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Criterion 3 – Research, Innovations and Extension

3.4	Research Publications and Awards

3.4.3 Details of research papers per teacher in CARE Journals notified on UGC website during the year

E-Copies of Research Papers published by faculty members

Document details - Development and Evaluation of a Small-Scale Organic Rankine Cycle for CSP Integration

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Development and Evaluation of a Small-Scale Organic Rankine Cycle for CSP Integration(Conference Paper)(Open Access)

Murthi, M.K.,   Magesh Babu, D.,   Sivalingam, A.,   Rahul, S.,   Hussain, B.I.,   Karthikeyan, R.   👤

[a]Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, 638 052, India
[b]Department of Mechatronics Engineering, Velammal Institute of Technology, Tamilnadu, Panjetty, 601 204, India
[c]Department of Mechatronics Engineering, Sona College of Technology, Tamilnadu, Salem, 636 005, India

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Abstract

The paper details the development, manufacturing, and evaluation of a compact Organic Rankine Cycle (ORC) system fueled by Concentrated Solar Power (CSP). The initial selection of the starting point of the cycle is described, considering the operational conditions of the ORC (such as the properties of the ambient temperature and solar field) and operational limitations. The study outlines the construction of a radial turbine generating 3 kW of power and conducts numerical simulations of fluid flow within the turbine components such as the nozzle and wheel. The course includes system engineering, focusing on the computation and selection of critical components including pumps, exchangers, and sensors. The findings of the laboratory tests are presented in the second part. The experiment utilized a thermal oil boiler for heating. The results show an isentropic efficiency of around 42% and a cycle efficiency of 6% under the initial test conditions, indicating promising performance over a wide range of pressure drops. © 2024 The Authors, published by EDP Sciences.

Author keywords

Cogeneration   CSP   Micro Solar   ORC   Power production   Renewable energy

👤 Murthi, M.K.; Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, India;

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Document details - Enhancing Wind Energy Potential Assessment with Three-Parameter Weibull Distribution: A Comparative Analysis using MATLAB

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Enhancing Wind Energy Potential Assessment with Three-Parameter Weibull Distribution: A Comparative Analysis using MATLAB(Conference Paper) (Open Access)

Kannakumar, K., Murthi, M.K., Ravivarman, G., Magesh Babu, D., Loganathan, G.B., Karthikeyan, R., Girimurugan, R.

[a]Department of Mechanical Engineering, Shree Venkateshwara Hi-Tech Engineering College, Tamilnadu, Gobichettipalayam, 638 455, India
[b]Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, 638 052, India
[c]Department of Electrical and Electronics Engineering, Karpagam Academy of Higher Education, Tamilnadu, Coimbatore, 641 021, India

View additional affiliations ⌄

Abstract

To determine the wind energy potential, the probability density function is typically used. For data distribution with modest wind speeds, this paper developed a three-parameter Weibull model. The distribution factors were determined using the maximal likelihood technique. The world renowned, user-friendly programming language Matrix Laboratory (MATLAB) processes all data that needs analysis. A comparison was made between the 3-factor Weibull, the 2-factor Weibull, and Rayleigh through R^2 and root mean square error (RMSE). The ECMWF Reanalysis v5 (ERA 5) reanalysis's hourly wind speeds are statistically represented by these three distributions. Due to its placement between the optimal R^2 and RMSE, the three-parameter Weibull model achieves good results. Weibull with three parameters has a R^2 of 0.9898, Weibull with two parameters has a R^2 of 0.9886, and Rayleigh has a R^2 of 0.5162. The root-mean-squared errors (RMSEs) for Rayleigh, 2-factor and 3-factor Weibull, are 0.0082 and 0.0070, respectively. © 2024 The Authors, published by EDP Sciences.

Author keywords

ERA 5   Rayleigh   RMSE   Weibull distribution   Wind Energy

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Document details - Strength properties of engineered cementitious composites containing pond ash and steel fiber

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Revista Materia

Volume 29, Issue 1, 2024, Article number e20230277

Strength properties of engineered cementitious composites containing pond ash and steel fiber(Article)(Open Access)

Kandasamy, Y., Thangavel, B., Sukumar, K.K., Ravi, B.

[a]K.S. Rangasamy College of Technology, Department of Civil Engineering, Namakkal, Tamilnadu, Tiruchengode, 637 215, India

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[c]Surya Engineering College, Department of Civil Engineering, Tamilnadu, Erode, 638 107, India

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Abstract

Concrete technology has seen a recent advancement with the widespread adoption of Engineered Cementitious Composite (ECC). Typically, ECC consist of cement, fly ash, fine sand, fibers, and occasionally other additives or mineral admixtures. However, there has been no exploration into the effects of combining pond ash with steel fibers on emerging cementitious materials like ECC. In this study, seven ECC specimens were made. One was a control mix, and the other six included pond ash with increments of 10% from 10% to 60%. All seven mixes were maintained at a fixed ratio of fly ash 40% and water-to-binder ratio of 0.3. To boost the fresh mix of the ECC mixes, superplasticizer was introduced at a rate of 1% by volume, and steel fiber was incorporated at a rate of 2% by volume of ECC. Addition of pond ash into ECC results exhibits superior properties than control mix. © 2024, Universidade Federal do Rio de Janeiro. All rights reserved.

Author keywords

Engineered cementitious composites   fly ash   mechanical properties   pond ash   steel fiber

Funding details

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Thangaraj, R.P. , Shanmugam, B.

Performance of RC beams developed with ECC layer and AR glass fiber mesh under flexural loading

(2024) Revista Materia

Ramasamy, S. , Singaraj, R. , Jagadeesan, V.

The influence of ZnO nanoparticles on mechanical and early-age hydration behaviour of cement paste

(2024) Revista Materia

Krishnaraj, R. , Subbaiyan, A. , Viswanathan, R.

Analyzing key success factors in public-private partnership BOT projects: an empirical study on financing influences, insights, and analysis in construction management

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Document details - Epilepsy Detection Using Supervised Learning Algorithms

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2nd IEEE International Conference on Contemporary Computing and Communications, InC4 2024; Bangalore; India; 15 March 2024 through 16 March 2024; Category numberCFP24DM1-ART; Code 202291

Epilepsy Detection Using Supervised Learning Algorithms(Conference Paper)

Krishnasamy, L.,   Sriwastav, Y.K.,   Bharat, S.P.,   Ganachar, S.R.

[a]Nandha Engineering College, Department of Artificial Intelligence and Data Science, Erode, India
[b]School of Engineering and Technology, Christ University, Department of CSE, Bengaluru, India
[c]School of Engineering and Technology, Christ University, Department of CSE AIML, Bengaluru, India

Abstract

In the current scenario, people are suffering and isolated by themselves by seizure detection and prediction in epilepsy. Also, it is highly essential that it needs to be identified through wearable devices. Researchers discussed this issue and outlined future developments in this field, suggesting that Machine Learning (ML) techniques could radically change how we diagnose and manage patients with epilepsy. However, as data availability has increased, Deep Learning (DL) techniques have become the most cutting-edge approach to adopt and use with wearable devices. On the other hand, large amounts of data are needed to train DL models, making overfitting problematic. DL models are created with open-source toolboxes and Python, allowing researchers to create automated systems and broaden computational accessibility. This work thoroughly overviews deep learning (DL) methods and neuroimaging modalities for automated epileptic seizure identification. It covers several MRI and EEG techniques for epileptic seizure diagnosis and treatment programmes designed to treat these seizures. The study also covers the difficulties in precise detection, the benefits and drawbacks of DL-based strategies, potential DL models and upcoming research in this area. © 2024 IEEE.

Author keywords

Convolution neural network   Electroencephalogram (EEG)   Epilepsy   K-Nearest Neighbour   Random Forest   Seizures   Supervised learning algorithms   Support vector machine

Indexed keywords

Engineering controlled terms: Adversarial machine learning   Convolutional neural networks   Decision trees   Deep learning   Nearest neighbor search   Neuroimaging   Random forests   Self-supervised learning   Support vector machines

Engineering uncontrolled terms   Convolution neural network   Electroencephalogram   Epilepsy   K-near neighbor   Learning models   Nearest-neighbour   Random forests   Seizure   Supervised learning algorithm   Support vectors machine

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IEEE 9th International Conference on Smart Structures and Systems, ICSSS 2023
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9th IEEE International Conference on Smart Structures and Systems, ICSSS 2023; Chennai; India; 23 November 2023 through 24 November 2023; Category numberCFP23ISL-ART; Code 196954

AI-Powered Pancreas Navigator: Delving into the Depths of Early Pancreatic Cancer Diagnosis using Advanced Deep Learning Techniques(Conference Paper)

Ravi, K.C.,   Dixit, R.R.,   Indhumathi, T.,   Singh, S.,   Gopatoti, A.,   Yadav, A.S.   👤

[a]Mlr Institute of Technology, Hyderabad, India
[b]Siemens Healthineers, New Hampshire, 03755, United States
[c]Nandha Engineering College, AP/AI&DS, India

View additional affiliations ⌄

Abstract

Pancreatic cancer is one of the deadliest forms of cancer, often diagnosed at advanced stages with limited treatment options. Early detection is critical for improving patient outcomes, and this study explores an innovative approach for early pancreatic cancer diagnosis. Leveraging advanced deep learning techniques, specifically a combination of Multi-Layer Perceptrons (MLP) and Support Vector Machines (SVM), we present a novel methodology that demonstrates promising results in accurately identifying pancreatic cancer at its incipient stages. By leveraging the deep learning capabilities of MLPs to extract intricate features from medical data and the discriminative power of SVMs for classification, our model exhibits a remarkable performance in terms of accuracy, sensitivity, and specificity. This research not only showcases the potential for early diagnosis of pancreatic cancer but also underscores the transformative impact of cutting-edge machine learning technologies in the realm of healthcare, offering hope for more effective and timely interventions in cancer management.The Proposed Model displayed an exceptional performance, boasting an Accuracy of 98.41%. © 2023 IEEE.

Author keywords

(Deep Learning) (Multi-Layer Perceptrons (MLP)) (Pancreatic cancer) (Support Vector Machines (SVM))

Indexed keywords

Engineering controlled terms:	(Deep learning) (Diagnosis) (Diseases) (Learning algorithms) (Learning systems)
Engineering uncontrolled terms	(Cancer diagnosis) (Deep learning) (Innovative approaches) (Learning techniques) (Multi-layer perceptron) (Multilayers perceptrons) (Pancreatic cancers) (Performance) (Support vector machine) (Support vectors machine)
Engineering main heading:	(Support vector machines)

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Kothuru, S.K. , Komperla, R.C.A. , Shah, M.K.
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Creating a sustainable large-scale content-based biomedical article classifier using bert
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9th IEEE International Conference on Smart Structures and Systems, ICSSS 2023; Chennai; India; 23 November 2023 through 24 November 2023; Category numberCFP23ISL-ART; Code 196954

Deep Learning-Enhanced MRI for Brain Tumor Detection and Characterization(Conference Paper)

Jahina, J., Raghul, S., Kumar, N.A., Ravindra Desai, K., Chourasia, V., Agrawal, A.K.

[a]Nandha Engineering College, AP/AI&DS, India
[b]M.P. Nachimuthu M. Jaganathan Engineering College, AP/CSE, India
[c]Bharati Vidyapeeth College of Engineering Kolhapur, India

View additional affiliations ⌄

Abstract

Brain tumors are a critical healthcare concern, demanding accurate and timely diagnosis for effective treatment planning. Magnetic Resonance Imaging (MRI) is a valuable tool for non-invasive brain tumor assessment. This study presents a novel approach, Deep Learning-Enhanced MRI (DE-MRI), which combines the power of AutoEncoder and Residual Neural Network (ResNet) architectures for improved brain tumor detection and characterization. In the DE-MRI framework, an AutoEncoder is employed to extract meaningful features from MRI images, reducing data dimensionality while preserving critical information. These features are then fed into a ResNet-based neural network, enabling high-level feature learning and classification. This two-stage architecture enhances the model's ability to differentiate between normal brain tissue and tumor regions, as well as categorize tumors into various types and grades. Whenever compared to conventional MRI-based tumor identification methods, the suggested DE-MRI methodology shows promising results in terms of accuracy, sensitivity, and specificity. Additionally, it offers the advantage of reduced manual intervention and faster diagnosis, potentially leading to more timely and tailored treatment plans for patients with brain tumors. The AutoEncoder-ResNet hybrid model distinguishes itself by achieving the highest accuracy of 0.96 and the most minimal loss of 1.46. Overall, DE-MRI, with its innovative combination of AutoEncoder and ResNet, represents a promising advancement in the field of medical imaging for brain tumor diagnosis and characterization, contributing to improved patient outcomes and healthcare efficiency. © 2023 IEEE.

Author keywords

AutoEncoder Brain Tumors Deep Learning-Enhanced MRI (DE-MRI) Residual Neural Network (ResNet)

Indexed keywords

Engineering controlled terms: Brain Deep learning Diagnosis Learning systems Medical imaging Network architecture Patient treatment Tumors

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2024, Pages 22-24

5th International Conference on Intelligent Communication Technologies and Virtual Mobile Networks, ICICV 2024; Tirunelveli; India; 11 March 2024 through 12 March 2024; Category numberCFP24ONG-ART; Code 199342

GUI Based Heart Disease Prediction Using Deep Neural Networks(Conference Paper)

Revathy, G., Dhipa, M., Kalaiselvi, T., Muruga Priya, P.

