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SOUVENIR / ABSTRACT PROCEEDINGS

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SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLGE

(Approved by AICTE - New Delhi, Affiliated to Anna University - Chennai)

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MESSAGE FROM THE CHAIRMAN

I have the great pleasure and honor of inviting you to the International Conference on Engineering and Technology (ICET-2023) organized by Sembodai Rukmani Varatharajan Engineering College in Nagapattinam on October 27, 2023. In this resurgent and competitive world, India's economy is growing at a faster rate because we are consistently and qualitatively developing in various fields such as technology, artificial intelligence, agriculture, nanotechnology, space research, electronics, renewable energy, and so on, ultimately contributing to the creation of something new and pioneering to society. Only because of the ardent and inventive research emphasis of national researchers and academics is this progress genuinely feasible.

The response of the academic community to this meeting has been tremendous. Presenting high-quality research papers at such conferences is extremely beneficial to academics. I am certain that this International Conference will provide a forum for researchers to communicate their research findings with others, receive valuable information from the research of others, and develop their networks for future research collaborations. This International Conference, I am confident, will provide a venue for academic discussions on future technologies in manufacturing, artificial intelligence, nanotechnology, and electronics. I would like to express my heartfelt appreciation to everyone who participated to the conference by presenting research papers.

The combined efforts of a committed and dedicated team are required for arranging such conferences, and we are fortunate to have such a hardworking dynamic team with us. I wish the conference great success.

Rtn. Dr. R. VARATHARAJAN
Chairman, SRV Group of Institutions

MESSAGE FROM THE SECRETARY

Esteemed delegates and guests, it is my absolute pleasure to offer a sincere and enthusiastic welcome to the International Conference on Engineering and Technology being organized by Sembodai Rukmani Varatharajan Engineering College, Nagapattinam. I must express my profound appreciation for the college's exceptional efforts in organizing this international conference, which is a testament to its long-standing commitment to promoting the exchange of intellectual and scholarly ideas. The college has been at the forefront of organizing such conferences, and it is an honor for them to host this international gathering. Over the years, the college has hosted numerous conferences at the national, state, and international levels, which have always been well-received by the research community. This conference will be no exception, focusing on interdisciplinary research and scientific applications that will significantly enhance the knowledge of the research community across various fields.

I am extremely excited to note that the theme of this conference is related to contemporary ideas of recent research and scientific applications, which will undoubtedly upsurge the research community's knowledge at the interdisciplinary level. The conference will provide an excellent platform for the exchange of new ideas, fostering new collaborations, and stimulating innovative thinking. On behalf of the organizing committee, I welcome you all to this event and extend my best wishes for a successful and fruitful conference. Let's work together to make this conference a memorable and enriching experience!

Rtn. Mr. V. Senthil
Secretary, SRV Group of Institutions

MESSAGE FROM THE PRINCIPAL

It gives me great pleasure to extend a warm welcome to the International Conference on Engineering and Technology (ICET-2023), which is being organized by Sembodai Rukmani Varatharajan Engineering College in Nagapattinam on October 27, 2023. The conference aims to bring together professionals from various fields of Engineering, including but not limited to Nanotechnology, Biotechnology, Agriculture, Artificial intelligence, Mechanical, Civil, Computer science, Electrical, Electronics, etc.

The conference's theme is multidisciplinary, and it has the potential to have a significant impact on society. The conference will provide a shared platform for young researchers to exchange ideas with professionals and experienced scientists, and debate new trends in engineering that are emerging. I am delighted to share that the response to ICET-2023 has been very enthusiastic. This conference has the potential to produce successful findings and catalyze scientific and technical progress if it combines complementary talent, clearly defined research goals, a common focus on deliverables, and smooth communication between participants.

I would like to express my gratitude to the Advisory Committee for their guidance and the local organizing Committee for their sincere efforts in organizing such a scientific event. Finally, I would like to take this opportunity to extend my best wishes to all the participants for an interesting and fruitful conference.

Dr. G. Kalivarathan
Principal, SRVEC

MESSAGE FROM THE CONVENOR

It gives me immense pleasure and honor to extend a warm welcome to all of you to the International Conference on Engineering and Technology 2023, also known as ICET 2023. The conference focuses on the themes of Manufacturing, Artificial Intelligence, Nanotechnology, and Electronics. 50 papers have been carefully selected based on the ICET theme from foreign universities, Anna University affiliated colleges, and private universities of India, as well as scientists, industry personnel, and entrepreneurs from across the globe.

The ICET team is extremely delighted to host this international conference in a hybrid mode. This is the first time that we are organizing a hybrid mode international conference from SRVEC Nagapattinam, after successfully pioneering the last two years through online mode. Such a hybrid conference will undoubtedly provide a platform for young researchers to interact with fellow researchers and experts, thereby expanding their research network. Eminent professors from India, South Korea, and Ethiopia are delivering the keynote speeches and sharing their research, knowledge, and experience with the conference participants.

Dr. S. Rajiv
Research Co-ordinator, SRVEC

ABOUT THE INSTITUTE

Rukmani Ammal Educational Trust was established in the year 1994 at Sembodai, Nagapattinam District, under the Chairmanship of Rtn. Dr. R. Varatharajan, M.com, M. Ed., D. Lit., to cater to the needs, especially of the poor and the downtrodden in providing better education in various fields of study. Sticking to the rules and regulations that have all in force throughout the years, the trust serves better in all respects for the development of the down-trodden, socially otherwise economically backward classes of the society by way of providing the right education with its various Educational Institutions for a meagre amount.

The college is located in the countryside with the scenic beauty of Sembodai, about 10k.m. away from the Vedaraniam and 40km away from Nagapattinam on Velankanni-Vedaraniam Road. Our institutions as a gift for the Point Calimere people. SRVEC provides a variety of stimulating environments for intellectual development, free-thinking, and personal growth, challenging its students with dynamic learning opportunities and equipping them with the skills technologies insights, attitudes, and practical experiences that are necessary to take up responsibilities in society. A Specialty of the College is that it is situated in a peaceful location. It has ample accommodation, spacious classrooms, well-equipped state-of-the-art Laboratories, well-stocked Libraries, and a dedicated band of highly qualified and competent staff. The ultimate aim of the Management is to mold the Institution into a School of Excellence and Advanced Learning.

With so much to offer, it is only natural that students of SRVEC get a unique opportunity to carve a niche for themselves in their chosen field of study that enables them to become well-rounded and discerning citizens, fully qualified for their chosen professions in the workplace. The Institution has Delnet facilities in our library, Communicative English Training Cell, and associations for all the departments. The college offers five Graduate Engineering programs and four Post Graduate programs.

KEYNOTE LECTURE I

AIRBRUSH PEN FOR GROWTH OF CONTINUOUS PEROVSKITE THIN FILMS FOR HYBRID SOLAR CELLS

Dr. Ramesh Mohan
Scientist,
Semiconductor Process Technology Group,
CSIR-Central Electronics Engineering Research Institute,
Pilani, Rajasthan

KEYNOTE LECTURE II

NANOTECHNOLOGICAL APPROACH IN FABRICATION OF BIOCHIP, SUPERHYDROPHOBIC COATINGS, AND PROFILING OF DNA METHYLATION

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Professor/Biotechnology,
Director – Innovation, IPR and Community Engagement,
Periyar Maniammai Institute of Science & Technology
(Deemed to University),
Thanjavur, TamilNadu, India.

TABLE OF ABSTRACTS

Development of Highly Stretchable and Conductive Superhydrophobic Coating for Flexible Electronics

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Abstract

Superhydrophobic materials that combine stretchability and conductivity have great potential in the emerging fields of wearable electronic sensors, flexible power storage devices, and corrosion-resistant circuits. A simple spraying method has been developed to create a durable superhydrophobic coating with excellent stretchability and electrical performance. This is achieved by combining 1-octadecanethiol-modified silver nanoparticles (M-AgNPs) with polystyrene-b-poly(ethylene-co-butylene)-b-polystyrene (SEBS) on a pre-stretched natural rubber (NR) substrate. The M-AgNPs embedded in the elastic SEBS matrix and the relaxation of the pre-stretched NR substrate create a hierarchical rough architecture and dense charge-transport pathways. The resulting coating is superhydrophobic, with a water contact angle greater than 160°, and has high conductivity, with a resistance of about 10 Ω. The coating is able to maintain its superhydrophobicity even at low/high stretch ratios, which generate small/large protuberances and can respond to stretching and bending with good sensitivity, broad sensing range, and stable response cycles. Furthermore, the coating is highly durable against heat, strong acid/alkali, and mechanical forces, including droplet impact, kneading, torsion, and repetitive stretching-relaxation. These findings could be used to develop multifunctional superhydrophobic materials with excellent stretchability and conductivity for use in flexible electronics under wet or corrosive conditions.

Keywords: Superhydrophobic, electronic sensors, M-AgNPs, Conductivity, Electrical

High Gain SSFIP patch Antenna Improvement for SAR Applications

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Abstract

A dual-polarised aperture-coupled microstrip stacked patch antenna with stacked feed lines is presented. The antenna is capable of operating over a bandwidth of 30% with improved front-to-back ratio performance. The patches are excited through non-resonating crossed slots. The feed lines are separated by a thin substrate to enhance the port decoupling. The measured impedance and radiation pattern of the antenna at C-band are presented.

