fluorescence, phosphorescence etc. in the molecules, drug design has been dramatically simpler through these processes. A myriad of chemical substances with diverse properties & wide spectrum of applications, their preparative reactions ranging from additions to substitutions, eliminations to rearrangements, ring expansion to ring contraction have been synthesized using these techniques with an effort extend it to industry. The paper presents a brief conspectus about these procedures.

Keywords

Transformations, Ecological, Green chemistry



An FPGA Implementation of Basic Video Processing and Timing Analysis for Real-Time Application

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Abstract

Since digital images from cameras or any image sources can be quite large, it is common practice for researchers to divide these large images into smaller sub-images. This present study proposes a subsystem module to read and display the region of interest (ROI) of real-time video signals for static camera applications to prepare for background subtraction (BGS) algorithm operation. The proposed subsystem was developed using Verilog hardware description language (HDL), synthesized, and implemented in the ZYBO Z7-10 platform. An ROI background image of (360×360) resolution was selected to test the operation of the module in real time. The proposed subsystem, which was used to implement the ROI reading algorithm consisted of five modules. Timing analysis was used to determine the real-time performance of the proposed subsystem. The subsystem works in multi-clock domain frequencies, 445.5MHz, 222.75MHz, 148.5MHz, and 74.25MHz, which are six, three, two, and one-time pixel clock frequencies respectively. These frequencies are chosen to perform five basic processing operations in real-time. The operation revealed that the latency of the proposed ROI reading subsystem was 13.468ns (one-pixel period), which matched the requirements for real-time applications.

Keywords

Background subtraction, Clock domain, Real-time, Region of Interest, Verilog HDL