[a]Src, Sastra Deemed University, Department of Cse, Thanjavur, India
[b]Nandha Engineering College, Department of BioMedical Engineering, Erode, India
[c]Erode Sengunthar Engineerig College, Department of Cse, Perundurai, India

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Abstract

The heart is a vital part of the human body. A dysfunctional heart valve can affect other organs in the human body, such as the brain and kidneys. An early warning system for coronary heart disease could alert people about the risk of the condition even before they visit a hospital or undergo costly medical tests. This type of approach would assist more than just medical practitioners. Thus, this technology offers a means for predicting coronary heart disease. One such technique is the Naïve Bayesian method, which is used for mining the health data records. © 2024 IEEE.

Author keywords

disease diagnosis   features selection   Heart disease classification   intelligent system   medical data analytics

Indexed keywords

Engineering controlled terms: Bayesian networks   Cardiology   Classification (of information)   Computer aided diagnosis   Data Analytics   Deep neural networks   Diseases   Heart

Engineering uncontrolled terms   Coronary heart disease   Data analytics   Disease classification   Disease diagnosis   Features selection   Heart disease   Heart disease classification   Human bodies   Medical data   Medical data analytic

Engineering main heading: Intelligent systems

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Enhancing Energy Efficiency in Sensor/Ad-Hoc Networks Through Dynamic Sleep Scheduling

EasyChair Preprint 11038

8 pages   •   Date: October 8, 2023

M Dhipa, Nisha Rathore, Pravin Prakash Adivarekar and Shams Tabrez Siddiqui

Abstract

Enhancing energy efficiency is a pivotal concern in sensor/ad-hoc networks, where devices are often constrained by limited power sources. Dynamic sleep scheduling emerges as a promising strategy to mitigate energy wastage and prolong network longevity. This approach involves orchestrating nodes to periodically transition between active and low-power sleep modes, aligning with data transmission requirements. Dynamic sleep scheduling optimizes energy usage, curbing the power-hungry nature of constant operation. This abstract explores the core concepts and applications of dynamic sleep scheduling, emphasizing its role in addressing the unique energy challenges encountered in sensor/ad-hoc networks. The benefits of dynamic sleep scheduling include extending network lifespan, minimizing interference, and promoting energy balance among nodes. Nevertheless, it also presents challenges like adapting to network dynamics, striking the right balance between energy savings and latency, and ensuring effective coordination among nodes. Various algorithms, including TDMA and LEACH, underpin dynamic sleep scheduling, with ongoing research driving advancements. These networks find application in environmental monitoring, disaster management, and industrial automation, among others.

Keyphrases: Dynamic sleep scheduling, Network Longevity, ad hoc networks, energy efficiency, sensor networks

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Document details - Convolution Neural Network and EVO Based Efficient Method for Detecting Nerve Disorders

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Convolution Neural Network and EVO Based Efficient Method for Detecting Nerve Disorders(Conference Paper)

Sowparnika, B.,   Ganu, L.,   Rai, M.,   Kaliappan, S.,   Maranan, R.,   Jayalakshmi, V.

[a]Nandha Engineering College (Autonomous), Department of Biomedical Engineering, Tamilnadu, Erode, India
[b]Nit, Department of Cse, Arunachal Pradesh, India
[c]Manipal University, Department of CSE(AIMl), Jaipur, India

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Abstract

Embryonic Neural Sheet (ENS) plays a crucial role in digestion and bowel movement. They show that the mouse's ENS is populated by amorphous neuroglia networks derived from overlapping clonal units, which originate from progenitors originating in the postmigratory neural crest. The spatial organization of ENS clones in the developing gut is influenced by a number of factors, including the colonization of the serosa-mucosa axis by clonal progeny and the proliferation-driven local contacts of ENS progenitors with lineage-independent neuroectodermal cells. They used a combination of single-cell transcriptomics and mutagenesis investigations to describe the different molecular states of ENS progenitors, which allowed them to determine RET's role in regulating neurogenic commitment. When stimulated as a network, neurons in the intestine that are genetically identical to each other fire in unison. Therefore, the structure of the peripheral nervous system relies on lineage ties. The suggested method employs the preprocessing tools of the wiener and gaussian filters, the feature extraction tools of MFEA, and the model training tools of CNN-EVO. When compared to convolutional neural network and extreme learning machine models, the proposed method fares quite well. © 2023 IEEE.

Author keywords

Egyptian Vulture Optimization   Extreme Learning Machine (ELM)   Multiple Feature Evaluation Approach (MFEA)

Indexed keywords

Engineering controlled terms: Clone cells   Convolutional neural networks   Feature extraction   Knowledge acquisition

Engineering uncontrolled terms   Egyptian vulture   Egyptian vulture optimization   Embryonics   Evaluation approach   Extreme learning machine   Feature evaluation   Learning machines   Multiple feature evaluation approach   Multiple features   Optimisations

Engineering main heading: Convolution

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Rai, M. , Parmar, H. , Jain, A.
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Rai, M. , Parmar, H. , Singh, S.
Comparative Analysis of Dimensionality Reduction Techniques in Machine Learning Models for Liver Disease Detection
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Impact of incorporating Gr particles in dielectric fluid on machining performance of AA7050/SiC/Al$_2$O$_3$ hybrid composites(Article)

Vishnu, A., Subramanian, M.

[a]Department of Mechanical Engineering, Nandha Engineering College, Erode, 638052, India
[b]Department of Mechanical Engineering, Sns College of Technology, Tamilnadu, Coimbatore, India

Abstract

This study attempted to machine AA7050 using the Electric Discharge Machining (EDM) technique fabricated through stir casting, whereas aluminium oxide and silicon carbide particles were used as reinforcement. Experiments conducted by altering, powder concentration, current, pulse duration, and reinforcing %, machining performance evaluated in terms of material removal rate (MRR), Tool Wear Rate (TWR), surface roughness (Ra), and Machined Surface Hardness (MSH). Because of the high density, the suspension of Gr particles inside the spark gap was obstructed, causing particle deposition over the surface, which lowers the MRR in contrast to other particle suspensions. Lower heat was produced at higher Tons due to plasma densification, resulting in a drop in TWR. The Ra value improved as a result of the electrode's higher gap distance from the workpiece, which enables thorough flushing of machined waste. The incorporation of particles also evenly distributed the energy over the machined area, eliminating the uneven machined surface. Black patches, resolidified solids, globules, craters, and pits were seen on the surface topography, when particles were introduced to the dielectric fluid, these defects were eliminated because of complete flushing of machined debris. © 2024, Hanyang University. All rights reserved.

Author keywords

Hardness   Hybrid composites   PMEDM   Stir casting   Surface topography

⚲ Vishnu, A.; Department of Mechanical Engineering, Nandha Engineering College, Erode, India;

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Document details - Adsorptive removal of 2, 4 dichlorophenol by polysulfone/graphene oxide blended microcapsules immobilized with CYPHOS® IL 103 ionic liquid

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Adsorptive removal of 2, 4 dichlorophenol by polysulfone/graphene oxide blended microcapsules immobilized with CYPHOS® IL 103 ionic liquid(Article) (Open Access)

Pandiarajan, S.,   Venkatesan, S.,   Balasubramani, K.

[a]Department of Chemical engineering, Nandha Engineering College, Tamil Nadu, Erode, India
[b]Department of Petrochemical technology, University College of Engineering, Bharathidasan Institute of Technology campus, Anna university, Tamil Nadu, Tiruchirappalli, India
[c]Department of Chemical Engineering, Hindusthan College of Engineering and Technology, Tamil Nadu, Coimbatore, India

Abstract

2,4-Dichlorophenoxyacetic acid (2,4-D), a phenoxyalkanoic acid herbicide, is among the most widely distributed pollutants in the environment. 2,4-Dichlorophenol (2,4-DCP), as the main metabolite which frequently detected in the environment resources. The toxicity of 2,4-DCP is more severe than that of its parent 2,4-D at any concentration levels. In this study, removal of 2,4-DCP from aqueous solution using graphene oxide (GO) + Trihexyl(tetradecyl) phosphoniumdecanoate [CYPHOS® IL 103] ionic liquid entrapped in polysulfone (PSF) capsule as an adsorbent (GO/IL/PSF microcapsule) is reported. Various techniques such as X-Ray diffraction, Fourier transform infrared spectroscopy, Field emission scanning electron microscopy and Brunauer-Emmett-Teller have been used to identify and confirm the formation of GO, functional group, surface morphology and surface area of the capsule. The adsorption capacity has been investigated under different experimental conditions including pH (2-10), initial 2,4-DCP concentration (20-100 mg L^{-1}), temperature (293-313 K) and at 250 rpm. It has been found that 97% of 2,4-DCP removed from aqueous solutions with adsorption capacity (q_e) of 388 mg.g^{-1} at optimized experimental conditions. The equilibrium adsorption of 2,4-DCP on capsule can be best described by Langmuir isotherm model, with a maximum adsorption capacity (q_{max}) of 398 mg.g^{-1} at room temperature. The adsorption kinetics is well described by the pseudo-second-order kinetic model than pseudo first order model and Freundlich kinetic. These results shows that capsule have promising application for adsorption of 2,4-DCP from aqueous solution.According to desorption research, the IL/GO/PSF may be renewed six times with a 1 N sodium hydroxide solution. IL/GO/PSF microcapsule is appropriate for use in fixed bed columns, which treat huge volume of wastewater. © 2024, National Institute of Science Communication and Policy Research. All rights reserved.

Author keywords

Adsorption   Graphene oxide   Ionic liquid   Isotherms   Phenolic compound
Polysulfone/graphene oxide blended microcapsules

Funding details

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Kuppusamy, B. , Gopalakrishnan, S. , Natesan, S.

Valorization of sugarcane bagasse cellulose to synthesize novel graphene oxide-based composite for remediation of atrazine – Optimization studies

(2024) Journal of Environmental Chemical Engineering

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Indian Journal of Environmental Protection

Volume 43, Issue 6, June 2023, Pages 483-492

An Ecological Problem of Heavy Metal Removal by using Green Synthesized Magnetically Recovery Fe_3O_4@ZnO Nanocomposites(Article)

Mohankumar, G.,   Sathian, S.,   Akilamudhan, P.,   Murugesan, A.   👤

[a]Annamalai University, Department of Chemical Engineering, Tamil Nadu, Chidambaram, 608 002, India
[b]Erode Sengunthar Engineering College (Autonomous), Department of Chemical Engineering, Tamil Nadu, Erode, 637 205, India
[c]Nandha Engineering College, Department of Chemical Engineering, Tamil Nadu, Erode, 638 052, India

Abstract

The ability to reuse adsorbent was critical for making the sewage treatment system both premium and environmentally beneficial. Toxic metal ions [Pb (II), Cr (II) and Cd (II)] were removed from effluent discharge using Fe_3O_4/ ZnO nanoparticles as sorbent materials. Chemical affinity, zero potentials, XRD, FTIR and TEM were used to explore the structural and interface adsorption process of Fe_3O_4/ZnO composite in this study. Experiments on absorption, desorption and recycling were performed. The findings demonstrate that perhaps the toxic metals substituted for H in the Fe-O-H structure and formed the Zn-O-Me structure, implying that metal elimination was accomplished through ion exchange. Cd (II), Pb (II) and Cr (IV) had 99.81 %, 99.76%, 98.1 % and 83.25%, accordingly, adsorptive degradation efficiency. The Langmuir model was shown to be the best fit for describing the absorption on the surface of Fe_3O_4/ZnO nanoparticles based on the stability data processing. The kinetic parameters of toxic metal ions on the surface of Fe_3O_4/ZnO composites were relatively similar to the pseudo-second-order concept, according to the kinetics investigations. The trials proved that reprocessing the Fe_3O_4/ZnO sorbent extracted from water by a magnetic material was a viable option for removing pollutants in an environmentally acceptable and effective manner. © 2023 - Kalpana Corporation.