Keywords: SSFIP, Antenna, SAR, C-band, decoupling

Energy Reliable of Routing Considering Residual using Wireless Ad Hoc Networks

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Abstract

Energy-aware routing algorithms for wireless ad hoc networks, recognized as reliable minimum energy price routing (RMECR) and reliable bare minimum energy routing (RMER). RMECR addresses three required needs of ad hoc networks: energy-efficiency, irresponsibleness, and prolong network lifetime. It considers the energy consumption and also the remaining battery energy of nodes in addition as quality of links to search out energy-efficient and reliable routes that increase the operational lifespan of the network. RMER, on the opposite hand, is associate energy-efficient steering formula that finds routes minimizing the full energy needed for end-to-end packet traversal. RMER and RMECR area unit predictable for networks during which either hop-by-hop or end-to-end retransmissions ensure reliability. Simulation studies show that RMECR is in a position to search out energy-efficient and reliable routes similar to RMER, whereas additionally extending the operational lifespan of the network. This makes RMECR an elegant answer to increase energy-efficiency, reliability, and lifetime of wireless unplanned networks. Within the style of RMECR.

Keywords: RMER,WANET,E2E,ETX,MACA,PAMAS,PARO

Multi-Object Tracking in the Video Domain by using QPBO

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Abstract

Video tracking is the process of locating a moving object or multiple objects over time using a camera. The interactions between non-associable tracklets are presented to facilitate multi-object tracking in video. Those explicitly exploit the interactions between tracklets in MOT. In single object tracking the only need is to focus on one target at a given time. In the case of MOT, to track multiple targets simultaneously and preserve their identities. There are two types of tracklet interactions, close Interaction and distant interaction. The close interaction imposes physical constraints between two temporally overlapping tracklets, and more importantly, that allows learning local classifiers to distinguish targets that are close to each other in the patio temporal domain. The distant interaction, on the other hand, accounts for the higher order motion and appearance consistency between two temporally isolated tracklets. Multi object tracking has a wide domain of applications including video surveillance, behavior analysis and medical image analysis. The early attempts of MOT concentrate on Expectation maximization algorithms to update the tracking model frame by frame. Such approaches however, are prone to errors like drifts that are difficult to recover from. To alleviate these problems, tracking by detection approaches have been proposed. The tracking by detection approach is modeled as a binary labeling problem and solved using the efficient quadratic pseudo-Boolean optimization.

Keywords: MOT, video domain, QPBO, camera, pseudo-boolean

Real Time Tracking and Control ofElectrical Diesel Generatorsby Using IOT

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Abstract

Improvements in the Internet of Things (IoT) have found applications in every field. Nowadays, IoT is causing affects the automation of devices. The widespread energy crisis has made it necessary to control alternative power sources like a generator. Generators are useful devices when there is a power outage. Surname are reliable but sometimes require human intervention to maintain them. The framework presented in this work Change manual generator monitoring to automatic monitoring. An onboard system monitors various activities when Generator running, includes status and alarms for many situations. This article addresses issues raised recently This only points to greater challenges in the field. To facilitate the management, operation and monitoring of generators, an IoT-based Android application designed to provide generator status updates as they become available work. The integrated system uses sensors that provide up-to-date information on fuel, oil, temperature, flow and voltage and relay this information to the person responsible for handling these issues. Embedded system based Small-scale Arduino controller, generates results in powered state, then sends information to Android device to monitor generator status in real time.

Keywords: IOT, electrical diesel, automatic, Arduino, embedded system

Battery Less IOT Based Tire Pressure Monitoring Systems (TPMS)

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Abstract

In this paper, we utilize the wireless power transmission technique in Radio Frequency used to achieve the battery-less tire pressure monitoring system use IOT enabled wireless sensors in vehicle tires to measure tire pressure and alert drivers.When pressure is going low to high level (TPMS). The system adopts efficacy Class-E Power Amplifier to transmit Radio Frequency power. The circuit for the whole power transmission circuit from the tire transponder to the reader is modeled so as to achieve the capital circuit parameter for a High Efficiency. This system uses the load modulation to acquire the data transmission, which includes the temperature and pressure data of tire. The capital speed of 46km/hr is achieved with a 2000μF (Vdd) capacitor.

Keywords: Class-E amplifier,IOT,WSN,Transponder

Smart Public Transportation System For Rural Area

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Abstract

In an era of increasing urbanization, efficient and reliable public transportation systems are paramount for sustainable urban living. “Find My Bus (Mobile Application)” is an innovative mobile application designed to address the daily commuting needs of urban dwellers by providing real-time tracking and information for town buses, with the added benefit of reducing waiting time. This user-friendly app helps commuters plan their journeys effectively by allowing them to input their specific location information, including district, taluka, boarding point, and destination point, thereby tailoring the service to their individual needs. In addition to location specificity, "Bus Track" features real-time bus tracking, route information, ticketing and payment options, alerts and notifications, user reviews, and feedback. It also seamlessly integrates with local transportation authorities to ensure accurate and up-to-date information. "Bus Track" aims to enhance the urban commuting experience, reduce congestion, and minimize the environmental footprint by promoting the use of public transportation. This represents a significant step towards the realization of smart, connected cities and the improvement of public transportation services in the urban landscape.

Keywords: Mobile application, bus track, transportation, rural area, friendly app

Automatic Drug Dispenser

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Abstract

To reduce and overcome the never-ending queue at the pharmacy, an AUTOMATIC DRUG DISPENSER has been proposed. HOSPITALS will have an e-prescription application, where the patients have to register their name and age with the help of the receptionist and each patient will be assigned a token number. The e-prescription application will also have a detail about all the medicines available in pharmacy. The doctor will be able to see the patient’s details based on the token number. Further, the doctor interacts with the patients and they diagnosis the disease and select the MEDICINES needed for the patients. Accordingly, in the e-prescription QR code is generated for the e-prescription. Then the patient or care-taker can scan the e-prescription in the AUTOMATIC DRUG DISPENSER. Dispenser will match the medicines in the QR with the medicines which are available in the dispenser and dispense the prescribed medicines, once the payment is completed. Here payment is made by Auto- rechargeable card. Hence the advantage of the solution is, the suffering of patient or caretaker due to queue in the pharmacy will be reduced and manpower is reduced.

Keywords: Drug, hospitals, medicines, pharmacy, QR

A Novel Image Encryption and Decryption in Cloud

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Abstract

These In today's world data security is the major problem which is to be face. In order to secure data during communication, data storage and transmission we use Advance encryption standard (AES). AES is a symmetric block cipher intended to replace DES for commercial applications .it uses 128-bit block size and a key size of 128, 192, or 256 bits. The AES algorithm is use to secure data from unauthorized user. The available AES algorithm is used for text data as well as for image data. In this paper an image is given as input AES encryption algorithm which gives encrypted output. This encrypted output is given as input to AES decryption algorithm and original image is regained as output. The AES algorithm for image encryption and decryption which synthesizes and simulated with the help of Java software for image encryption java code is synthesized and simulated by Java Application Platform SDK. Mainly Code Block Chaining (CBC) mode with PKCS 5 padding is used for image encryption.

Keywords: Encryption, Decryption, AES,DES,CBC,SDK

Authenticated Key Exchange Protocols For Parallel Network File Systems

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Abstract

We study the problem of key establishing for secure many-to-many communications. The problem is inspired by the proliferation of large-scale distributed file systems supporting equivalent access to multiple storage devices. Our work submissions on the current Internet standard for such file systems, i.e., parallel Link File System which makes use of Kerberos to establish parallel session keys between customers and storage devices. Our analysis of the existing Kerberos-based protocol shows that it has a number of limitations: A metadata server facilitating key exchange between the customers and the storage devices has heavy workload that restricts the scalability of the protocol.The protocol does not provide onward secrecy.The metadata waiter generates itself all the session keys that are used between the clients and packing devices, and this inherently leads to key escrow.In this paper, we propose a variety of authentic key exchange protocols that are designed to address the above issues. We show that our proprieties are capable of reducing up to almost 54% of the capacity of the metadata server and concurrently supporting onward secrecy and escrow-freeness. All this requires only a small section of increased computation overhead at the client.

Keywords: Communication, system, customers,storage,device

From cloud to fog computing: A review and a conceptual liveVM migration framework

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Abstract

Fog computing, an addition of cloud computing services to the edge of the network to decrease latency and set of connections congestion, is a relatively recent research trend. Although both cloud and fog offer like resources and services, the latter is characterized by low latency with a wider spread and geographically distributed nodes to support mobility and real-time interaction. In this paper, we describe the fog computing architecture and analysis its different services and applications. We then discuss security and privacy issues in fog computing, focusing on service and resource availability. Virtualization is a vital technology in both fog and cloud computing that enables Virtual Machines (VMs) to coexist in a physical server (host) to share resources. These VMs could be subject to malicious attacks or the physical server hosting it possibly will experience system failure, both of which result in unavailability of services and resources. Therefore, a conceptual smart pre-copy live migration approach is presented for VM migration, which estimates the downtime after each iteration to decide whether to proceed to the stop-and-copy stage during a system failure or an attack on a fog computing node. This will minimize both the downtime and the migration time to assurance resource and service availability to the end users of fog computing. Lastly, future research directions are outlined.

Keywords: VM migration, cloud computing, fog computing, virtualization.