Author keywords

Adsorption Fe_3O_4/ZnO   Heavy metals   Langmuir isotherm   Magnetite

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Volume 26, Issue 5, 2024, Article number 05204

Environment-friendly sustainable concrete produced from marble waste powder(Article)(Open Access)

Rajesh, A.A.,   Prasanthni, P.,   Senthilkumar, S.,   Priya, B.   ⚇

[a]Department of Civil Engineering, K.S.R College of Engineering, Tamil Nadu, Tiruchengode, India
[b]Nandha Engineering College, Tamil Nadu, Erode, India

Abstract

Concrete is an indispensable construction material renowned for its versatility and durability, yet its traditional components pose significant environmental challenges. The cement industry is a major emitter of CO_2, while the extensive extraction of natural aggregates depletes finite resources. In response, researchers have explored alternative materials like Marble Waste Powder (MWP) as sustainable substitutes in concrete production. This study investigates the feasibility of incorporating MWP as partial replacements for cement and fine aggregate, examining substitution fractions of 25% and 35%. Through experimental analysis, the mechanical properties and cost implications of these modified concrete blends are evaluated. The research findings reveal that integrating MWP into concrete formulations enables the production of high-strength concrete at a reduced cost, offering a promising solution to enhance the sustainability of construction practices. By partially replacing conventional materials with MWP, the environmental impact associated with concrete production can be mitigated, contributing to efforts aimed at reducing carbon emissions and conserving natural resources. Additionally, the study underscores the importance of eco-friendly innovations in construction materials, emphasizing the need for sustainable alternatives to meet the growing demand for infrastructure development while minimizing environmental harm. Overall, this research highlights the novel use of MWP as a sustainable alternative in concrete production, showcasing its potential to address environmental concerns and promote more eco-conscious construction practices. Through the exploration of mechanical performance and economic feasibility, the study provides valuable insights for advancing sustainability in the construction industry and achieving long-term environmental stewardship. © 2024 Global NEST Printed in Greece. All rights reserved.

Author keywords

cement   compressive strength   cost   flexural strength   Marble waste powder (MWP)   tensile strength

⚇ Rajesh, A.A.; Department of Civil Engineering, K.S.R College of Engineering, Tamil Nadu, Tiruchengode, India;

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Balancing Sustainability and Strength: Analyzing the Effects of Textile, Tannery, and Water Treatment Sludge on Brick Performance

(2024) *Journal of Environmental Nanotechnology*

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Global Nest Journal

Volume 26, Issue 4, May 2024, Article number 05743

Sustainable approach of utilization of limestone and treated construction wastes as aggregates in the production of high temperature resistant green concrete(Article)(Open Access)

Loganathan, S., Nirmalkumar, K., Sivakumar, A.

[a]Department of Civil Engineering, Government Polytechnic College, Tamil Nadu, Karur, 621301, India
[b]Department of Civil Engineering, Nandha Engineering College, Tamil Nadu, Erode, 638052, India
[c]Department, Excel Engineering College, Komarapalayam, Tamil Nadu, Namakkal, 637303, India

Abstract

Natural gravel used as aggregates in the construction had a severe impact on the environment leading to scarcity in recent times. Furthermore, the resistance of such natural aggregates to crack at higher temperature zones was less. This paper investigates the above concerns on scarcity and meagre high-temperature resistance with the use of sustainable waste materials such as recycled aggregates and limestone as aggregates in the concrete. The natural aggregates were replaced with different proportions of limestone aggregates (LA), recycled aggregates (RA) and carbonation treated recycled aggregates (CRA) to investigate their hardened properties and thermal properties at 200, 400, and 800°C. The strength of recycled aggregate concrete (RAC) and carbonated RAC (CRAC) was reduced by 16.67% and 1.32%, while the strength of limestone aggregate concrete (LAC) was enhanced by only 2.3%. The RAC and LAC show better resistance to elevated temperature compared to control concrete and the residual temperature was observed between 200 to 400°C. © 2024 Global NEST Printed in Greece. All rights reserved.

Author keywords

carbonation treatment   elevated temperature   hardened properties   limestone aggregate   Natural aggregate   recycled aggregate

Loganathan, S.; Department of Civil Engineering, Government Polytechnic College, Tamil Nadu, Karur, India;

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Mechanical properties of coal ash concrete in the presence of graphene oxide(Article)

Prasanthni, P., Priya, B., Dineshkumar, G., Gobinath, G.N.

[a]Civil Engineering, KSR College of Engineering, KSR Kalvi Nilayam, Namakkal, India
[b]Civil Engineering, Nandha Engineering College, Erode, India
[c]Civil Engineering, Vaagdevi College of Engineering, Warangal, India

Abstract

Modern concrete technology places a strong emphasis on incorporating diverse resources, particularly industrial byproducts, into the concrete production process. The utilization of fly ash, a notable industrial waste, has gained increasing importance due to its potential to enhance concrete properties and provide economic advantages. In this study, we conducted experimental investigations on concrete, varying the concentrations of graphene oxide (ranging from 0.1% to 0.5%) and coal ash (at levels of 5%, 10%, and 15%). We evaluated the mechanical characteristics of concrete, including compressive strength, tensile strength, and flexural strength, by creating a total of 45 different mix specimens across 15 distinct mix formulations. Remarkably, the combination known as 4GOCA (Graphene Oxide and Coal Ash at 5%, 10%, and 15%) exhibited the highest strength, demonstrating a remarkable 65% increase compared to the reference mix. Similarly, both 2GOCA and 3GOCA demonstrated strength gains exceeding 50%. The unique aspect of this research lies in its innovative utilization of graphene oxide and coal ash in the concrete mix, showcasing the potential for sustainable and high-performance construction materials. © 2023 Taylor & Francis Group, LLC.

Author keywords

coal ash | concrete | Graphene oxide | mechanical properties

Indexed keywords

Engineering controlled terms: Coal | Compressive strength | Concrete mixtures | Fly ash | Graphene | Tensile strength

Engineering uncontrolled terms: Concrete production process | Concrete properties | Concrete technology | Economic advantages | Experimental investigations | Graphene oxides | High-strength | Industrial by-products | Mechanical characteristics | Mix formulation

Engineering main heading: Coal ash

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Mohanraj, R. , Prasanthni, P. , Senthilkumar, S.

Comparative analysis of armid fiber reinforced polymer for strengthening reinforced concrete beam-column joints under cyclic loading | Vergleichende Analyse von armierten faserverstärkten Polymeren zur Verstärkung von Balken-Stützen-Verbindungen aus Stahlbeton unter zyklischer Belastung

(2024) Materialwissenschaft und Werkstofftechnik

Jaychandran, A. , Ramaiyan, M. , Singaram, C.J.

Non-destructive evaluation of subsurface corrosion on hot steel angle sections embedded in concrete and its repair by cement slurry and nitozinc coating | NEDESTRUKTIVNA PROCENA PODZEMNE KOROZIJE NA UGAONIM PROFILIMA OD VRUĆEG ČELIKA UGRAĐENIH U BETON I NJIHOVA SANACIJA CEMENTNOM SUSPENZIJOM I NITOCINK PREMAZOM

(2024) Materials Protection

Rajesh, A.A. , Prasanthni, P. , Senthilkumar, S.

Environment-friendly sustainable concrete produced from marble waste powder

(2024) Global Nest Journal

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2024, Pages 115-119

4th IEEE International Conference on Advance Computing and Innovative Technologies in Engineering, ICACITE 2024; Greater Noida; India; 14 May 2024 through 15 May 2024; Category numberCFP24Y63-ART; Code 201583

An Novel Based Mobile Dropping Sesing to Protect using Inertia Sensor and Integration of DL Technology(Conference Paper)

Barkunan, S.R.,   Radha, J.,   Egala, R.,   Singhal, R.K.,   Alkhafaji, M.A.,   Sefeer, B.   ዶ

[a]Vel Tech Rangarajan Dr. Sagunthala R&d Institute of Science and Technology, Department of Computer Science and Engineering, Avadi, India
[b]Nandha Engineering College, Department of Cse, Tamilnadu, Perundurai, India
[c]Gayatri Vidya Parished College for Degree and Pg Courses(A), Department of Ece, Andhra Pradesh, Visakhapatnam, India

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Abstract

With all such technologies, the recent advances in health monitoring due to smartphone sensor technologies provide an opportunity to quantify an individual's functional performance and deviations from normality. Falling and drowning are two major unnatural reasons for accidental silent death, and it requires an ambient approach to detect the same. This paper presents a novel ambient assistive framework, FaDD (Falling and Drowning Detection), designed for identifying and distinguishing incidents of falls or drowning. Input data are taken through smartphone sensors like the accelerometer, gyroscope, magnetometer, and GPS, which capture the movement of a person's body for effective recognition. By adopting a hierarchical approach, FaDD effectively detects dropping and choking actions using machine learning models. The framework is also integrated with the emergency alert notifications embedded in a smartphone application and, in the case of drowning, immediately alerts the respective stakeholders of the guardians, rescue team, and close community circle. With an accuracy rate of 98%, FaDD is proficient in detecting falls, drowning, and normal activities. Coordination of all stakeholders through the FaDD framework is bound to enhance the provision of an effective and efficient health service to the people. © 2024 IEEE.

Author keywords

Emergency alert notifications   Guardians   Hierarchical approach   Machine learning models
Smartphone application   Stakeholders

Indexed keywords

Engineering controlled terms: Accidents   Adversarial machine learning   Electronic health record   Machine learning
mHealth

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1st IEEE International Conference on Electronics, Computing, Communication and Control Technology, ICECCC 2024; Hybrid, Bengaluru; India; 2 May 2024 through 3 May 2024; Category numberCFP24UU8-ART; Code 201214

Object Recognition and Tracking System to Assist Visually Impaired: A Neural Network-Based Deep RBM Technique(Conference Paper)

Patil, S.,   Ramagundam, S.,   Sukumar, P.,   Khan, M.A.,   Patil, N.D.,   Nishant, N.

[a]G H Raisoni Institute of Engineering and Business Management, HoD of CSE-IT Department, Jalgaon, India
[b]Software and Dev Engg4- SDET/ IT COMCAST, Monrovia, MD, United States
[c]Nandha Engineering College (Autonomous), Department of Computer Science and Engineering, Tamilnadu, Erode, India

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Abstract

Being able to see is fundamental to almost every aspect of our everyday lives, thus those who are visually impaired confront enormous obstacles. Thanks to recent developments in computer vision and computing, a system that can provide auditory input to visually impaired individuals regarding objects and their environments has been designed. Sequencing is crucial for preprocessing, feature selection, and model training. Although extremely accurate data input is still required for object detection, preparation is getting computationally cheaper. We were partially successful in reducing the image size by employing Gaussian Blur, which imparts a smoother appearance to the photos. We use color descriptors and Fourier transforms for feature extraction. Deep RBM training necessitates precise control over the attributes. In comparison to this method, current RBM and DNN algorithms look antiquated. The results demonstrated a notable enhancement in accuracy, reaching 98.31%. © 2024 IEEE.

Author keywords

Multiple Object Tracking (MOT)   Object Detection and Recognition   Restricted Boltzmann Machine (RBM)

Indexed keywords

Engineering controlled terms: Deep learning   Feature extraction   Fourier transforms   Object recognition   Tracking (position)

Engineering uncontrolled terms   Multiple object tracking   Neural-networks   Object detection and recognition   Object recognition systems   Object Tracking   Restricted boltzmann machine   Tracking system   Visually impaired

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3rd International Conference on Artificial Intelligence For Internet of Things, AIIoT 2024; Vellore; India; 3 May 2024 through 4 May 2024; Category numberCFP24KZ7-ART; Code 200762

Autonomous Parking Space Detection for Electric Vehicles Based on Advanced Custom YOLOv5(Conference Paper)

Balusamy, D.,   Shanmugam, G.,   Rameshkumar, B.,   Palanisamy, A.,   Kingston, G.,   Ravi, L.

Nandha Engineering College, Department of Computer Science and Engineering, Erode, India

Abstract

This research contributes to the development and deployment of smart parking system utilizing cutting-edge computer vision techniques. The study utilizes a subset of the Google Open Images Dataset focused on parking spaces to train a Custom Object Detection model tailored for low-computation devices. Employing YOLOv5 architecture and the Feature Pyramid Network (FPN), the system effectively detects parking spaces and objects within them. Utilizing ResNetv250 as the backbone architecture ensures precise feature extraction, resulting in high accuracy in identifying parking spots. Experimental results reveal the efficacy of the envisioned methodology, with Efficient YOLOv5 model achieving a mean Average Precision (mAP) of 0.970 for object detection in aerial dimensional frames. Graphical representations of F1-Confidence Curve and Precision-Confidence Curve demonstrate the model's robustness in balancing precision and recall, even with an imbalanced dataset. This research underscores the potential of the proposed smart parking system to revolutionize urban parking management, providing an efficient and accurate solution for parking space identification. © 2024 IEEE.

Author keywords

computer vision   Custom Object Detection   feature extraction and urban parking management   ResNetv250   Smart parking system   YOLOv5

Indexed keywords

Engineering controlled terms: Antennas   Computer vision   Extraction   Feature extraction   Intelligent systems   Network architecture   Object recognition

Engineering uncontrolled terms   Custom object detection   Feature extraction and urban parking management   Features extraction   Objects detection   Parking management   Parking spaces   Resnetv250   Smart parking systems   Urban parking   YOLOv5

Engineering main heading: Object detection

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2024 International Conference on Science, Technology, Engineering and Management, ICSTEM 2024; Coimbatore; India; 26 April 2024 through 27 April 2024; Category numberCFP24J85-ART; Code 200527

Securing Social Media: Analyzing user behaviors for Threat Detection using Ensemble Random Forest Algorithm(Conference Paper)

Sanjai, T.S.,   Vanathi, D.,   Thirumoorthi, P.,   Kavinkumar, D.,   Uma, P.,   Shanmugapriya, K.

Department of Computer Science and Engineering, Nandha Engineering College (Autonomous), Erode, India

Abstract

The popularity of online social networks (OSNs) has exponentially increased over the past few years as a direct result of the rapid development of technology. The ability of online social networks (OSNs) to facilitate communication between users and their loved ones, coworkers, and other contacts is one of the primary causes behind this phenomenon. Attackers are tempted to gather information through social media and other means of rapid, near-instantaneous content dissemination because of the ease with which they can obtain this information. A variety of approaches ought to be taken in order to evaluate the safety and privacy of online social networks (OSNs). In this paper, we develop an ensemble random forest algorithm to classify the threats from the input dataset. The results show that the proposed method achieves higher rate of accuracy, precision, recall and f-measure than the existing methods. © 2024 IEEE.

Author keywords

Ensemble Learning   Random Forest   Security Threats   Social Media   User Behaviors

Indexed keywords

Engineering controlled terms: Behavioral research   Classification (of information)   Random forests   Social sciences computing

Engineering uncontrolled terms   Accuracy measures   Content dissemination   Ensemble learning   High rate   Random forest algorithm   Random forests   Security threats   Social media   Threat detection   User behaviors

Engineering main heading: Social networking (online)

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Novel Energy Efficient Routing Protocol Using Improved Fuzzy Logic Based Effective Clustering (IFLEC)(Conference Paper)

Vanathi, D.,   Tamizharasu, K.,   Kalyanasundaram, P.,   Dharanya, C.,   Aarthi, K.,   Rajasekar, M.

[a]Nandha Engineering College, Department Of Cse, Erode, Perundurai, India
[b]K.S.R. College Of Engineering, Department Of Cse, Tiruchengode, India
[c]K.S.R. College Of Engineering, Department Of It, Tiruchengode, India

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Abstract

To improve the energy efficiency of the routing protocol in Wireless Sensor Networks using Improved Fuzzy Logic based Effective Clustering protocol (IFLEC) and performance comparison with Fuzzy Logic based Effective Clustering protocol (FLEC). Using novel cluster-head (CH) selection parameters fuzzy based angle between the sensor nodes and the sink, average threshold energy, and probability based average energy in WSN, an improved fuzzy based clustering approach is used to choose the CH to enhance the efficiency of the routing protocol. To measure how well the IFLEC protocol performs, its packet delivery ratio (PDR), energy consumption, lifetime, latency, and throughput characteristics are computed. The simulation output demonstrated that IFLEC protocol outperforms than FLEC protocols in terms of 6.2 % lower energy consumption, 11 % higher lifetime of the network, 2.8% higher PDR, 23% lower delay and 28% higher throughput. © 2024 IEEE.

Author keywords

(cluster-head) (clustering) (fuzzy logic) (novel fuzzy angle) (threshold) (WSN)

Indexed keywords

Engineering controlled terms:	(Computer circuits) (Energy efficiency) (Energy utilization) (Internet protocols) (Power management (telecommunication)) (Routing protocols) (Sensor nodes)

Engineering uncontrolled terms	(Cluster-heads) (Clustering protocol) (Clusterings) (Energy efficient routing protocol) (Fuzzy-Logic) (Novel fuzzy angle) (Packet delivery ratio) (Routing-protocol) (Threshold) (WSN)

Engineering main heading:	(Fuzzy logic)

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Packet Loss Minimization and Enhanced Road Traffic Management using Improved Local Interconnect Network (ILIN) in VANET(Conference Paper)

Tamizharasu, K.,   Gomathy, B.,   Umadevi, P.,   Aarthi, K.,   Vanathi, D.,   Kalyanasundaram, P.

[a]K.S.R. College Of Engineering, Department Of Cse, Tiruchengode, India
[b]Dr. Ngp Institute Of Technology, Dept Of Computer Science And Business Systems, Tamilnadu, Coimbatore, India
[c]K.S.R. College Of Engineering, Department Of Mathematics, Tiruchengode, India

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Abstract

By using the Improved Local Interconnect Network (ILIN) protocol in place of the Local Interconnect Network (LIN) protocol, the study seeks to reduce the risk of accidents in the road traffic management for VANET. Through the use of an effective cluster head and gateway node selection strategy that takes into account a variety of criteria, including the distance between the node and sink, the distance between novel neighbor nodes, and residual energy, cluster-based routing in VANET is proposed in this research to avoid excessive packet loss in the network. In terms of reduced transmission latency by 7.25%, reduced network congestion by 9.36%, and enhanced information coverage area by 5.7%, throughput by 4.32%, and increased packet delivery ratio by 4.61%, simulation results demonstrate that the ILIN protocol outperformed the LIN protocol. The simulation findings demonstrate that the suggested ILIN protocol outperformed the LIN protocol in terms of performance. © 2024 IEEE.

Author keywords

broadcast storm   cluster head   clustering   GW   Novel neighbour nodes distance   residual energy   routing
VANET

Indexed keywords

Engineering controlled terms: Gateways (computer networks)   Highway administration   Highway planning   Packet loss
Street traffic control   Vehicular ad hoc networks

Engineering uncontrolled terms   Broadcast storm   Cluster-heads   Clusterings   GW   Local interconnect networks
Neighbour nodes   Novel neighbor node distance   Residual energy   Routings   VANET

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Comprehensive Machine Learning Approach for Early Detection and Classification of Hyperthyroidism and Hypothyroidism(Conference Paper)

Jayadharshini, P.,   Kumar, A.S.,   Sivasankar, R.,   Harsine, K.U.,   Geetha, P.,   Logu, B.   ⍩

[a]Department of Artificial Intelligence, Kongu Engineering College, Perundurai, Tamilnadu, Erode, India
[b]Department of Cse, Nandha Engineering College, Erode, India
[c]Department of Cse, Builders Engineering College, Tirupur, India

Abstract

Thyroid disorders, including hyperthyroidism and hypothyroidism, pose significant health risks and necessitate early detection for effective management. In this study, we present a comprehensive approach employing various machine learning algorithms for the prediction of thyroid conditions. The algorithms investigated include Random Forest, Naive Bayes, Decision Tree, Gradient Boosting, Logistic Regression, Adaboost, Support Vector Machines (SVM), and k-Nearest Neighbors (KNN). Using a dataset comprising diverse thyroid-related features, we conducted an extensive comparative analysis of these algorithms. Our findings reveal that Random Forest exhibited the highest predictive accuracy, reaching an impressive 98.46%. This outstanding performance positions Random Forest as a robust model for accurate thyroid disorder classification. The target classes encompass hyperthyroid, hypothyroid, and negative instances, providing a comprehensive framework for diagnosing thyroid conditions. The incorporation of multiple algorithms ensures the robustness of our predictive model, accommodating diverse data patterns associated with thyroid abnormalities. Our research provides a foundation for the development of an intelligent diagnostic system. As the field of machine learning progresses, there is a growing recognition of its capacity to advance healthcare diagnostics, specifically in the early identification of abnormalities related to the thyroid. This has the potential to significantly enhance patient outcomes and overall quality of life. © 2024 IEEE.

Author keywords

Decision Tree   Hyperthyroid   Hypothyroid   Machine Learning   Random Forest

Indexed keywords

Engineering controlled terms: Contrastive Learning   Support vector machines

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2nd International Conference on Computer, Communication and Control, IC4 2024; Indore; India; 8 February 2024 through 10 February 2024; Category numberCFP24NZ4-ART; Code 198630

A Comprehensive Analysis of Identifying Patients with Chronic Kidney Disease(Conference Paper)

Geetha, S.,   Marimuthu, C.N.,   Maheswari, S.,   Deepa, B.   👤

[a]Anna University, Faculty of Information and Communication Engineering, Chennai, 600025, India
[b]Nandha Engineering College, Department of Electronics and Communication Engineering, Erode, 638052, India
[c]Nandha Engineering College, Department of Computer Science and Engineering, Erode, 638052, India

Abstract

Chronic Kidney Disease (CKD) is a prevalent and progressive health condition affecting millions of individuals worldwide. Early identification and management of CKD are critical to mitigate its adverse effects on patients' health and reduce the burden on healthcare systems. This study presents a comprehensive analysis of various methodologies and approaches for identifying patients with Chronic Kidney Disease. The research encompasses a detailed review of traditional and emerging diagnostic techniques, by exploring the sensitivity, specificity, and accuracy of these methods, considering their applicability in diverse patient populations and healthcare settings. Furthermore, this analysis delves into the role of artificial intelligence (AI) and machine learning in enhancing CKD detection and risk prediction. The synthesis of this comprehensive analysis provides valuable insights into the current landscape of CKD identification and offers recommendations for optimizing diagnostic strategies. © 2024 IEEE.

Author keywords

Chronic Kidney Disease | CNN | Deep learning | optimization | Review

Indexed keywords

Engineering controlled terms: Deep learning | Diagnosis | Health care

Engineering uncontrolled terms   Adverse effect | Analysis of various | Chronic kidney disease | Comprehensive analysis | Deep learning | Diagnostics techniques | Health condition | Healthcare systems | Optimisations | Patient health

Engineering main heading: Risk assessment

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Blockchain Assisted Fireworks Optimization with Machine Learning based Intrusion Detection System (IDS)(Article)(Open Access)

Thiruvenkatasamy, S., Sivaraj, R., Vijayakumar, M. 🔗

[a]Department of Computer Science and Engineering, Nandha College of Technology, Erode, 638052, India
[b]Department of Computer Science and Engineering, Nandha Engineering College, Erode, 638052, India
[c]Department of Computer Science and Engineering, Sasurire College of Engineering, Vijayamangalam, 638056, India

Abstract

In order to cope with the growing complexity of cyber attacks, it is imperative to have efficient intrusion detection systems (IDSs) that can monitor computer resources and produce data on abnormal or suspicious activities. The security of IoT networks is increasingly becoming a crucial concern as the Internet of Things (IoT) technology receives widespread use. Protecting the IoT framework with a conventional Intrusion Detection System (IDS) might be challenging due to the vast quantity and diversity of IoT devices. Traditional Intrusion Detection Systems (IDSs) face limitations when deployed in IoT networks due to resource limitations and the inherent complexity of these networks.This research proposed the Blockchain Assisted Fireworks Optimization with Machine Learning based Intrusion Detection System (BAFWO-MLIDS) technique in the healthcare platform. The major purpose of the BAFWO-MLIDS system is to apply BC technology (BCT) with IDS for enhanced security in the healthcare sector. The BCT enables to achieve secure data transmission in the healthcare platform. The BCT enables to achieve secure data broadcast in the healthcare environment. The BAFWO-MLIDS technique involves a three-stage procedure: FWO based FS process, ENN-based detection, and BO-based parameter optimization. In the proposed BAFWO-MLIDS technique, the FWO-based feature selection process is involved to select optimal features. For intrusion detection, the BAFWO-MLIDS technique uses Elman Neural Network (ENN) model. Finally, the Bayesian optimization (BO) technique is applied to modify the parameters compared with the ENN model and thereby it accomplishes enhanced detection performance. The simulation results of the BAFWO-MLIDS system can be inspected in a series of experiments and the obtained results ensured greater efficiency of the BAFWO-MLIDS methodology with other recent algorithms. © 2024, Strojarski Facultet. All rights reserved.

Author keywords

bayesian optimization blockchain healthcare intrusion detection machine learning security

Indexed keywords

Engineering controlled terms:	Blockchain Complex networks Cybersecurity Explosives Health care Internet of things Machine learning Network security
Engineering uncontrolled terms	Bayesian optimization Block-chain Healthcare Intrusion Detection Systems Intrusion-Detection Machine-learning Neural network model Optimisations Secure data Security
Engineering main heading:	Intrusion detection

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Venkatesan, S. , Ramakrishnan, M.
A Smart Coherent Security Model (SCSM) using Intelligent Optimization and Ensemble Deep Learning Mechanisms for Healthcare-IoT Networks
(2024) 2024 Control Instrumentation System Conference: Guiding Tomorrow: Emerging Trends in Control, Instrumentation, and Systems Engineering, CISCON 2024

Muthu, T. , Kalimuthu, V.K. , Srinivasan, B.
Enhancing Intrusion Detection Using Binary Arithmetic Optimization with Sparse Auto Encoder for Fog-Assisted Wireless Sensor Networks
(2024) Brazilian Archives of Biology and Technology

Srinivasan, B. , Kalimuthu, V.K. , Muthu, T.
Modeling of Tuna Swarm Algorithm Based Unequal Clustering Approach on Internet of Things Assisted Networks
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Sukumar, P.,   Murugasami, R.,   Rajan, A.,   Sharmila, S.

[a]Department of Computer Science and Engineering, Nandha Engineering College (Autonomous), Erode, India
[b]Department of Electronics and Communication Engineering, Nandha Engineering College (Autonomous), Erode, India
[c]Department of ECE, Sreerama Engineering College, Thirupathi, India

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Abstract

A computer-aided automatic detection and diagnosis method for cervix cancer using Pap smear image is described in this chapter. Cervix disease is the foremost reason behind feminine genital cancers and also severe reason for feminine disease death around the world. A papanicolaou smear is a process performed by the therapist during which a trail of cells are taken from the cervix-uteri using a minor swab and examined for any abnormal microscopic appearances due to HPV infections. The proposed methodology constitutes the following stages: preprocessing, feature extraction, nuclei region segmentation, and classification. Morphological operations are used to segment the nuclei cell region. The features are extracted from the re-processed papnicolaou spot cell image. False error rate can be decreased by using the automated process. © 2024 Apple Academic Press, Inc.