Critical Analysis of Deep Learning-Based Approaches for Plant Disease Detection and Classification: A Comprehensive Review

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Abstract

In recent years, deep learning, a subfield of artificial intelligence known for its automatic learning and feature extraction capabilities, has garnered substantial attention across academic and industrial domains. Its applications span various areas, including image and video processing, voice analysis, and natural language understanding. Furthermore, deep learning has emerged as a prominent research focus within agricultural plant protection, particularly in the domains of plant disease recognition and pest assessment. The integration of deep learning into plant disease recognition offers several advantages, such as eliminating biases associated with manual feature selection from disease spots, rendering plant disease feature extraction more objective, and accelerating research progress and technological advancements. This review encapsulates the recent advancements in deep learning technology applied to the identification of crop leaf diseases. We present an overview of the current trends and challenges in utilizing deep learning in conjunction with advanced imaging techniques for the detection of plant leaf diseases. Our aim is to provide a valuable resource for researchers involved in the study of plant disease and pest detection while addressing prevalent challenges and unresolved issues in the field.

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A Critical Review of IoT Armed and AI-based Next Generation Advanced Agriculture

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Abstract

Smart farming technology has attracted a lot of interest from farmers recently. This is drivenAffectedby multiple factors, including widespread use of low-cost, low-power Internet.Internetof Things (IoT)-based wireless sensors remotely monitor and report on site conditions, climateand more reward. This empowers proficient asset the executives, for example, limiting watersystem water use, and so on. Limit the utilization of poisonous pesticides. Moreover, the newblast in computerized reasoning could make this potential Ranchers can utilize independenthorticultural hardware and improve expectations about what was in store in view of the presentand early circumstances to limit plant illnesses and bug pervasions. These two key technologiescome togetherCompletely changed traditional agriculture. This survey paper contains: (a)Detailed Tutorial On the progress made in the field of smart agricultural systems through IoTtechnology and artificial intelligence technology; (b) conduct a critical review of these twoexisting technologies and their diffusion challenges Mission; (c) discuss future trends in detail,including technological and social trends, By then, smart agricultural systems will be widely
adopted by farmers around the world.

Artificial Intelligence and Internet of Things for Ecological Agricultural and Smooth Farming

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Abstract

Advances like man-made intelligence and IoT have been utilized in cultivating for quite a while, alongside different types of state of the art software engineering. There has been a change as of late toward contemplating how to put this new innovation to utilize. Horticulture has given an enormous part of humankind's food for millennia, with its most remarkable commitment being the boundless utilization of powerful farming practices for a few yield types. The coming of state of the art IoT skill with the capacity to screen horticultural biological systems and assurance great creation is in progress. Brilliant Reasonable Agribusiness keeps on confronting imposing obstacles because of the far reaching scattering of rural systems, like the organization and organization of IoT and simulated intelligence gadgets, the sharing of information and organization, interoperability, and the investigation and capacity of colossal information amounts. This work at first examinations existing Web of-Things advances utilized in Shrewd Maintainable Farming (SSA) to find building parts that could work with the improvement of SSA stages. This paper analyzes the condition of innovative work in SSA, focuses.

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Neuro-Fuzzy and Networks-Based Records Motivated Model for Multi-Charging States of Plug-In-Electric Vehicles

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Abstract

Significant advancements have been made recently in the field of intelligent and environmentally friendly transportation. Electric transportation becomes a practical and efficient option, providing affordable a mode of transport. However, factors like as rising fuel prices, global warming, and unrestricted EV charging have forced a fundamental change in how smart grids function. The potential to negatively impact electricity systems due to the exponential growth of EV charging requirements peak demand, grid congestion, pollution from energy hubs, and potential infrastructure overload. This research the use of a hybrid search and rescue (SAR) and adaptive neuro-fuzzy predictive cost model The SAR-ANFIS technique is referred to as an interface system (ANFIS). The model is intended to accurately represent scenarios that are sophisticated dynamic energy emission dispatch In order to implement the 24-hour pricing scheme, a minimum-cost optimization problem must be solved It is used to create the suggested model using an adaptive neuro fuzzy method as the initial training data. The suggested method successfully coordinates the numerous electric car charging behaviours, such as those specified by the EPRI and stochastic, peak, and off-peak charging, at the system level. The suggested methodology has a number of benefits, one of which is that it makes coordination easier. Considering different EV charging circumstances, the development of a cost prediction model, and In creating financial preparations for upcoming EV loads, policymakers. One advantage of this technology is that its autonomy, which allows car owners to charge their electric automobiles in an economical manner.

Augmented Reality

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Abstract

Researchers have noticed a rise in reading and writing issues in youngsters over time. With numerous paper-based exercises and gaming solutions, they primarily target the difficulties of dyslexia and dysgraphia. However, they are either non-interactive, which causes kids to get bored with the games after a while, or they aren't transparent enough for parents and therapists to know how their kids are doing. In today's world of education, augmented reality is a developing technology. There is currently no workable solution for kids with dyslexia and dysgraphia, despite the market's development of various augmented reality applications. In this study, we created the ARLexic game, a serious game based on augmented reality, to help dyslexic and dysgraphic kids learn. Kids who were dyslexic and dysgraphic, ages 7 to 12, participated in an experiment.

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Securing Privacy and Interlinking Insixth Generation: A Evaluation of Potential Applications and Difficulties for VDS

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Abstract

This review delves into the security challenges that Versatile Discerning Surfaces (VDSs) face in the context of 6G wireless networks. VDSs offer potential for enhancing security in next-gen wireless systems, but their susceptibility to security threats due to easy fault tolerant and low cost is a major concern. The focus is on analyzing VDS-related security issues in conjunction with various sixth generation technologies such as millimeter wave (mm Wave), terahertz (THz), device-to-device (D2D) communication, Internet of Things (IoT) networks, multi-access edge computing (MEC), integrated sensing and communication (ISAC), simultaneous wireless information and power transfer (SWIPT), and nonterrestrial networks. The review concludes by highlighting research gaps and suggesting future directions to sustain the security of VDS-assisted Sixth generation applications.

System Key Generation Technique for MIMO-OFDWireless Communication Based on Channel Characteristics

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Abstract

Dynamic mystery key age from remote channel qualities is a promising strategy for actual layersecurity. One of the significant issues in this field is expanding the mystery key's length whilesaving its consistency and haphazardness. This paper proposes a key age technique in light of time shiftingand the correspondence of remote channels for Various Info Numerous Result SymmetricalFrequency Division Multiplexing (MIMO-OFDM) remote correspondence frameworks. In theproposed procedure, the complicated motivation reaction (CIR) of the assessed channel state data(CSI) is removed, and a quantization calculation is intended to change over the greatest pinnacles ofthe CIR into secret key pieces. The viability of the proposed key age strategy is evaluated as far asthe irregularity of the delivered key pieces with various key lengths by utilizing a measurable testset-up of the Public Foundation of Guidelines and Innovation (NIST). The proposed method isutilized in the MIMO-OFDM frameworks with different adjustment plans through Added substanceWhite Gaussian Commotion (AWGN) and Rayleigh channels. The reproduction results show thatthe mystery keys with different key lengths produced from the proposed strategy for the MIMOOFDMframeworks ensure arbitrariness. In addition, the proposed CSI-based key age method givesbetter viability as far as security when contrasted with a few existing strategies.

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Recent AI for Pedestrian Navigation Using Wearable Inertial Sensors: Analysis

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Abstract

Wearable technology the incorporation of inertial sensors allows for autonomous, hassle-free, and inexpensive pedestrian navigation. Despite how enticing it is, the approach has a number of drawbacks, including measurement noises, various device-carrying modes, various user dynamics, and unique walking characteristics. Recent studies use artificial intelligence (AI) to increase the accuracy and resilience of inertial navigation. Based on the segmentation of inertial signals, our analysis distinguishes two major groups of AI approaches: Using either fixed-length inertial data segments or human gait events (steps or strides). For each category, a theoretical study of the underlying presumptions is conducted. A 2.17-kilometer open-access dataset indicative of the variety of pedestrians' mobility environments (open-sky, indoors, forests, cities, etc.) is used to compare the performance of two cutting-edge AI algorithms (SELDA and RoNIN), one for each category, and a gait-driven non-AI method (SmartWalk).

The Hexa-X Project's Vision For Transmission And Estimation Ambitious By Artificial Intelligence And Machine Learning: For 6g, Co-Design

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Abstract

This document gives a summary of the most current developments and findings in the field of in-network artificial intelligence (AI) and machine learning (ML) from the European 6G flagship project Hexa-X. The project's goals in terms of use cases (UCs), key performance indicators (KPIs), and key value indicators (KVIs) are first briefly discussed. Then we outline the major obstacles to achieving, putting into practice, and enabling the native integration of AI and ML in 6G, both as a tool for designing adaptable, simple, and reconfigurable networks (learning to communicate) and as an inherent intelligence feature built into the network (6G as an effective AI/ML platform). We give a high-level overview of a few chosen technology enablers and their effects on the problems connected to distributed MIMO, power amplifier design,estimation, upper layer issues, incorporating distributed AI as well as administration and orchestration of AI/ML workloads. The second involves Federated. Learning and explain ability as tools for trustworthy AI that respects privacy. The high level explanation is accompanied by some typical numerical data to help close the gap between the technical enablers and the 6G targets. Overall, the paper's methodology begins with the UCs and KPIs/KVIs before concentrating on the recommended technological solutions. Solutions capable of achieving them. Finally, a brief description of the continuing AI-related regulatory actions is provided. To focus our attention on a 6G transmission and estimate design that is jointly powered by AI and ML.