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2nd International Conference on Intelligent Data Communication Technologies and Internet of Things, IDCIoT 2024

2024, Pages 1040-1044

2nd International Conference on Intelligent Data Communication Technologies and Internet of Things, IDCIoT 2024; Bengaluru; India; 4 January 2024 through 6 January 2024; Category numberCFP24CV1-ART; Code 198326

Performance Comparison of Object Detection Neural Network Models Based on Accuracy and Latency(Conference Paper)

Gomathy, B.,   Sengottaiyan, N.,   Aarthi, K.,   Thirumoorthy, P.,   Tamizharasu, K.,   Kalyanasundaram, P.

[a]Dr.NGP Institute of Technology, Dept of Computer Science and Business Systems, Tamilnadu, Coimbatore, India
[b]Alliance College of Engineering and Design, Alliance University, Faculty of Science and Technology, Karnataka, Anekal, 562106, India
[c]Kongu Engineering College, Department of ECE, Erode, Tamilnadu, Perundurai, 638 060, India

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Abstract

Aim: The purpose of this study is to compare the object detection performance of You Only Look Once V4 (YOLOv4) and Single Shot Multibox Detector (SSD) algorithms with respect to metrics like accuracy and latency. Materials and method: Twenty sample photos in all, from different classifications and labels, were gathered. These samples were divided into training dataset (60 %) and test dataset (40 %). To measure the performance, values for accuracy and latency were computed for YOLOv4 and SSD with G power 0.8. Result: The accuracy in prediction of the object in the image was higher in the YOLOv4 algorithm (97 %) compared to the SSD algorithm (84 %). After running a t-test on an independent sample of the two groups under consideration. It is observed that YOLOv4 reported greater preference than the SSD algorithm having p value 0.166 (p>0.05). It was proven that the YOLOv4 reported greater preference than SSD in terms of accuracy. © 2024 IEEE.

Author keywords

(Convolutional neural networks) (Machine Learning) (Novel Custom Dataset) (Object Detection)
(Single Shot Multibox Detector) (You Only Look Once V4)

Indexed keywords

Engineering controlled terms:
(Machine learning) (Object detection) (Object recognition) (Statistical tests)

Engineering uncontrolled terms
(Convolutional neural network) (Machine-learning) (Model-based OPC)
(Neural network model) (Novel custom dataset) (Objects detection) (Performance comparison)
(Single shot multibox detector) (Single-shot) (You only look once v4)

Engineering main heading:
(Convolutional neural networks)

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2023, Pages 1434-1439

4th International Conference on Smart Electronics and Communication, ICOSEC 2023; Trichy; India; 20 September 2023 through 22 September 2023; Category numberCFP23V90-ART; Code 193543

Detection and Analysis of Gene Functioning and Manipulation using Deep Learning(Conference Paper)

Bhutto, J.A.,   Sunkari, V.,   Patil, A.M.,   Vanathi, D.,   Loganayagi, S.,   Nayak, M.

[a]College of Computer Science, Huanggang Normal University, Huanggang, 438000, China
[b]School of Information Technology and Engineering, Addis Ababa Institute of Technology, Addis Ababa University, Ethiopia
[c]Bharati Vidyapeeth Deemed University, Department of Applied Science, Department of Engineering and Technology, Navi mumbai, 400614, India

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Abstract

In the field of genomics, the analysis of gene functioning and manipulation is critical for understanding the underlying mechanisms of genetic diseases and developing effective treatments. Deep learning algorithms have shown great potential in processing large volumes of genomic data and predicting gene function. However, deep learning models require large amounts of labeled data for training, which can be a challenge in genomics where data labeling is time-consuming and expensive. To get over this restriction, deep learning and evolutionary algorithms have been used to optimize model hyperparameters and boost accuracy. Through recurrent candidate selection and modification, genetic algorithms apply evolutionary biology principles to optimize complicated solutions. By using this method, the quantity of labeled data needed to train deep learning models can be greatly decreased, and gene function predictions can be made more accurately. Overall, deep learning and genetic algorithms provide a potent tool for the investigation and modulation of gene function. These methods could result in quicker drug development, more precise gene function predictions, and personalized therapy. To ensure the ethical use of these technologies, it is important to recognize and resolve the ethical issues raised by genetic alteration. Furthermore, by deciding on the best guide RNAs for the editing process, genetic algorithms can be utilized to optimize gene editing research like CRISPR-Cas9 gene editing. This strategy can improve the effectiveness and precision of gene editing while minimizing unwanted side effects and potential ethical issues. © 2023 IEEE.

Author keywords

artificial intelligence   deep learning   gene structure   genetic algorithm   genomics

Indexed keywords

Engineering controlled terms: Deep learning   Forecasting   Genes   Genetic algorithms   Learning algorithms   Learning systems   Philosophical aspects

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2023, Pages 866-871

2nd International Conference on Augmented Intelligence and Sustainable Systems, ICAISS 2023; CARE College of EngineeringTrichy; India; 23 August 2023 through 25 August 2023; Category numberCFP23CB2-ART; Code 192825

Improved Pattern Recognition Techniques for Monitoring Human Activity Recognition in Digital Platforms through Image Processing Techniques(Conference Paper)

Sumathi, V., Vanathi, D., Musale, J.C., Gowtham Prasad, T.V.S., Singh, A.R. 👤

[a]Sri Sai Ram Engineering College, Department of Mathematics, Chennai, 44, India
[b]Nandha Engineering College, Department of Computer Science and Engineering, Tamil Nadu, Erode, India
[c]Shri Jagdishprasad Jhabarmal Tibrewala University, University in Jhunjhunu, Department of Computer Science and Engineering, Rajasthan, India

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Abstract

With the rapid advancement of digital platforms and the increasing prevalence of visual data, the need for accurate and efficient human activity recognition has become paramount. In this paper, a novel approach that leverages image processing and hybrid deep learning techniques to enhance pattern recognition for monitoring human activity in digital platforms is proposed. The proposed framework begins with a sensor-captured image to the preprocessing step where raw image data is cleaned, normalized, and transformed into suitable feature representations. Various image processing techniques such as image enhancement, noise reduction, and feature extraction are employed to enhance the discriminative power of the input data. A hybrid deep learning architecture is developed that combines the benefits of various deep learning models to accomplish robust and accurate human activity recognition. Convolutional neural networks (CNNs), recurrent neural networks (RNNs), and attention mechanisms are specifically combined to extract both spatial and temporal information from the input images. The CNNs are in charge of picking up spatial features, while the RNNs and attention mechanisms, respectively, record temporal relationships and emphasize significant areas in the images. To train and evaluate the proposed framework, large-scale datasets containing diverse human activities are utilized. Experimental results demonstrate the superior performance of the proposed approach compared to state-of-the-art methods in terms of accuracy, precision, and recall. The hybrid deep learning architecture effectively handles complex human activity recognition tasks, accurately identifying and categorizing various activities in digital platforms. © 2023 IEEE.

Author keywords

attention mechanisms   convolutional neural networks   deep learning   digital platforms   Human activity recognition   image processing   pattern recognition   recurrent neural networks   sensor

Indexed keywords

Engineering controlled terms: Convolution   Convolutional neural networks   E-learning   Large dataset   Learning systems   Network architecture   Noise abatement   Pattern recognition   Recurrent neural networks

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Mekruksavanich, S. , Jitpattanakul, A.

A Lightweight Deep Residual Network for Recognizing Activities in Daily Living Using Channel State Information

(2023) Proceedings of the IEEE International Conference on Software Engineering and Service Sciences, ICSESS

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2023, Pages 372-377

6th International Conference on Recent Trends in Advance Computing, ICRTAC 2023; Chennai; India; 14 December 2023 through 15 December 2023; Category numberCFP23P35-ART; Code 198534

An Effective Cervical Cancer Detection Approaches - A Comparative Analysis(Conference Paper)

Maheswari, S.,   Marimuthu, C.N.,   Deepa, B.,   Geetha, S.   👤

[a]Anna University, Faculty of Information and Communication Engineering, Chennai, 600025, India
[b]Nandha Engineering College, Department of Electronics and Communication Engineering, Erode, 638052, India
[c]Nandha Engineering College, Department of Computer Science and Engineering, Erode, 638052, India

Abstract

The chance to preserve a life is provided by early identification of cervical cancer, which is the fourth most common malignancy among women globally. Early diagnosis can lower its frequency. However, due to a number of variables, manual screening techniques are ineffective in detecting cervical cancer. However, this leads to incorrect diagnoses and excessive therapy. Therefore, researchers suggested cervical identification using both conventional and deep learning (DL) methods. This study examines future approaches for automated cervical cancer diagnosis and reviews prior work, focusing on the DL area. This is thought to ensure accurate diagnosis and may possibly lower the incidence of cervical cancer. The comparison chart is provided among various techniques in which EL-SVM model shows higher accuracy. © 2023 IEEE.

Author keywords

Cervical cancer detection   Deep learning   Medical imaging   Survey

Indexed keywords

Engineering controlled terms: Deep learning   Diseases   Medical imaging

Engineering uncontrolled terms: Cancer detection   Cancer diagnosis   Cervical cancer detection   Cervical cancers   Comparative analyzes   Deep learning   Detection approach   Early diagnosis   Learning methods   Screening techniques

Engineering main heading: Diagnosis

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9th IEEE International Conference on Smart Structures and Systems, ICSSS 2023; Chennai; India; 23 November 2023 through 24 November 2023; Category numberCFP23ISL-ART; Code 196954

Leveraging the Internet of Things (IoT) for Disaster Management: Enhancing Resilience, Early Warning System in a Globally Connected World(Conference Paper)

Rajendran, S.,   Jadhav, S.A.,   Praba, J.A.,   Muthukumaran, D.,   Kiran, K.,   Sharma, S.   👤

[a]Nandha Engineering College, India
[b]Bharati Vidyapeeth (Deemed to Be University), Institute of Management, Kolhapur, India
[c]Vel Tech Rangarajan Dr.Sagunthala R&d Institute of Science and Technology, Tamil Nadu, Chennai, India

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Abstract

Natural disasters such as earthquakes, fires, and landslides pose significant threats to humanity. While it is impossible to prevent these disasters entirely, careful planning and the implementation of emergency measures, including effective alert systems, can help mitigate their consequences. Recent advancements in communication technology have paved the way for innovative monitoring systems that are designed to enhance disaster preparedness and response. This new monitoring system focuses on the real-time tracking of critical parameters, including water levels, earth vibrations, and room temperatures, through the use of sensors. These sensors are programmed to generate alert signals when the measured values surpass predefined threshold values, which are set to trigger warnings at levels indicative of potential disaster risks. The alerts generated by the system are transmitted in the form of text messages and Android application notifications. These alerts are promptly sent to relevant authorities through their mobile phones, ensuring that they are informed of the developing emergency situation in a timely manner. Additionally, the system incorporates a public address (PA) system to broadcast warning messages to local residents residing near the affected area. This broader alert mechanism ensures that not only authorities but also the general public are aware of potential dangers and can take necessary precautions. In conclusion, the integration of advanced communication technologies and sensor-based monitoring systems has paved the way for more effective disaster preparedness and response strategies. © 2023 IEEE.

Author keywords

Disaster Management   Gas Sensor   Internet of Things (IoT)   Temperature Sensor

Indexed keywords

Engineering controlled terms: Disaster prevention   Emergency services   Risk assessment   Water levels

Engineering uncontrolled terms   Communicationtechnology   Disaster management   Disaster preparedness   Disaster-response   Early Warning System   Gas-sensors   Internet of thing   Monitoring system   Natural disasters   Preparedness and response

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Elshoukry, H.
Enhancing Disaster Management by leveraging Smart Cities Technologies

(2024) Proceedings of 2024 1st Edition of the Mediterranean Smart Cities Conference, MSCC 2024

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2023, Pages 1611-1617

2023 International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2023; M.P. Nachimuthu M.Jaganathan Engineering CollegeErode; India; 18 October 2023 through 20 October 2023; Category numberCFP22DN7-ART; Code 195071

Optimal Load Flow Analysis for Distributed Generation in Radial Distribution Systems Using Modified Newton Raphson Method(Conference Paper)

Saravanakumar, R.,   Saranpriya, R.,   Singaram, G.,   Hariprabhu, M.,   Meenatchi, K.,   Sharanyanivasini, J.S.

[a]Velalar College of Engineering and Technology, Department of Biomedical Engineering, Erode, India
[b]Nandha Engineering College, Department of Computer Science and Engineering (Internet of Things), Erode, India
[c]Annasaheb Dange College of Engineering and Technology, Department of Electrical Engineering, Sangli, Maharashtra, Ashta, 416301, India

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Abstract

The economic status of the country depends upon the power consumption, if the power consumption is more and then there is a chance of over loading in the transmission lines, which may result in more losses. According to one hypothesis. the voltage profile of a radial distribution system with distributed generation (DG) can be enhanced by adding more effective control mechanisms for both actual and reactive power. Because it imnroves system stability and successtully reduce power dissipation in radial distribution networks, distributed production systems outperform traditional approaches for limiting power loss. In order to undertake a comprehensive examination of load flow, the current study used a real-time distribution system in India comprised of 25 buses. The location of distribution generation also identified with trial and error method. The Wind Turbine Generator System (WTGS) is located in different buses to improve the voltage profile. The detailed analysis is carried out with the E-TAP system. © 2023 IEEE.