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Challenges That Cloud Forensics Expert Must Overcome

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Abstract

Distributed computing has turned into a fundamental part of numerous associations IT frameworks, giving huge advantages like versatility, adaptability, and cost-adequacy. Notwithstanding, the reception of cloud innovation additionally presents new difficulties for advanced legal sciences specialists, as proof can be dispersed across numerous areas, virtualized, and open by means of web interfaces. Cloud legal sciences is turning out to be progressively significant as additional associations depend on cloud-based frameworks and applications to store and handle delicate information. The capacity to appropriately examine security episodes, information breaks, and different sorts of cybercrime in the cloud is significant to keeping up with the honesty of the computerized framework and safeguarding delicate data. The difficulties of cloud crime scene investigation have been irrefutable by the two scientists and government organizations , albeit a considerable lot of the difficulties stay unsettled.. In light of the discoveries from the review, we present a bunch of plan rules to illuminate future cloud criminological examination processes, and a synopsis of computerized relics that can be gotten from various partners in the distributed computing design/biological system. This study gives a significant outline of the present status of computerized and cloud measurable difficulties and can assist with directing future re-search in this significant field.

Keywords: Cloud computing, digital forensics,cloud forensics challenges, multi-tenancy, Privacy

Management Of Smart-IOT Business Processes: A C mote Digital Early Cardiac Study Detection And Diagnosis Of Arrhythmias

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Abstract

Cyber-physical systems (CPS) and the Internet of Things (IoT)Things (IoT) systems are primarily responsible for managing, controlling, computing, communicating, and evolving the software incorporated into gadgets. The many different technology and gadgets that facilitate Internet of Things systems and decentralized service deliverythrough the use of infrastructures like fog or edge computing, businesses use intricate business models. These intricate businessDecentralized and business-aware architectures are needed for models.BPMSs, or business process management systems, are the driving force.That specify the actions taken in IoT processes. Well-defined IoT business process management (BPM) is a well-established technique, Necessary for businesses to continue to be competitive. Although, thereare still issues that must be resolved for a seamless integration. The daily operations of a digitally native organization can incorporate IoT BPM and associated architectures. We offer an IoT architecture in this post to enable an intelligent IoT BPM that aims to tackle the issues of scheduling, resource allocation, and state management of IoT smart systems. The use of this Smart IoT BMP by the IDOVEN firm in a remote monitoring IoT system in specific ,It is illustrated that digital early cardiac arrhythmia detection and diagnosis has been proven with 2188 individuals throughout the continents, seven.

Analysis of Higher Order Tensor Independent Components for MIMO Remote Sensing of Heartbeat and Respiration Signals

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Abstract

In this research, a brand-new independent component analysis (ICA) technique is proposed. We call it higher-order tensor ICA (HOT-ICA). A robust microwave multiple-input multiple-output (MIMO) radar system that we have recently developed uses HOT-ICA to separate numerous target signals to detect breathing and heartbeat. Microwaves propagate even in environments with impediments, spreading farther with diffraction than millimeter waves do. But because of its lesser resolution, it frequently needs more signal separation. By employing channel information, or the knowledge of physical measurement circumstances pertaining, for example, to which transmitting/receiving antennas are employed, HOT-ICA achieves high robustness in the self-organization of a separation tensor. Our HOT-ICA system reliably isolates the biosignals even in an environment with obstacles, which has been challenging in numerical and living-human studies.

RESNET-LSTM Based Deep Learning for Short Term Load Forecasting and Weather Variable Prediction

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Abstract

Speedy term load estimating is specifically used in control communities to investigate the changing over examples of buyer stacks and expect the weight cost at a definite time inside the predetermination. it is one of the vital innovations for shrewd framework execution. The weight boundaries are tortured by complex variables. To adequately exploit the time assortment qualities in load information and work on the precision of burden gauging, a mixture model in view of the Lingering Brain people group and extensive transient memory is proposed in this paper. In the first place, the record with two or three component boundaries is recreated and go into Leftover organization for highlight extraction. Second, the separated capability vector is utilized with the grounds that the enter of long momentary memory for speedy time span load gauging. In conclusion, a practical model is utilized to contrast this strategy and various styles, which confirms the possibility and prevalence of enter boundary trademark extraction, and shows that the proposed joined approach has higher expectation precision. Likewise, moreover, the work additionally led to gauging probe variable elements influencing the climate.

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GenAI Unveiled: Navigating the Cybersecurity Landscape in the Age of Advanced AI Models

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Abstract

In the ever-evolving digital landscape, the rise of Generative AI (GenAI) models in 2022 stands as a remarkable achievement. With the likes of ChatGPT and Google Bard continually pushing the boundaries of complexity and capability, it is crucial to delve into their cybersecurity implications. Recent instances have demonstrated the dual application of GenAI tools in both defensive and offensive cybersecurity, necessitating a deep exploration of the associated social, ethical, and privacy considerations. This research paper offers an in-depth analysis of GenAI within the domains of cybersecurity and privacy, shedding light on their limitations, challenges, potential risks, and opportunities. Of particular note, the paper exposes vulnerabilities within ChatGPT that malicious actors can exploit to exfiltrate sensitive information while sidestepping ethical boundaries. The paper further provides a vivid depiction of successful attacks, including jailbreaks, reverse psychology maneuvers, and prompt injection attacks on ChatGPT, illustrating the magnitude of potential threats. Moreover, the research explores how cybercriminals can leverage GenAI tools to craft a diverse range of cyberattacks, considering scenarios in which adversaries might employ ChatGPT for social engineering, phishing, automated hacking, attack payload generation, malware creation, and the creation of polymorphic malware. Transitioning to the defensive aspect, the paper investigates innovative techniques that leverage GenAI to enhance security measures, encompassing cyber defense automation, comprehensive reporting, advanced threat intelligence, secure code generation and detection, attack identification, the formulation of ethical guidelines, incident response planning, and sophisticated malware detection. The paper delves into the broader implications of ChatGPT's usage, delving into the social, legal, and ethical dimensions. In conclusion, it emphasizes the persisting challenges and future directions required to ensure the secure, safe, trustworthy, and ethical application of GenAI, considering its far-reaching impact on cybersecurity.

Unlocking The Possibility of Wireless and Optical Merging Access Invention In 6G

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Abstract

The sixth generation of mobile communication (6G) systems is currently generating a lot of interest due to its potential to introduce new futuristic and challenging use cases. These use cases will require more than just communications to become a reality. With the demand for higher throughput, lower latencies, and a higher number of connections, future mobile networks will need to reach a new level of performance. Additionally, sensing, positioning, and imaging will play important roles in these anticipated use cases. The integration of techniques developed for wireless communications with those conceived for optical links will be essential in providing the necessary capabilities for the next generation of mobile networks.

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Performing Initiative Data Prefetching in Distributed File Systems for Cloud Computing

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Abstract

This paper presents an initiative data prefetching scheme on the storage servers in distributed file systems for cloud computing. In this prefetching technique, the client machines are not substantially involved in the process of data prefetching, but the storage servers can directly prefetch the data after analyzing the history of disk I/O access events, and then send the prefetched data to the relevant client machines proactively. To put this technique to work, the information about client nodes is piggybacked onto the real client I/O requests, and then forwarded to the relevant storage server. Next, two prediction algorithms have been proposed to forecast future block access operations for directing what data should be fetched on storage servers in advance. Finally, the prefetched data can be pushed to the relevant client machine from the storage server. Through a series of evaluation experiments with a collection of application benchmarks, we have demonstrated that our presented initiative prefetching technique can benefit distributed file systems for cloud environments to achieve better I/O performance. In particular, configuration- limited client machines in the cloud are not responsible for predicting I/O access operations, which can definitely contribute to preferable system performance on them.

Exploring the Intersection of Virtual Reality and Education: Enhancing Learning Experiences in the Digital Age

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Abstract

A unique conference called "Exploring the Intersection of Virtual Reality and Education: Enhancing Learning Experiences in the Digital Age" brings together academics, researchers, and business executives to discuss how VR may transform education. This event features a variety of VR uses, such as science demonstrations, historical recreations, virtual field trips, and group learning. Participants will exchange views on incorporating VR into the curriculum to improve critical thinking and problem-solving abilities, explore practical techniques, and debate obstacles. Through sharing best practices, success stories, and cutting-edge research, this conference fosters communication between educators and technology specialists. Join us to influence the direction of immersive learning.

Keywords: VR in Education Conference, Immersive Learning Event, Digital Education Transformation, Interactive Learning environments.

Smart Lighting: A Mood Detection System using Temperature and Heart Rate Sensors

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Abstract

Smart lighting is a technology that allows users to control the lighting of their environment using sensors and automation. In this paper, we present a system that uses a thermophilic sensor and a heart rate sensor to measure temperature and heart rate, respectively. These values are then used to detect the user's mood, and based on the detected mood, a LED light is activated to create an ambient lighting that would make the user feel better. The system is implemented using an Arduino Uno microcontroller and the code for the same is provided in the paper. This study presents a novel approach to mood detection and ambient lighting using physiological parameters. By combining temperature and heart rate measurements with an Arduino Uno and LED, the system is able to accurately detect and respond to an individual's emotional state. The proposed system has the potential to enhance emotional well-being and improve the quality of life for individuals, making it a promising area for future research and development.