Author keywords

Distributed Generation   ETAP System   Modified Newton Raphson Method   Wind Turbine Generator System (WTGS)

Indexed keywords

Engineering controlled terms: Distributed power generation   Electric load flow   Electric power transmission   Electric power transmission networks   Newton-Raphson method   Power control   Reactive power   System stability   Turbogenerators   Wind Turbine Generators

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2nd International Conference on Distributed Computing and Optimization Techniques, ICDCOT 2024; SJB Institute of TechnologyBengaluru; India; 15 March 2024 through 16 March 2024; Category numberCFP24UQ5-ART; Code 199353

Predicting Optimal Deep Brain Stimulation Parameters for Parkinson's Disease using Functional MRI and MSVM(Conference Paper)

Muruganandham, S.K., Krithika, S., Alsalami, Z., Kumar S, P., Malathy, V.

[a]Raja Rajeswari College of Engineering, Computer Applications, Bengaluru, India
[b]Nandha Engineering College, Department of Cse (Cyber Security), Tamilnadu, Erode, India
[c]The Islamic University, Najaf, Iraq

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Abstract

Parkinson's disease (PD) is a progressive illness of the central nervous system primarily caused by neuronal degeneration in the substantia nigra of the brain. Blood uric acid level is an emerging biomarker for Parkinson's disease (PD). Despite numerous studies to the contrary, the relationship between Parkinson's disease, diabetes, and the outcomes of specific treatments remains unclear. A collection of machine learning (ML) models was created to predict Parkinson's disease based on MRI images. This work makes use of Parkinson's progressive Markers initiative (PPMI) dataset. Initially, the feature extraction process used VGG-16 and HOG for detecting Parkinson's disease. In following stage, a predicted classification of Parkinson's patients and healthy controls is produced using the Multi-class Support Vector machines (MSVM) model in an effort to enhance the final output of overall classification model. The individuals can use an accessible database created by the Parkinson's progression Markers Initiative (PPMI) to assess the implemented model. When compared to existing methods like Convolutional Neural Network with Fuzzy Rank Level Fusion (CNN-FRLF), and AlexNet with quantum transfer learning method, implemented method achieved high values of 99.53% accuracy. © 2024 IEEE.

Author keywords

machine learning   parkinson's disease   parkinson's progression markers initiative (ppmi)   relieff   VGG16

Indexed keywords

Engineering controlled terms: Convolutional neural networks   Feature extraction   Learning systems   Neurodegenerative diseases   Support vector machines

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2024, Pages 845-848

1st IEEE International Conference on Cognitive Robotics and Intelligent Systems, ICC - ROBINS 2024; Coimbatore; India; 17 April 2024 through 19 April 2024; Category numberCFP24UD1-ART; Code 199666

Improving QR Code Security using Multiple Encryption Layers(Conference Paper)

Narayanan, S.D., Prabhu, S., Padma, E. 👤

Nandha Engineering College (Autonomous), Department of Computer Science and Engineering, Tamil Nadu, Erode, India

Abstract

Growing concerns about identity theft and privacy are brought on by the increased sharing of digital information, which leaves data open to quick changes while in transit. Digital data must be protected from hackers. This study presents a novel approach to improve QR code security and fight counterfeiting. This technique strengthens QR code anti-counterfeit measures by integrating the AES algorithm with Rubik's Cube Principle. The Rubik's Cubic Principle is used to separate the RGB channels in the QR code image. Following the encryption of these channels using the Advanced Encryption Standard (AES) encryption key, the encrypted image is combined with image steganography and is subjected to linear feedback shift register (LFSR) processing. Test results confirm the efficiency of the suggested plan, exhibiting strong encryption and flawless covert abilities. © 2024 IEEE.

Author keywords

AES algorithm   image steganography   LFSR   QR code security   Rubik's Cube Principle

Indexed keywords

Engineering controlled terms:
Codes (symbols)   Crime   Data privacy   Image enhancement   Personal computing   Shift registers   Steganography

Engineering uncontrolled terms
Advanced Encryption Standard algorithms   Code security   Encryption layer   Identity theft   Image steganography   Linear feedback shift registers   QR code security   QR codes   Rubik cube principle   Rubik's cubes

Engineering main heading:
Cryptography

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2024, Pages 864-866

Strengthening QR code Anti-Counterfeit through Multi-Encryption Algorithm(Conference Paper)

Narayanan, S.D., Prabhu, S.   👤

Nandha Engineering College (Autonomous), Department of Computer Science and Engineering, Tamil Nadu, Erode, India

Abstract

The rise in digital information sharing poses risks to privacy and personal identity, making data vulnerable to theft and swift modifications during transfer. Safeguarding digital data against attackers is crucial. To enhance QR code security and combat counterfeiting, a novel approach is presented in this study. This method integrates the Advanced Encryption Standard (AES) algorithm and Rubik's Cube Principle, fortifying anti-counterfeit measures in QR codes. The QR code image is divided into RGB channels using the Rubik's Cubic Principle. The AES encryption key encrypts these channels, and the results are combined into an encrypted image. Experimental outcomes affirm the effectiveness of the proposed scheme, demonstrating robust encryption and impeccable concealment capabilities. © 2024 IEEE.

Author keywords

AES algorithm   anti-counterfeit   image steganography   QR code   Rubik's Cube Principle   security

Indexed keywords

Engineering controlled terms: Crime   Data privacy   Steganography

Engineering uncontrolled terms   Advanced Encryption Standard algorithms   Anti-counterfeit   Digital information   Encryption algorithms   Image steganography   Information sharing   QR codes   Rubik cube principle   Rubik's cubes   Security

Engineering main heading: Cryptography

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9th IEEE International Conference on Smart Structures and Systems, ICSSS 2023; Chennai; India; 23 November 2023 through 24 November 2023; Category numberCFP23ISL-ART; Code 196954

Enhancing Pathology Insights: Deep Learning for Histopathological Image Analysis in Colorectal Cancer(Conference Paper)

Swamy, B.V.,   Mudalkar, P.K.,   Balaji, R.R.,   Prasad, M.V.S.,   Harikumar, M.,   Saikia, A.

[a]B v Raju Institute of Technology, Department of Chemistry, Telangana, Narsapur, 502313, India
[b]Bharati Vidyapeeth (Deemed to Be University), Institute of Management, Kolhapur, India
[c]Nandha Engineering College, India

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Abstract

Histopathological image analysis has emerged as a pivotal tool in the field of colorectal cancer diagnosis and prognosis. As the incidence of colorectal cancer continues to rise globally, the need for accurate, efficient, and scalable diagnostic methods becomes increasingly paramount. Deep Neural Networks (DNNs) have shown remarkable potential in various medical imaging tasks, including histopathological image analysis. In this paper, we introduce DNNI, a novel framework comprises of Deep Neural Networks and Inception, tailored specifically for the comprehensive analysis of colorectal cancer histopathological images. The DNNI framework leverages state-of-the-art deep learning techniques, drawing inspiration from the inception architecture, to address the unique challenges posed by colorectal cancer histopathology. Moreover, we present a large-scale dataset of colorectal cancer histopathological images, carefully curated and annotated, to facilitate training and evaluation of the DNNI model.This dataset incorporates diverse tissue samples, capturing various stages and subtypes of colorectal cancer, thus enabling robust and generalizable model development. Experimental results demonstrate the efficacy of DNNI as 98.25% in accurately identifying cancerous regions, grading tumor malignancy, and predicting patient outcomes. We compare our model's performance with existing approaches, showcasing superior accuracy and efficiency. © 2023 IEEE.

Author keywords

Colorectal Cancer Detection   Deep Learning Model   Deep Neural Networks   Histopathological image   Inception

Indexed keywords

Engineering controlled terms:
Diagnosis   Diseases   Grading   Image analysis   Image enhancement   Large datasets   Learning systems   Medical imaging

Engineering uncontrolled terms
Cancer detection   Cancer prognosis   Colorectal cancer detection   Colorectal cancer diagnosis   Deep learning model   Diagnosis and prognosis   Histopathological image analysis   Histopathological images   Inception   Learning models

Engineering main heading:
Deep neural networks

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Santhoshi, A. , Muthukumaravel, A.

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(2024) Advancing Intelligent Networks Through Distributed Optimization

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Document details - An Empirical Evaluation of Transmission Line Fault Identification and Filtration Using Improved Deep Learning Strategy

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An Empirical Evaluation of Transmission Line Fault Identification and Filtration Using Improved Deep Learning Strategy(Conference Paper)

Nirmala, P., Logeswari, V., Nair, M.S.

[a]Saveetha Institute of Medical And Technical Sciences, Saveetha University, Department of Ece, Saveetha School of Engineering, Chennai, India
[b]Nandha Engineering College, Department of Ece, Erode, 6380552, India
[c]School of Electronics Engineering (SENSE), Vellore Institute of Technology, Chennai, India

Abstract

Transmission line fault identification is crucial for maintaining the reliability and stability of electrical power grids. In this study, we propose an enhanced deep learning strategy for the precise detection and filtration of faults in transmission lines. Leveraging integrated DenseNet and Xception models, renowned for their effectiveness in handling complex data, we develop a robust fault detection system. The integrated DenseNet architecture facilitates efficient feature reuse and propagation through densely connected convolutional networks with skip connections, while the Xception model employs depthwise separable convolutions to capture spatial dependencies and reduce computational complexity. Pretrained on extensive datasets, these models automatically learn hierarchical features, enabling them to accurately identify faults in transmission lines. Through meticulous experimentation, our proposed strategy achieves an impressive accuracy of 98.2%, demonstrating its effectiveness in enhancing fault detection capabilities and ensuring the reliability of electrical power grids. © 2024 IEEE.

Author keywords

Deep Learning Strategy   Integrated DenseNet   Transmission Line Fault Identification   Xception Models

Indexed keywords

Engineering controlled terms:
Complex networks   Convolution   Convolutional neural networks   Data handling   Deep learning   Electric power transmission   Electric power transmission networks   Fault detection   Learning systems

Engineering uncontrolled terms
Deep learning strategy   Electrical power   Fault identifications   Integrated densenet   Learning strategy   Power grids   Transmission line fault identification   Transmission line faults   Transmission-line   Xception model

Engineering main heading:
Electric lines

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Li, A. , Xu, J. , Lu, W.

Fault Detection of Electrical Equipment Using Attention Based Hybrid Deep Learning Approach

(2024) 2nd IEEE International Conference on Data Science and Network Security, ICDSNS 2024

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2024, Pages 2109-2114

7th International Conference on Inventive Computation Technologies, ICICT 2024; Lalitpur; Nepal; 24 April 2024 through 26 April 2024; Category numberCFP24F70-ART; Code 200047

Lithium - Ion Battery Degradation and Estimation of Battery Parameters(Conference Paper)

Gunasekar, T.,   Kokila, P.,   Rithanya, N.,   Rinthita, T.,   Shreenithi, M.,   Ranjith, V.P.

[a]Kongu Engineering College, Department of Eee, India

[b]Nandha Engineering College, Department of Ece, India

Abstract

The energy storage industry is growing rapidly, with the first installation of more than 10 Gigawatts (GW) of energy storage in 2021. However, there are still significant obstacles to implementation, such as the tension between steadily falling prices and a perception of high cost. Additionally, some systems require significantly more maintenance to keep functioning as intended, which could result in higher overall costs and the creation of new charges where none previously existed. Energy storage's inherent ability to offer backup power in the event of grid failure is a feature that both residential consumers and commercial owners find highly desirable. The utility is interested in energy storage since it allows them to store energy produced by their plants but not used and release it during the day when demand is higher, and costs are higher. As this study attempts to build a smart grid, it achieves the objective of being more efficient, stable, and less expensive. Additionally, the automotive sector has faced challenges when it comes to recycling and reusing lithium-ion batteries, as the carbon footprint of manufacturers of electric vehicles is significantly impacted by the extraction of the raw materials needed to construct Li-ion batteries. Our analysis helps to categorize the problems that lithium-ion batteries run into when employed in various loading applications. © 2024 IEEE.

Author keywords

Battery   Degradation   Energy storage   Energy supply   Estimation and Battery parameters   Recycling

Indexed keywords

Engineering controlled terms:	Automotive industry Carbon footprint Energy storage Ions Recycling Smart power grids
Engineering uncontrolled terms	Back-up power Battery Battery degradation Energy Energy supplies Estimation and battery parameter High costs Overall costs Recycling Residential consumers
Engineering main heading:	Lithium-ion batteries

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2nd International Conference on Distributed Computing and Optimization Techniques, ICDCOT 2024; SJB Institute of TechnologyBengaluru; India; 15 March 2024 through 16 March 2024; Category numberCFP24UQ5-ART; Code 199353

Residual Network Based Bidirectional Gated Recurrent Unit for Speech Recognition Using Speech Signals(Conference Paper)

Naga, R.M.,   Jayachandran, T.,   Alzubaidi, L.H.,   Mazumder, D.,   Praveena, H.D.

[a]Gst, Gitam, Department of Cse, Karnataka, Nagadenahalli, India
[b]Nandha Engineering College, Department of Ece, Tamilnadu, Erode, India
[c]The Islamic University, Najaf, Iraq

View additional affiliations ⌄

Abstract

Speech Recognition is challenging research ins speech processing field of research. Different method has available in previous research that attained high accuracy. However, accuracy of speech recognition is not increased because of irrelevant features in recognition stage. In this research, proposed a Residual Network based Bidirectional Gated Recurrent Unit (ResNet based Bi-GRU) method for speech recognition using Libri Speech dataset. The signals from data are pre-processed and feature extraction is performed through Mel Frequency Cepstral Coefficients (MFCC) that extract relevant features. Then, the extracted features are fed to classification stage which recognized the speech signals with high accuracy and less error rates. Performance of developed method is evaluated to metrics of Word Error Rate (%), Character Error Rate (CER), accuracy and f1-score. Developed technique obtained less WER of 4.55%, CER of 4.1%, accuracy of 96.71% and f1-score of 96.15% that is effective than existing methods like Recurrent Neural Network (RNN) -Gated Recurrent Unit (GRU) and Long Short-Term Memory (LSTM). © 2024 IEEE.

Author keywords

bidirectional gated recurrent unit   mel frequency cepstral coefficients   residual network   speech recognition   word error rate

Indexed keywords

Engineering controlled terms:

Audio signal processing   Errors   Long short-term memory   Speech communication   Speech processing

Engineering uncontrolled terms

Bidirectional gated recurrent unit   Character error rates   F1 scores   High-accuracy   Mel frequency cepstral co-efficient   Mel-frequency cepstral coefficients   Network-based   Residual network   Speech signals   Word error rate

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2024

2nd International Conference on Artificial Intelligence and Machine Learning Applications, AIMLA 2024; Namakkal; India; 15 March 2024 through 16 March 2024; Category numberCFP24NZ5-ART; Code 199651

An Intelligent Plant Leaf Syndrome Identification Derived from Pathogen Based Deep Learning Algorithm by Interfacing Internet of Things in Smart Irrigation System(Conference Paper)

Parameshwari, V.,   Brundha, A.,   Gomathi, P.,   Gopika, R.

Nandha Engineering College, Electronics and Communication Engineering, Tamilnadu, Erode, India

Abstract

Agriculture is a backbone of the national economy. This project focuses on the advancement of a sophisticated plant leaf disease recognition method that harnesses the capabilities of deep transfer learning algorithms for precise and efficient disease classification. This project adopts a pathogen-centric approach, utilizing deep transfer learning models. The foremost intend of this project is to discover the plant illnesses by pathogens and the system is integrated into a smart irrigation arrangement through the use of Internet of Things technology with deep transfer learning algorithm. The deep transfer learning improves disease diagnosis. It enables the system to learn from a wide variety of data, improving its ability to recognize different plant diseases. The Internet of Things component makes sure that the smart irrigation arrangement has smooth connectivity and communication. Not only can this intelligent approach diagnose ailments, but it also makes a substantial contribution to effective irrigation management. It helps to promote sustainable agriculture by facilitating the quick and targeted responses made available by IOT. This project promotes early intervention, which improves crop health and yield. © 2024 IEEE.

Author keywords

Debian   Deep learning   Keras   Pathogens   Plant diseases detection   Smart irrigation   Tensor flow

Indexed keywords

Engineering controlled terms: Deep learning   Diagnosis   Internet of things   Learning algorithms   Learning systems   Pathogens

Engineering uncontrolled terms   Debian   Deep learning   Disease detection   Keras   Plant disease   Plant disease detection   Plant leaves   Smart irrigation   Tensor flow   Transfer learning

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2nd International Conference on Computer, Communication and Control, IC4 2024; Indore; India; 8 February 2024 through 10 February 2024; Category numberCFP24NZ4-ART; Code 198630

Advances in Medical Image Processing for Liver Tumour Recognition: A Comprehensive Survey(Conference Paper)

Deepa, B., Marimuthu, C.N., Geetha, S., Maheswari, S. 👤

[a]Anna University, Faculty of Information and Communication Engineering, Chennai, 600025, India
[b]Nandha Engineering College, Department of Electronics and Communication Engineering, Erode, 638052, India
[c]Nandha Engineering College, Department of Computer Science and Engineering, Erode, 638052, India

Abstract

The last several decades have seen a lot of activity in the medical image processing domain especially when it comes to the segmentation of liver and liver tumours. The survival rate of liver cancer is rather low when compared to some other types of cancer. Nevertheless, early detection greatly improves the prognosis of liver cancer patients. As a consequence, multiple researchers have developed automated deep-learning (DL) systems for forecasting the development of cancer cells using various medical imaging modalities. A summary of some previously published studies on liver cancer diagnosis is currently lacking in review publications. But new mechanisms and architecture in the prognosis of liver cancer were beyond the possibility of these investigations. This review emphases on the topologies of DL for liver cancer diagnosis. The survey that follows examines the datasets used, describes existing DL-based designs, assesses the benefits and drawbacks of earlier studies, and discusses image processing techniques. Furthermore, a thorough examination of several imaging modalities, performance metrics and results, challenges and future research goals are provided. The comparison study of different methods reveals that HFCNN has the highest accuracy, at 97.22%. © 2024 IEEE.

Author keywords

deep learning   Image pre-processing   Imaging modalities   Liver cancer diagnosis

Indexed keywords

Engineering controlled terms:
Cancer cells   Deep learning   Diagnosis   Diseases   Image segmentation   Tumors

Engineering uncontrolled terms
Cancer diagnosis   Deep learning   Image preprocessing   Imaging modality   Liver cancer diagnose   Liver cancers   Liver tumors   Medical images processing   Survival rate   Tumor recognition

Engineering main heading:
Medical imaging

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An Intelligent Smart healthcare system for patient monitoring based on CNN machine learning algorithm(Conference Paper)

Parameshwari, V., Kavitha, S.

Nandha Engineering College, Electronics and Communication Engineering, Tamilnadu, Erode, India

Abstract

Diseases are spreading swiftly among people in the modern society, and it is challenging to diagnose illnesses in older people with diabetes, heart disease, kidney disease, and other health challenges. They affect the neurological system and result in vision loss in addition to the diseases indicated above. The proposed method provides a machine learning technique that uses convolution neural network (CNN) classifiers to detect diseases for patients earlier, offering an advantage over linear regression, KNN and decision tree approaches. This algorithm has good accuracy, precision, and recall compare to KNN, Linear regression, Decision tree methods. The recommended system is a trustworthy health monitoring system with sufficient intelligence to leverage the IoT to keep an eye on the patient without human intervention. By using these technologies, it gathers significance information about the patient, including blood pressure, temperature, heart rate, and ECG and uses that information to send an emergency warning via an Android phone to the patient's physician and patients relative, along with the patient's present situation. The proposed system allows the consultant as well as caregiver to observe their patient from wherever in the globe. Smart sensors are used by this proposed system to generate real time data that is to be gathered from various sensors and is to be sent to a cloud for analysis and statistical safeguarding before being used. In the recommended patient monitoring system approach, the parameters pertaining to the patient's health are tracked health metrics with a Raspberry Pi. The Raspberry Pi act as server and sends data to the website then the consultant and caregivers can use laptops, tablets, and smart phones to check a patient's health issues where ever by using their IP address. Doctors and family members will receive an automatic SMS alert if any of these parameters deviate from normal. This study makes use of a Raspberry Pi Board as an Internet of Things gadget to read patient health parameters and interface with different sensors. These health metrics are then sent to the cloud. The caregiver and doctor have cloud access to these values. If the doctor is unable to visit the patient in the hospital, the proposed system will be a helpful tool for quickly giving prescriptions and keeping an eye on the health of the patient from a distance. © 2024 IEEE.

Author keywords

CNN   Internet of Things (IoT)   linear regression   Machine learning algorithm   Raspberry Pi

Indexed keywords

Engineering controlled terms: Blood pressure   Decision trees   Diseases   Learning algorithms   Linear regression   mHealth   Patient treatment   Smartphones

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Parameshwari, V. , Abirami, T. , Karthikkumar, M.

Investigation of Healthcare Tracking System for Diabetic Patients Utilizing Machine Learning Algorithms to Integrate the Internet of Things

(2024) 2nd International Conference on Intelligent Cyber Physical Systems and Internet of Things, ICoICI 2024 - Proceedings

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Energy Efficient Routing Technique Using Enthalpy Ant Net Routing for Zone-Based MANETS(Article)

Kannan, K.R., Marimuthu, C.N.

[a]Department of Electronics and Communication Engineering, Hindusthan Institute of Technology, Coimbatore, India

[b]Department of Electronics and Communication Engineering, Nandha Engineering College, Erode, India

Abstract

Routes discovery that can provide reliable data transmission in Mobile Ad-hoc Networks is challenging due to its wireless channel characteristics and dynamic transmission environment. Ad-hoc networks frequently experience link failure because nodes are mobile and their positions are not fixed. The cellular ad hoc community's dynamic nature makes it possible to analyze multi-route routing protocols specifically. One of the most trustworthy and environment-friendly routing methods is the Zone Routing Protocol used in Mobile Ad Hoc Networks. Offering timely and trustworthy communication services, however, depends critically on maintaining the Quality of Service, electricity performance, and outstanding resource management. In this research, we suggested an energy-efficient routing method for zone-based MANETs called enthalpy and net routing. First, a completely fuzzy quarter clustering based on an Energy guide is used to perform the clustering. With the help of fuzzy memberships, the AFCM set of rules permits the input of statistics for each elegance. In the second, the best route is selected using Enthalpy Ant Net Routing (EANR) while taking the following factors into account: community disconnection, channel error, buffer overflow, and contention at the link layer. The results of the experiment show that the collection of rules performs better than many existing algorithms in terms of community longevity, electricity consumption, and other metrics. © 2024 IETE.

Author keywords

Clustering | Energy | Enthalpy | Fuzzy c-means clustering | Link lifetime | Optimal path | Secure routing

Indexed keywords

Engineering controlled terms: Electric power transmission | Energy efficiency | Mobile ad hoc networks | Power management (telecommunication) | Quality of service | Routing protocols

Engineering uncontrolled terms Clusterings | Energy | Energy efficient routing | Fuzzy C-Means clustering | Link lifetimes | Mobile ad-hoc networks | Optimal paths | Routings | Secure routing | Zone-based

Engineering main heading: Enthalpy

Cited by 1 document

Prasanna, K.S. , Ramesh, B.

A Review: An Efficient and Reliable Secure Routing Mechanism with the Prevention of Attacks in Mobile Ad-Hoc Network (MANET)

(2023) Wireless Personal Communications

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Current modulation/optical injection and feedback for semiconductor laser diode based on optical field rate and intensity rate equation model

(📖 Article in press ❓)

Mohanadoss, P.,   Sridhar, P.K.,   Subramaniam, K.,   Jebanazer, J.,   Dhandapani, A.,   Kanchana, R.,   Xavier, B.M.,
Prabu, R.T.,   Rashed, A.N.Z.   👤   👤

[a]Department of ECE, S.A. Engineering College, Tamil Nadu, Chennai, 600077, India
[b]Department of ECE, Sathyabama Institute of Science and Technology, Jeppiaar Nagar, Rajiv Gandhi Salai, Tamil Nadu, Chennai, 600119, India
[c]Department of ECE, Nandha Engineering College, Tamil Nadu, Erode, 638052, India

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Abstract

This paper demonstrated the current modulation/optical injection and feedback for semiconductor laser diode based on optical field rate and intensity rate equation model. The injected electrical current and carrier density equations model are used to estimate the laser net gain, stimulated emission gain and spontaneous laser emission absorption. As well as the photon density equations model to determine the laser diode cavity loss and laser output power. The laser rate equations are clarified for the photon/electron concentration with the time. The small and large signal modulation response is demonstrated. The single mode laser diode equation for the complex optical field is studied. Laser diode output power is studied against laser pump current for both stimulated/spontaneous emission at first/second/third wavelength window. Laser relaxation oscillation frequency and optical gain are both clarified versus laser pump power for both stimulated/spontaneous emission at various wavelength window. © The Author(s), under exclusive licence to The Optical Society of India 2024.