Keywords: Smart Lighting, Mood Detection, Temperature Sensor, Heart Rate Sensor, Arduino Uno, LED

Soil Nutrient Management System for Perennial Cashew Cultivation Using Random Forest Classifier

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Abstract

Cashew cultivation is a major source of income for many tropical and subtropical regions. Cashew production contributes significantly to the economies of several countries, providing employment and livelihoods for millions of people. To ensure optimal cashew nut production, it is essential to manage soil nutrient levels effectively. The Soil Nutrient Management System for Cashew is an innovative solution designed to help cashew farmers maintain soil fertility and maximize yields. Through Machine Learning (ML), information may be gleaned from datasets. Along with NPK values of soil, inputs include the local soil type, temperature, rainfall, and humidity. By examining the numerous connected ascribe success locations, it was possible to determine how much important nutrients, like as Nitrogen (N), Phosphorus (P), and Potassium (K), were present in the soil and it will be helpful for the understanding of soil fertility level of the area. Based on the input factors, ML trained model will provide suggestions for the Cashew cultivating farmers for better yield. In our proposed work, Random Forest Algorithm was used to provide a better prediction. The proposed system will provide fertilizer recommendations based on the soil quality and suggest farmers to pick best fertilizers. Together with a decrease in the farmers' input efforts, these strategies will increase the productivity of the fields.

Keywords: Cashew, Soil Nutrient Management system, Machine Learning, NPK, Fertilizer Recommendation

Agromax: Sustainable Precision Farming Rover Artificial intelligence (AI) and Internet of Things (IOT)

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Abstract

"AgroMax: Sustainable Precision Farming Rover" is an innovative agricultural solution at the forefront of modern farming technology, seamlessly integrating IoT, AI, and renewable energy sources. This advanced rover is designed to optimize soil health, seeding, weeding, and fertilization processes, empowering farmers with precision and sustainability. Key features include precision soil management through NPK and moisture analysis, smart seeding and weeding mechanisms, and efficient fertilizer spraying with minimal environmental impact. The rover operates on renewable energy, predominantly solar power, ensuring continuous and eco-friendly farming practices. User-friendly interfaces, robust data security measures, and a commitment to environmental consciousness further enhance the AgroMax experience. With scalability and adaptability, AgroMax promises to revolutionize agriculture, promoting resource efficiency and a greener future for global farming communities.

Email Spam Detection Using Machine Learning

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Abstract

Dispatch spam bracket is a critical task in moment's digital world, where the quantum of spam emails has increased dramatically. In this design, we propose to use machine literacy (ML) and natural language processing (NLP) ways to classify dispatch dispatches as either spam or licit. The design aims to develop an effective spam classifier that can directly identify and filter spam emails from licit bones.

The dataset used in this design will consist of a large number of dispatch dispatches with their corresponding markers (spam/ ham). We'll use NLP ways similar as tokenization, stop word junking, stemming, and point birth to preprocess the textbook data and excerpt applicable features. We'll estimate several ML algorithms similar as Naive Bayes, Support Vector Machines (SVMs), and Random timbers to determine the best model for spam bracket. We'll also perform hyperactive parameter tuning to optimize the model's performance. The delicacy of the classifier will be Measured using evaluation criteria similar as perfection, recall, and F1- score. The design's issues will include a spam classifier model that can be integrated into an dispatch system to automatically filter spam emails, perfecting dispatch security and productivity. also, the design will contribute to the advancement of NLP and ML ways for dispatch spam bracket

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Achieving Security in Cyber World through Blockchain as a Taxonomy

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Abstract

The contemporary cyber landscape is marked by an escalating need for robust security measures as digital threats become more sophisticated. This paper addresses this challenge by presenting a comprehensive taxonomy that elucidates the integration of blockchain technology as a pivotal strategy for fortifying cybersecurity. Blockchain, characterized by its decentralized architecture and cryptographic underpinnings, emerges as a promising paradigm to address these challenges. The taxonomy delineates and categorizes the multifaceted applications, protocols, and mechanisms within blockchain that contribute synergistically to the cybersecurity domain. By systematically exploring these elements, the paper provides a structured and nuanced understanding of how blockchain serves as a resilient foundation for securing digital assets and communication channels. The decentralized nature of blockchain introduces a paradigm shift, mitigating single points of failure and reducing susceptibility to malicious activities. Through an in-depth analysis, the paper examines the role of blockchain in securing data integrity through consensus mechanisms, ensuring confidentiality through cryptographic techniques, and bolstering availability through distributed ledger technologies. Additionally, it explores emerging trends such as privacy-focused blockchains and the interplay between blockchain and other cutting-edge technologies like artificial intelligence in enhancing overall cybersecurity. Furthermore, the taxonomy delves into real-world applications where blockchain has demonstrated efficacy in fortifying cybersecurity, ranging from securing financial transactions to ensuring the integrity of supply chain data. In conclusion, this work contributes a comprehensive taxonomy that not only illuminates the intricate components of blockchain pertinent to cybersecurity but also underscores the transformative potential of blockchain technology in establishing a resilient security infrastructure for the ever-evolving cyber world. As the digital landscape continues to advance, understanding and harnessing the power of blockchain becomes imperative for creating a secure and trustworthy cyberspace.

Robust Layout Independent License Detection and Recognition Model Based On Attention Method

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Abstract

In recent years, the automatic detection and recognition of license plates have become crucial for various applications, from traffic management to security surveillance. However, a significant challenge lies in accurately detecting and recognizing license plates across varied layouts and backgrounds. This paper presents a robust, layout-independent license plate detection and recognition model that leverages the attention mechanism. The model is designed to focus on the most relevant parts of an image, thereby filtering out potential noise and distractions, which can be especially prevalent in complex environments. Our approach seamlessly integrates a two-stage process: first, accurately detecting the license plate regardless of its position, orientation, or layout, and second, recognizing the alphanumeric characters on the plate. We tested our model on a diverse set of images, including those with challenging backgrounds, different lighting conditions, and varied plate designs. The results demonstrated superior performance in both detection and recognition rates compared to existing models. Moreover, the attention mechanism proved instrumental in improving the model's ability to handle plates from different regions and designs, making it a versatile solution for real-world applications.

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An IoT-Based Smart Home Automation System

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Abstract

Advances in technology, particularly in the field of internet-of-things (IoT), have led to the development of smart homes. These homes are equipped with automation systems that allow home owners to remotely monitor and control their appliances, improving their quality of life by reducing manual efforts. With busy schedules, individuals often leave their appliances running even when they are not physically present at home. This leads to increased electricity consumption and higher utility bills. Additionally, elderly and physically challenged individuals may struggle with manual tasks such as turning lights on/off, controlling fans, TVs, and other appliances. This proposal suggests the development of a smart home system that can automate the operation of home appliances and make decisions without human interference. The system includes an interactive graphical user interface (GUI) on an Android device, giving users the flexibility to choose between remote control from their device or enabling automatic control using sensors connected to a PIC microcontroller. At the receiving end, the microcontroller interfaces with sensors such as temperature, light, passive infrared (PIR), and a Wi-Fi module for internet connectivity to the Android application. In addition, this paper presents a smart home system that has an interactive graphical user interface on an android device to allow the user to choose whether to remotely control and monitor the home from their android device or to enable automatic control using sensors that are interfaced with a home-based PIC microcontroller. At the transmitting end, the GUI application on the Android device sends commands to the microcontroller, which in turn controls the appliances connected to the sensors. This proposed system offers several benefits, including energy conservation by automatically turning off appliances when not in use. It also provides convenience and accessibility for both physically challenged and healthy individuals by allowing them to remotely control their home appliances.

Online voting system using face recognition

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Abstract

In the digital period where hacking and bypassing a system is easy, tampering of data is always possible leading to bad situations. Blockchain is used to store data which is near insolvable to change or tamper with as it's veritably secure in nature. Voting as a process in any nation is an essential event and if votes get misestimated by any external source it'll be dangerous. To avoid similar kinds of situations and making it more comfortable blockchain technology comes in acknowledgment. This paper proposes a decentralized public e-voting system grounded on blockchain technology. It includes an admin panel to schedule the voting, manage campaigners and declare the results. The web operation will give the druggies with an interface to enter their Aadhar card ID as textbook input and a print of themselves at the time of voting. The eligibility of the namer will be checked at the time they enter their Aadhar card ID. Eligible namer's phone numbers will be indicated via One Time word OTP). After namer verification, individual choosers will be considered eligible for voting. During voting, choosers will be covered through a webcam/ front camera. The votes will be stored in a blockchain and any tampering would be detected fluently. The address and the corresponding constituency will be checked in the backend. Voting results will be declared on a specified date and will be handled by the admin. The results will be displayed graphically with colorful options to choose from and will also include once results and statistics

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Decibel Dilemma of the Deepawali Festival: An ArcGIS Comparative Spatial Analysis of Chennai's Noise Pollution

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Abstract

A comprehensive assessment of noise pollution is of utmost importance for developing countries such as India, where it can adversely affect human health. The celebration of Deepawali in Chennai is often marked by the ignition of firecrackers leading to a notable increase in noise levels. This study primarily focuses on spatial analysis of noise pollution in Chennai City during the Pre-Deepawali and on Deepawali festival day using Arc Gis software for the year 2021 and 2022.The comparative spatial analysis of noise pollution during the Deepawali festival in Chennai for the years 2021 and 2022 reveals strikingly similar trends. In 2021, noise pollution levels ranged from 55 to 66 dB in the pre-Deepawali period and increased to 69 to 79 dB during Deepawali. In 2022, the patterns closely mirrored those of the previous year, with noise levels ranging from 54.8 to 64.5 dB before Deepawali and surging to 66 to 79.7 dB during the festival. This comparative analysis underscores the consistent escalation of noise levels during Deepawali festivities, consistently surpassing permissible limits. These findings emphasize the need for measures to mitigate noise pollution during festive celebrations to protect the well-being of the population.

Keywords Noise pollution, Deepawali, Spatial analysis, ArcGIS

Design and Analysis of Multistage Pump Impeller Using ANSYS

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Abstract

The flow field in centrifugal pump is influenced by fluid rotation and curvature, which are highly turbulent and unsteady. Due to separation and recirculation of flow, it became very complex. In order to study these changes in the flow field lots of work has been done previously, both experimentally and numerically. The scope of this project is to improving strength of the pump by Re-modelling the pump casing and Impellers with the help of 3D modelling software and finds the Stress Analysis for the Impellers using Ansys software by static condition. The design analysis software integrated within ANSYS 12.0 to perform steady-state stress and strain analysis. The first step in the analysis process is to transfer 3-D impeller geometry created in Solid works 10.0. A very accurate representation of stiffness and mass of the impeller is required. The Finite Element Analysis (FEA) simulation then calculates the structural analysis at both zero rpm and 1470 rpm in the design speed to include stress stiffening effects using actual boundary condition and material properties. From the plotted mode shapes, it is important to identify blade and disk modes that are critical in assessing the likelihood of dangerous resonance conditions. Impeller failures can be very costly both in terms of dollars and in lost production, making the avoidance of these failures.

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Impact Of Foliar Nutrition of Seaweed Extract on Growth and Yield of Irrigated Greengram (Vigna Radiata)

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Abstract

The field experiment was conducted during the kharif season (June-September, 2021) in Ambagarathur village, Thirunallar Taluk, Karaikal District of Puducherry to study the effect of foliar nutrition of seaweed extract on irrigated greengram. Seaweed and seaweed-derived products have gained increasing attention as bio-stimulants in crop production due to their rich nutrient content and the presence of various growth-regulating compounds. This abstract provides a concise overview of the importance of seaweed extracts in agriculture, emphasizing their positive impacts on plant germination, crop performance, and the enhancement of nutritional quality. These effects are attributed to the presence of essential macronutrients and micronutrients, along with growth regulators such as cytokinins, auxins, gibberellins, and betaines. Furthermore, the use of seaweed extracts has been linked to early seed germination, improved crop yields, and increased resistance to both biotic and abiotic stressors. This paper serves as a review and exploration of the potential applications of seaweed in irrigated green gram crop, shedding light on its role in promoting sustainable and high-quality crop production..
Keywords: Greengram, yield, , foliar spray, seaweed extract

Controlled Drainage Cum Subirrigation – Overview

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Abstract

Water logging adversely affected agricultural lands creating doubts about the sustainability of irrigated agriculture. Many irrigation project command areas of Tamil Nadu lack adequate supply of water to agriculture in three to four months every year due to inadequate water resources. At the same time water logging problems due to excess water release from reservoirs during heavy rainfall periods from inter-state rivers is the common problem in some low lying areas. Hence a dual system to tackle water logging in monsoon season and scarcity during summer is the need of the hour. Water table management system (i.e. Controlled Drainage cum Subirrigation system) is the next level of improving water management in irrigated agriculture. The water table management system was designed to work effectively both in monsoon season as controlled drainage system and as subirrigation system during summer.

Keywords: Controlled drainage, Subirrigation and Waterlogging

Economic Analysis of Hi-Tech Hydroponic Systems of Leafy Vegetables

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Abstract

Hydroponics is the growing of plants in a liquid nutrient solution with or without the use of artificial media. The reasons for using hydroponics are to grow fresh produce and to protect the health of the environment. The greenhouse is made up of galvanised iron pipes bent to form a fan- and pad-type polyhouse structure. The shape and design of the polyhouse were aerodynamic and pre-galvanised steel tube structures with an 8 m x 4 m grid, and the top height of the structure was 5 m. The modes of operation of hydroponics are the nutrient film technique and the deep water culture technique. The budget estimation for a high-tech hydroponic system is around Rs 2 crore per acre. The revenue generated from the hydroponic system is 1.2 crores per year of lettuce, 1.0 crores per year of palak, and 1.7 crores per year of kale. The benefit-cost ratio of a hydroponic system is 3.25.

Keywords: Economic analysis, Deep water culture, Hydroponics, Nutrient Film Technique and revenue generation

Analyzing the Influence of Organic Manure on the Growth and Yield of Amaranthus dubius for Enhanced Agricultural Practices

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Abstract

This study aimed to assess the effects of different doses of organic and inorganic manures on various plant characteristics, both quantitative and qualitative. The parameters examined included plant height, leaf length, leaf breadth, number of leaves, shoot weight, leaf weight, yield plot-1 and yield ha-1, dry matter content, protein content, and total chlorophyll content. Out of the eighteen treatments tested, one particular treatment, denoted as T10, stood out as the most promising. T10 involved the application of the treatment T10 Vermicompost (7.5 t ha-1) + 75 per cent Recommended Dose of Fertilizers (75 kg ha-1 N: 25 kg ha-1 K2O). This treatment consistently delivered the best results, surpassing the control group across multiple parameters. In terms of plant growth, T10 resulted in a plant height of 54.09 cm, leaf length of 11.48 cm, and a remarkable 67.10 leaves, all of which outperformed the control group. When it came to yield-related factors, T10 significantly boosted leaf weight (14.90 g), shoot weight (22.30 g), plot-wise yield (2.78 kg), and hectare-wise yield (13.87 tons) in comparison to the control group, demonstrating its superiority in enhancing crop productivity. Notably, T10 also excelled in improving qualitative aspects, particularly protein content. The treatment with vermicompost and inorganic manures recorded the highest protein content among all the treatments. In summary, the findings of this study underscore the effectiveness of treatment T10, which combines Vermicompost with inorganic manures, in enhancing plant growth, increasing yields, and improving the qualitative characteristics of crops. This approach presents a promising avenue for sustainable and high-yield agricultural practices, with potential implications for optimizing crop production and nutrient quality.

Keywords: Amaranthus, organic and inorganic manures, yield and quality components

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Challenges and Opportunities in the Microgreen Industry: Enhancing Safety, Quality, and Shelf Life

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Abstract

Microgreens have garnered significant attention in recent years, thanks to their exceptional nutritional profile and diverse culinary appeal. These tiny, edible seedlings, comprising an array of vegetables and herbs, have been primarily employed by the restaurant industry since their introduction in 1996, adding visual and flavor sophistication to dishes. However, the rapid growth of the microgreen industry has brought forth notable challenges. While microgreens share similarities with sprouts, which have been associated with food borne illness outbreaks, they have been the subject of seven recent recalls, indicating a potential for carrying food borne pathogens. Thus, it is imperative to take proactive steps during production to reduce the risk of such incidents. One major bottleneck hindering the growth of this industry is the swift quality degradation that occurs soon after harvest, leading to elevated prices and a limited scope of local sales. Once harvested, microgreens are prone to dehydration, wilting, decay, and the rapid loss of certain nutrients. Although research has delved into pre-harvest and post-harvest interventions, such as calcium treatments, modified atmosphere packaging, temperature control, and controlled lighting, to maintain quality, augment nutritional value, and extend shelf life, there is a pressing need for further optimization of both production and storage conditions. Such efforts are pivotal in enhancing the safety, quality, and shelf life of microgreens, thereby broadening their reach into potential markets.

Keywords: Microgreens, nutritional value, challenges, quality components

Experimental Investigation of Paver Concrete Block Using Recycled Plastic

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Abstract

The rapid industrialization and urbanization in the country leads lot of infrastructure development. This process leads to several problems like shortage of construction materials, increase productivity of wastes and other products. This paper deals with the reuse of waste plastics as partial replacement of course aggregate in M25 concrete. Usually M25 concrete is used for most constructional works. Waste plastics were incrementally added in 5%, 10%. 15%, 20% and fully plastics to replace the same amount of aggregate. Paver blocks are casted and tested for 7 and 14 days strength. The result shows that the compressive strength of M25 concrete with plastic is for Paver blocks. At present nearly 56 lakhs tones of plastic waste is produced in India per year. The degradation rate of plastic waste is also a very slow process. Hence the project is helpful in reducing plastic waste in a useful way. In this project we have used plastic in M25 concrete with the ratio (1:1:2). Amount of waste plastic being accumulated in 21" centuries as created big challenges for the disposal, the obliging the authorities to invest in felicitating the use of waste plastic coarse aggregate in concrete is fundamental to the booming construction industry. Disposal of plastic waste in in an environment is considered to be a big problem due to its very low bio-degradability and presents in large quality.

A Research of the Impact of Novel Polypropylene Fiber in Ordinary Portland Cement Concrete and Compare the Flexural Strength by M25 Conventional Concrete

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Abstract

The main aim of this study is to improve the strength of the plain cement concrete. Materials and Methods: A research of the impact of Novel Polypropylene Fiber in regular Portland Cement Concrete has been made in an effort to enhance these features of plain concrete. Results: Flexural strength tests for M25 grade concrete were performed at 28 days as part of this experimental inquiry to examine the impact of fibers at various percentages of 4% on the strength qualities of concrete. The outcomes show that flexural strength is increased by the addition of new polypropylene fiber to traditional Portland cement concrete. The SPSS carried out has a significance of 0.000 ($p<0.05$). This shows that there is a statistical significant difference between the two groups considered in this study. The comparison of M25 quality and hybrid reinforced concrete beams with traditional concrete beams, with mean values (13.0372, 16.0122), standard deviation (0.20096, 0.65048), and standard error (0.04737, 320.155). With the addition of Novel Polypropylene Fiber to regular Portland Cement Concrete, the findings have shown an improvement in flexural strength. Conclusion: The flexural strength of the concrete mixture is only slightly enhanced by the inclusion of fibers.

Keywords: Novel Polypropylene Fiber, Cement, Conventional Concrete, Coarse Aggregate, Flexural Strength, M25 Grade, Concrete, Water.

A Design of Dynamically Simultaneous Search GA-based FuzzyNeural Networks: Comparative Analysis and Interpretation

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Abstract

In this paper, we introduce advanced architectures of genetically-oriented Fuzzy Neural Networks (FNNs) based on fuzzy set and fuzzy relation and discuss a comprehensive design methodology. The proposed FNNs are based on 'if-then' rule-based networks with the extended structure of the premise and the consequence parts of the fuzzy rules. We consider two types of the FNNs topologies, called here FSNN and FRNN, depending upon the usage of inputs in the premise of fuzzy rules. Three different type of polynomials function (namely, constant, linear, and quadratic) are used to construct the consequence of the rules. In order to improve the accuracy of FNNs, the structure and the parameters are optimized by making use of genetic algorithms (GAs). We enhance the search capabilities of the GAs by introducing the dynamic variants of genetic optimization. It fully exploits the processing capabilities of the FNNs by supporting their structural and parametric optimization. To evaluate the performance of the proposed FNNs, we exploit a suite of several representative numerical examples and its experimental results are compared with those reported in the previous studies.

Keywords: Fuzzy set, Fuzzy relation, Fuzzy neural networks, Genetic algorithm, Polynomial fuzzy inference, dynamically simultaneous search

Design and Implementation Stand Alone Solar System for Water Pump

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Abstract

An effective multi-input transformer linked bidirectional dc-dc converter with a grid connected hybrid PV-AC battery system is described in this study as a control approach for managing power flow. The suggested system intends to meet load demand, control the flow of energy from various sources, inject extra energy into the grid, and charge the battery from the grid as and when necessary. Wind energy is captured using a transformer-coupled boost half-bridge converter, whereas PV energy is captured using a bidirectional buck-boost converter that also controls battery charging and discharging. For feeding ac loads and interacting with the grid,a single-phase full-bridge bidirectional converter is employed. The suggested converter architecture has fewer power conversion stages, uses fewer components, and experiences lower losses than hybrid systems currently connected to the grid. As a result, the system is more reliable and efficient. The performance of the suggested control method for managing power flow is demonstrated by simulation results acquired using MATLAB/Simulink in a variety of operating modes. To show how the system can operate in various modes, thorough experimental experiments are used to validate the effectiveness of the topology and the proposed control approach.

Keywords: Solar Panel, DC-DC Converter , Battery, ATmega 328 microcontroller

Design and Implementation of Real-Time MMC Based PMSM With Bess

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Abstract

New advanced power conversion systems play an essential role in the extension of range and life of batteries. This paper proposes a new modular multilevel converter with embedded electrochemical cells that achieves very low cell unbalancing without traditional balancing circuits and a negligible harmonic content of the output currents. In this new topology, the cells are connected in series by means of half-bridge converters, allowing high flexibility for the discharge and recharge of the battery. The converter features a cell balancing control that operates on each individual arm of the converter to equalize the state of charge of the cells. The paper shows that the proposed control does not affect the symmetry of the three-phase voltage output, even for significantly unbalanced cells. The viability of the proposed converter for battery electric vehicles and the effectiveness of the cell balancing control are confirmed by numerical simulations and experiments on a kilowatt-size prototype.

Keywords: Battery, electric vehicle, emulation, modular multilevel converter, real-time, state of charge

Electric Vehicle Technologies Gratuitous Hybrid Energy E- Vehicle

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Abstract

Automobile manufacturers are creating electric, hybrid electric and plug-in hybrid electric vehicle since response to regulations aimed at reducing emissions and improving the environment. Power electronics is a fundamental technology for the development of these greener vehicles and the implementation of advanced electrical architectures to meet the requirements of a higher electrical load. An overview of current trends, potential vehicle strategies, and the role of power electronic sub systems are given in the form of gratuitous hybrid energy electric vehicle. For the successful development of these vehicles, the needs for electric motor drives and power electronic components are also provided. This system's primary goal is to charge the battery of electric vehicles using hybrid energy instead of external power ports. The energy is gained from the generator and the solar energy, which are arranged in the vehicle. This is very useful idea because the vehicles need not to stay for in particular place more than the hours to charge its battery. This increases the charging ability, energy loss minimization, and voltage deviation reduction cost minimization. This can also improve the battery re-charging cycle thus this can make the vehicle performance batter then the present electric vehicle. Thus, this can lead our country people to early buy the electric vehicle and reduce the carbon emission from the vehicle.

Keywords: Electric Vehicle Technologies, Hybrid Energy E-vehicle, Solar Energy, Bidirectional suspension power generating system.

Asymmetric Satellite-Under Water Monitoring for Researcher's Health Conditions Using Visible light Communication

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Abstract

In this paper, we investigate the performance of the proposed oceanic monitoring system that connects oceanic life with terrestrial life. Multiple sensor nodes (SN) are deployed at different water levels that collect sensor's data and transmit it to ship underwater visible light communication (UVLC). This paper mainly focuses on the health monitoring system for researchers by transferring the data by using UVLC. This system senses different health specifications like heartbeat and body temperature. The system transfers the data to the nearby researcher and ship only during the abnormal health issue. The system is mainly used in ARDUINO UNO. The ARDUINO UNO is the main controller of the system.

Keywords: ARDUINO UNO, Heartbeat sensor, Body temperature sensor, LIFI TX & RX, LCD display

Open Circuit Fault Diagnosis PWM Rectifier and Random Forest Classification

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Abstract

Fault diagnosis is becoming increasingly important in improving the reliability of Power electronic devices. The research in this paper focuses on the issue of the faulty operation that can occur after partial IGBT open circuit faults in three-phase PWM rectifier Circuit. To promptly and effectively diagnose faults and to determine their locations, fault diagnosis a Method based on transient Characteristics. And random forest classification is proposed. First, the characteristics of single and double IGBT open-circuit fault in three-phase PWM rectifier certain are analyzed. It is discovered that these faults do not immediately Manifest. Instead, they exhibit fault characteristics in the Corresponding time sequence. Then the random forest Classifier is traced using transient fault samples from the those- Phase PWM Grant. Finally generalized testing is performed on that was not involved in the Training process, with an accuracy rate of 98% the Use of frequency distribution graphs for visual analysis of the diagnostic results solves the problem of diagnosing multiple IGBI open circuit faults.

Keywords: Three phase PWM rectifier, IGBT, Power electronics devices, Power supply, Open circuit fault.

Investigation of CNC turning operation on AZ91D Mg alloy using MQL setup With Surfactants Addition

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Abstract

Machines have become an integral part in Industrial concerns and processes for so many decades. The success of processing especially in machinery manufacturing sector is largely dictated by the efficiency of the tools being used. Specifically, in the cutting sector, tool wear is a significant parameter which impacts the overall efficiency of the model. Tools tend to wear with age and due to a number of parameters like the substrate characteristics on which they are applied, environmental conditions, maintenance and lubrication etc. However, due to continuous vibration and frictional forces at the cutting surface, tools tend to wear. This severely affects the intended application. Metal cutting fluids offer an efficient alternative in maintenance of the tool condition through effective lubrication which tends to control the heat being generated at the cutting point. They are quite a cost-effective approach. However, they are not a good choice as they pose threats to employee health condition as well as contribute to increasing pollution. Due to these problems, some of these options include minimal machining & optimum use of surfactants mixed with the lubricants and with nano additives mixed with the lubricants. Hence, we choose to go with optimization of lubrication quantity by using Minimum Quantity Lubrication (MQL) setup for optimization with surfactants

Keywords: Magnesium alloy AZ91D, MQL setup, Surfactants, Nano additives

Investigation of Mechanical and Corrosion Behaviour of AZ61 Mg Nanocomposites with Boron Carbide Particles

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Abstract

Magnesium (Mg) based composites are new lightweight and advanced substances used in automotive, aerospace, space, electronics, sports activities, and medication sectors, broadly speaking, due to their decreased density compared to aluminium and steel. But the synthesis of magnesium-based composites is relatively tricky. In the current work, Mg composites were processed using alloy AZ61 as a matrix and B4C reinforcement particles of an average size of 100 nanometers in various percentages (2.5, 5, 7.5 and 10 wt. %). An uncomplicated and economically stable method of stir casting process was initially engaged to devise feeble-weighted AZ61-B4C composites to enhance their mechanical and corrosive resistance. The microstructural characterization of the specimen's as-cast divulged considerately homogenous allocation of B4C particle, fine-bonded B4C to the AZ61 matrix from the microstructure images taken from scanning electron microscope (SEM). It was revealed that B4C inclusion slightly impacts the microporous structure in a state as caste, fracturing and dispersion of the Mg17Al12 phase resulted in the rise significantly heightening in terms of tensile, compressive strength, hardness and related corrosive properties. Using a scanning electron microscope (SEM), the advertence of the surface escorted for AZ61-B4C composites. These results constitute that the AZ61-B4C composites could be considered a prominent material with a relatively more significant compressive strength and corrosion-resistance in the constituents of considerable significance, chiefly in the auto and aerospace components.

Keywords: AZ61-B4C composite; Stir casting; Mechanical properties; Corrosion behaviour

Design and Fabrication Of Refrigeration By Peltier Module

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Abstract

The impact of continuing scientific and technological advancement has produced a range of systems that can be utilized to provide a refrigerator effect using thermoelectric cooling. Such a device is also known as a solid state refrigerator and a Pettier heat pump. Although cooling is the most common application in practice, it can be used for both heating and cooling. It may also be used to manage the temperature and can heat or cool. It benefits from not having any moving parts and being maintenance-free. A modern substitute is thermoelectric refrigeration, which uses less electricity to create cooling effects while still being able to fulfil today's energy demands. Therefore, the need for thermoelectric refrigeration in developing countries is very high where long life and low maintenance are needed. The objectives of this study is to develop a working thermoelectric refrigerator to cool a volume of 2 L that utilizes the Peltier effect to cool and maintain a selected temperature range of 3° C to 23° C. The design requirements are to cool this volume to temperature within a short time and provide retention of at least next half an hour. The design and fabrication of thermoelectric refrigerator for required applications are presented.

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Fabrication of superhydrophobic composite coating using BN/MWCNT via supercritical fluid processing

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Abstract

We utilized a fast method of supercritical fluid processing (SCF) to create superhydrophobic composite coatings by combining h-boron nitride (h-BN) and multi-walled carbon nanotubes (MWCNT) to form hierarchical nanostructures on fiber-reinforced polymer (FRP) sheets. The resulting BN-MWCNT composite coating showed a high water contact angle of 169.4°. Upon closer inspection, the surface morphology of the composite coatings revealed that BN nanosheets completely covered MWCNT in all directions. The presence of both aligned nano- and micro-surface roughness in the coating was investigated using an atomic force microscope (AFM). An X-ray diffraction (XRD) study indicated that h-BN nanosheets significantly impacted the phase separation of MWCNT. The exceptional structural stability of the obtained BN-MWCNT superhydrophobic composite coating was confirmed by Raman spectroscopy. This study discovered a cost-effective approach to creating BN-MWCNT composites using the SCF technique.

Keywords: Boron nitride, Supercritical fluid processing, Multiwalled carbon nanotubes Superhydrophobic coatings

Exploration of Macro Properties and Tribological Characteristics of Al6082 Hybrid Metal Matrix Composites

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Abstract

The present study deals with the investigation of effect of reinforcements (B_4C+ZrO_2+graphite) particles on mechanical properties of aluminum alloy (Al6082) composites, fabricated by Stir casting method. The MMC specimens were prepared by varying weight percentage of the reinforced particles 0% B_4C & 0% ZrO_2 ,1% B_4C & 2% ZrO_2, 2% B_4C & 4% ZrO_2, 3% B_4C & 6% ZrO_2 and 1% graphite respectively and keeping all other parameters constant. The various mechanical properties and wear behavior had been analyzed for the fabricated MMC's. During metal matrix investigation shows higher tensile value obtained at Sample C (ZrO_2 4% +2% B_4C+ Gr 1%). The lower wear rate and higher hardness value were obtained at Sample D (3% B_4C, 6% ZrO_2 & 1% graphite), due to higher weight percentage of reinforcement enhanced the properties of this metal matrix composites. For impact test, Sample A had higher impact strength.

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Analysis of Borided and Inducted Hardness Tested AISI 1045 Steel Rods

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Abstract

The structures and characteristics of different materials are profoundly altered when the temperature is changed. In this study, rod samples made of AISI 1045 medium carbon steel were bored and then hardened and tempered by induction. The goal was to increase the surface layer's hardness. Induction coils are utilised in the process of applying boron paste components to the surfaces of the steel rods. The treated steel rods are put through a series of tests that are designed to analyse both their hardness and their microstructure. In order to evaluate the effectiveness of the treatment on the hardness of the specimens, a total of thirty samples are evaluated using a range of temperatures, dwell times, and feed rates. During the process of tempering, Taguchi optimization is performed in a furnace to optimize the better parameter results for removing internal stresses. This is done so that the stress can be eliminated. The scanning electron microscope (SEM) and the optical microscope are the two types of instruments that are used in the process of analysing materials for both their chemical composition and their microstructure. The formation of martensitic structures has contributed to an increase in the material's hardness values. At temperatures between 800 and 850 degrees Celsius, the values of the material's hardness are lower, while at a temperature of 1208 degrees Celsius, the maximum value of the hardness is 690 HV. According to the results of laboratory tests, an increase in temperature results in an increase in the surface hardness of AISI 1045 steel. The results of the comparison show that AISI 1045 steel that has been subjected to both boron and induction treatments has a greater hardness value than AISI 1045 steel that has only been subjected to induction treatment.

Keywords: Hardening, Microstructure, Dwell Time, Boriding, Tempering.

Gprediction of Functionality Aspects Interms of Advanced Bio Sensors Towards Sustainable Developments in Bio Medical Applications – A Viable Approach

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Abstract

In the Context of Bio Medical applications, it is very much essential for upgrading the implementation of functionality through bio sensors. However, it is noticed that, the viability of expected reliability of bio sensors towards progressive aspects must be validated by using suitable mechanisms for capturing the performance in medical field. Of course, it is also evident that bio sensors are broadly utilize in the fields of disease monitoring, drug discovery, detection of pollutant species, identification of disease causing micro organisms and indicators of disease in bodily fluids. Since Bio sensors are mainly focusing on combining a biological component for detecting an analyte and a physicochemical components for producing a measure signal. The functionality of bio sensors is considered as an important factor for monitoring blood gas levels during surgery in medical field and it is also necessary to predict the performance of various types of bio sensors including electro chemical bio sensors interms of amperometric as well as pontentiometer bio sensors. Hence, a modest attempt is made for predicting the functionality aspects in terms of advanced bio sensors towards sustainable developments in Bio medical applications as a viable strategy. Capturing of modeling aspects of Bio sensors for surgical phenomenon is validated by using Bio informatics as well as synthesis.

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Fuzzy Graph in Dominating Set Wireless Sensor Network

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Abstract

Fuzzy graph and fuzzy sets theory are powerful mathematical tools for modeling. They are facilitations for approximate reasoning in decision making in the absence of complete and precise information. In this paper uses of dominating concept in Fuzzy Graph. The online interpersonal organization has been grown essentially in the ongoing years us a made of correspondence, sharing the data and spreading the impact. The issue of using the online informal community for taking care of the social issues in the physical world. The dominating set assumes a fundamental job in examining the impact on a genuine online informal organization informational index through reproduction. A WSN (Wireless sensor network) is a sort of remote system which comprises of spatially disseminated self-ruling sensors to screen the physical or ecological circumstances.
Keywords: Dominating set on WSN is a sort of remote system.

The Social impact in Virginia Woolf's Mrs. Dalloway

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Abstract

Mrs. Dalloway is a novel by Virginia Woolf published on 14 May 1925. It the details a day in the life of Clarissa Dalloway, a fictional upper class woman in post First World War England. It is one of Woolf's best-known novels. The working title of Mrs. Dalloway was The Hours. The novel began the two short stories, "Mrs. Dalloway in Bond Street" and the unfinished "The Prime Minister". The book describes Clarissa's preparations for a party she will host in the evening and ensuring party. With an interior perspective, the story travels forwards and backwards in time, to construct an image of Clarissa's life and the inter war social structure. The novel addresses the nature of time in personal experience through multiple interwoven stories. In October 2005, Mrs. Dalloway was included on TIME Magazine's list of the 100 best English language novels written since its first issue in 1923.

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Green Synthesis and Characterization Of Copper Oxide (CUO) Nanoparticle Using Punica Granatum Leaf Extract

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Abstract

A brief introduction to nanoscience and nanotechnology, classification of nonmaterial's, properties of nanomaterials and nature of the materials used in the synthesis process are discussed. The brief review of literature and the aim of this study are also included. A simple chemical precipitation method has been suggested to cuo nanoparticles using fruits of pomegranate (punica granatum) leaf extract .The characterization techniques employed are given in detail. We report less toxic, inexpensive synthesis of copper oxide nanoparticles (cuo) NPs by an ingenious highly efficient green synthesis by punica granatum leaf extract. The green synthesis had been achieved by using an aqueous solution of punica granatum leaf extract and copper acetate monohydrate. A certain ratio of leaf extracts for the metal ion was prepared and a color change was prepared and a color change was observed which proves the formation of nanoparticles. This was quantified by various characterization techniques namely x-ray diffraction (XRD),Fourier –transform infrared spectroscopy (FTIR) and scanning electron microscope (SEM). The XRD graph showed the crystalline and monoclinic phase of Cuo nanoparticles.

The Facets of Post Colonialism in Kamala Markandaya's Nectar in a Sieve

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Abstract

Nectar in a Sieve was a novel which was written by Kamala Markandaya. "Markandaya was a pioneer who influenced all of us Indians Writing in English" said by Shasi Tharoor. This novel was sets in two different places. The first place was sets in rural background and the second place was sets in the urban background. This novel also portrays about the effects of post colonialism, because this novel clearly portrays about the problems faced by the people in that village people due to post colonialism. The person who plays as a post colonial figure was Dr Kennington and the thing that denotes the post colonial figure was the tannery industry which means the skin industry. The effect of post colonialism was takes place to Rukmani's family, because her family only faced lots and lots of problems due to post colonialism. Before the colonisation takes place in that village Rukmani and her family lives a happy life with their own agricultural land but when the colonisation takes place in that village the happy life of Rukmani's family got disappeared. After the colonisation Rukmani lead a painful tragic life. Her daughter Irawali involves herself into prostitution. Through prostitution she gave birth to the child called Sacrabani. Her son Raja was died due to the tannery industry and another son Kutti was died due to the deficiency of vitamins. Her one of the son Murugan moves to urban side and lives an awkward life. The tragic end of Rukmani's life was she lost her husband Nathan in urban side and she lived her life with her prostitute daughter Irawali and her son Sacrabani and her one of the son Selvam adapted child puli.

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