Author keywords

Current modulation   Optical feedback   Optical field rate   Optical injection

Indexed keywords

Engineering controlled terms: Chirp modulation   Injection lasers   Optical pumping   PIN diodes
Power semiconductor diodes   Surface discharges

Engineering uncontrolled terms   Current modulation   Density equations   Equation models   Field intensity   Field rates
Optical field   Optical field rate   Optical injection   Optical-   Rate-equation models

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Volume 65, Issue 1, 2024, Pages 73-81

Diabetes classification using MapReduce-based capsule network(Article) (Open Access)

Arun, G., Marimuthu, C.N.

a M P Nachimuthu M Jaganathan Engineering College, Erode, India
b Nandha Engineering College, Erode, India

Abstract

Big data analytics is a complex exploratory process to uncover hidden data information from vast collections of data. It often provides enormous information from diverse sources and the use of analytics provides confined knowledge from the collected noisy data. In the case of diabetes data, there exist a massive collection of patient data that relates to significant information on patient health and its critical nature. In order of validating and analysing the data to get desired information about a patient and their health risk from the vast collection of data, the study uses bigdata based deep learning analytics. This study uses a Deep Learning Model namely capsule network (CapsNet) is executed on a MapReduce framework. The CapsNet present in the MapReduce framework enables the classification of instances via proper regulations. This model after suitable training with the training dataset enables optimal classification of instances to detect the nature of the risk of a patient. The validation conducted on the test dataset shows that the proposed CapsNets-based MapReduce model obtains increased accuracy, recall, and F-score than the conventional MapReduce and deep learning models. © 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

Author keywords

big data   Capsnets   classification   framework   MapReduce   network

Funding details

Arun, G.; Department of Computer Science and Engineering, Erode Sengunthar Engineering College, Perundurai, Erode, Thudupathi, India;

Marimuthu, C.N.; Department of ECE, Nandha Engineering College, Erode, Perundurai, India;

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Mayya, V. , Kandala, R.N.V.P.S. , Gurupur, V.

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6th International Conference on Recent Trends in Advance Computing, ICRTAC 2023; Chennai; India; 14 December 2023 through 15 December 2023; Category numberCFP23P35-ART; Code 198534

An Effective Cervical Cancer Detection Approaches - A Comparative Analysis(Conference Paper)

Maheswari, S.,   Marimuthu, C.N.,   Deepa, B.,   Geetha, S.   👤

[a]Anna University, Faculty of Information and Communication Engineering, Chennai, 600025, India
[b]Nandha Engineering College, Department of Electronics and Communication Engineering, Erode, 638052, India
[c]Nandha Engineering College, Department of Computer Science and Engineering, Erode, 638052, India

Abstract

The chance to preserve a life is provided by early identification of cervical cancer, which is the fourth most common malignancy among women globally. Early diagnosis can lower its frequency. However, due to a number of variables, manual screening techniques are ineffective in detecting cervical cancer. However, this leads to incorrect diagnoses and excessive therapy. Therefore, researchers suggested cervical identification using both conventional and deep learning (DL) methods. This study examines future approaches for automated cervical cancer diagnosis and reviews prior work, focusing on the DL area. This is thought to ensure accurate diagnosis and may possibly lower the incidence of cervical cancer. The comparison chart is provided among various techniques in which EL-SVM model shows higher accuracy. © 2023 IEEE.

Author keywords

Cervical cancer detection   Deep learning   Medical imaging   Survey

Indexed keywords

Engineering controlled terms: Deep learning   Diseases   Medical imaging

Engineering uncontrolled terms   Cancer detection   Cancer diagnosis   Cervical cancer detection   Cervical cancers   Comparative analyzes   Deep learning   Detection approach   Early diagnosis   Learning methods   Screening techniques

Engineering main heading: Diagnosis

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7th International Conference on Electronics, Communication and Aerospace Technology, ICECA 2023; Coimbatore; India; 22 November 2023 through 24 November 2023; Category numberCFP23J88-ART; Code 197155

Energy-Efficient Clustering and Routing Algorithm using Deer Hunting Optimization in Wireless Sensor Networks(Conference Paper)

Jayachandran, T., Logeswaran, A., Thillaikkarasi, S., Suman, S.M., Sakthikumar, B., Karthick, S.

[a]Nandha Engineering College, Dept of ECE, Erode, India
[b]Velalar College of Engineering, Department of IT, Erode, India
[c]Sri Eshwar College of Engineering, Department of ECE, Coimbatore, India

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Abstract

(WSNs) Wireless sensor networks have been available aimed at over an era and are employed in various critical applications. Two significant challenges for such applications are power and dependability. Because data transmission reliability is a vital component of data transmission quality, it is an essential issue in WSNs. Therefore, the primary objective of this research is to find the best header in each packet; it offers a Deer Hunting Optimization (DHO) algorithm to solve the most significant issue of finding the optimum header in each packet. Furthermore, the Adaptive Threshold Sensitive Energy Efficient Sensor Network (APTEEN) algorithm determines the best direction-finding path since the cluster head (CH) to the base station (BS). In addition, the APTEEN algorithm finds the straight routing path to minimize power usage. The proposed method is then evaluated using performance analysis on various criteria. The suggested method is utilized to evaluate PDR, end-to-end latency, throughput, network longevity, and packet loss rate, and the findings beat existing methods. Throughput findings for quality-of-service characteristics include PDR (98.5%), end-to-end latency (3.2ms), throughput (1Mbps), network lifetime (6600 rounds), and PLR (1%) for 100 nodes. © 2023 IEEE.

Author keywords

clustering   deer hunting optimization   Efficient Sensor Network Protocol   sensor nodes

Indexed keywords

Engineering controlled terms:

Clustering algorithms   Data transfer   Energy efficiency   Mobile telecommunication systems   Network protocols   Packet networks   Power management (telecommunication)   Quality of service   Routing algorithms

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7th International Conference on Electronics, Communication and Aerospace Technology, ICECA 2023; Coimbatore; India; 22 November 2023 through 24 November 2023; Category numberCFP23J88-ART; Code 197155

Development of Chain Link Twister Machine for Land Fencing Applications(Conference Paper)

Gunasekar, T., Kokila, P., Livinkumar, D., Mathinraj, R., Parvathavarthini, S., Priyadharshini, T.

[a]Kongu Engineering College, Erode, Perundurai, India
[b]Nandha Engineering College, Erode, Perundurai, India

Abstract

For ages, it has been a common practice to mark or designate one's property by fencing around it. As time changed, so did the techniques involve in fencing. In an early age, the fences used to be made of stones. A century ago, fencing was dominated by the use of steel and wood. In modern times, though, there are many fencing techniques available that can be implied as per the requirement. Of many such techniques, a well-known and diversely implied one is chain link fencing. Its implications can be found at borders, alongside highways, in industrial production lines, and for domestic purposes. It was the industrial revolution that influenced the production of chain link fencing machines; the inspiration was taken from cloth weaving machines. For the production of chain link fencing, manual, semi-automatic, and automatic machines are used. The machine under development focuses on a small-scale business model in places where instant fencing is required. The research presents a review, analysis, study of concepts, and innovation of machine-producing chain links. The length of the fence produced is adjustable. The machine also has a manually operated mechanism for situations like power cuts. The goal is to occupy less space at the workplace and produce the fence as required on the spot. The main problem and solution provided is regarding the locking system of the fencing, which is implemented using the chain link twister machine. Since twisting is done manually, it takes more time to complete. There may be a chance of injury to the workers. The twister structures may be improper in shape. © 2023 IEEE.

Author keywords

Chain link   Fencing   Hall effect sensor   Microcontroller

Indexed keywords

Engineering controlled terms: Fences   Weaving

Engineering uncontrolled terms   Chain links   Chain-link fencing   Domestic purpose   Early age   Fencing   Hall-effect sensors   Industrial production lines   Industrial revolutions   Modern time   Property

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Fluctuation and Noise Letters

Volume 22, Issue 5, 1 October 2023, Article number 2350026

A Development and Analysis of Color Image New Blind Watermarking Based on DWT-SVD Swapping and 3-Dimensional Cryptography Technique(Article)

Jayachandran, T., Kavitha, S. ⚲

Department of Electronics and Communication Engineering, Nandha Engineering College, Tamilnadu, Erode, India

Abstract

Several acceptable watermarking methods are designed to minimize this problem depending on the desired applications. A watermarking system that is stable and healthy at the same time, however, is hard to achieve. This paper provides information about the standard method for watermarking by using different methodologies including an arrangement of Singular Value Decomposition (SVD) and Discrete wavelet transforms (DWT) technique, ensuring a fully blind and robust watermarking technique. New swapping techniques and a nonlinear three-dimensional Chaos-based simple technique of Cryptography are implemented to improve the protection of the proposed method. Three-dimensional chaos is the first time used technique for permutated positions and value transformation techniques. In addition, this work compares the efficiency and safety analysis provided for the various fractal cover combinations by some metrics, which are deliberated in the result section. The proposed project will also be compared with some metrics such as Peak Signal Noise Ratio (PSNR), Mean Square Error (MSE), and Structural Similarity Index (SSIM). The outcomes show that image degradation is much less in the dimension of the hidden image file than in the cover image file, which is double in size. Therefore, the proposed method saves the bandwidth and storage requirements. © 2023 World Scientific Publishing Company.

Author keywords

Discrete wavelet transforms (DWT)   image security   image swapping   singular value decomposition (SVD)   three-dimensional chaos watermarking

⚲ Jayachandran, T.; Department of Electronics and Communication Engineering, Nandha Engineering College, Tamilnadu, Erode, India;

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2023, Pages 1355-1362

2023 International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2023; M.P. Nachimuthu M.Jaganathan Engineering CollegeErode; India; 18 October 2023 through 20 October 2023; Category numberCFP22DN7-ART; Code 195071

Enhancing IoT Image Security Through Hybrid Encryption and Optimal Key Generation with Optimization(Conference Paper)

Anitha, M., Arulanantham, D., Brinda, G., Vijayakumar, S.D., Prakash, G., Shivaranjani, M.

[a]M.P.NachimuthuM.Jaganathan Engineering College, Department of Ece, Erode, India
[b]Nandha Engineering College, Department of Ece, Erode, India
[c]Builders Engineering College, Department of Ece, Tirupur, India

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Abstract

In today's world, the Internet of Things (IoT), the essential need for safeguarding digital data, namely digital images and videos, has come to the forefront. This study introduces a novel hybrid encryption technique characterized by specific attributes that favor efficiency and optimum key utilization, enhancing information technology security. Safeguarding the authenticity and privacy of digital images is of utmost importance owing to the many security obstacles presented during their processing and transmission. This research presents the IoT-based Hybrid Image Security Framework (IoT-HISF) using Genetic Algorithm (GA) and Particle Swarm Optimization (PSO), which comprises a comprehensive solution to address the difficulties. The research provides valuable contributions by creating high-speed encryption, focusing on generating vital cryptographic keys. The research introduces multi-layered security measures specifically designed to safeguard images in the IoT using the IoT-HISF framework. The IoT-HISF demonstrates performance outcomes in several metrics, such as peak signal-to-noise ratio (PSNR) with a value of 53.15 dB, Hamming distance of 0.02, bit error rate (BER) of 0.0002, accuracy of 97.82%, payload capacity of 5.32 bits per pixel (bpp), and security index of 97.05. These findings emphasize the exceptional image security capabilities of the IoT-HISF framework, particularly in IoT applications. The results indicate that the IoT-HISF enhances image security in IoT applications, including reliable safeguards for high-quality photos and optimizing resource efficiency. © 2023 IEEE.

Author keywords

Hybrid Framework Image Encryption Internet of Things Security Optimization

Indexed keywords

Engineering controlled terms: Bit error rate Efficiency Genetic algorithms Hamming distance Image enhancement Particle swarm optimization (PSO) Signal to noise ratio

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Enhancing Skin Cancer Diagnosis Using DL with 3D Model(Conference Paper)

Amarnath Prabhakaran, A., Srinevasan, M., Sowparnika, B., Balajee, B.

[a]Nandha Engineering College, Dept of Ece, Tamilnadu, Erode, India
[b]Al-Ameen Engineering College, Dept of Eee, Erode, India

Abstract

Skin cancer is a potentially fatal condition that can be treated if found in its early stages. The diagnosis of skin cancer is often challenging and requires skilled medical professionals. Deep learning models have shown promise in detecting skin cancer from images with high accuracy. The proposed neural network using convolutions is to identify skin cancer using photos of skin lesions. The model was evaluated on a different dataset of 5,105 photos after being trained on a dataset of over 10,000 images. It is also developed a web-based application that allows users to upload their skin lesion images to the model and obtain a prediction of the cancer type. The output is a cancer type with a 3D image of the skin lesion that can aid in visualizing the extent of the cancer. The results show that the model achieved an accuracy of 94%, This performs better than earlier state-of-the-art techniques. The proposed web-based application offers a simple method for spotting skin cancer early on. © 2023 IEEE.

Author keywords

3-Dimensional Image   Convolutional Neural Network   deep learning   Skin cancer   Web page

Indexed keywords

Engineering controlled terms: 3D modeling   Convolutional neural networks   Deep learning   Dermatology   Diagnosis   Diseases   Image enhancement   Learning systems   Web services   Websites

Engineering uncontrolled terms   3-dimensional images   3D models   3d-modeling   Cancer diagnosis   Convolutional neural network   Deep learning   Skin cancers   Skin lesion   Web-based applications   Web-page

Engineering main heading: Convolution

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2023, Pages 1745-1749

2023 International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2023; M.P. Nachimuthu M.Jaganathan Engineering CollegeErode; India; 18 October 2023 through 20 October 2023; Category numberCFP22DN7-ART; Code 195071

Radio Astronomy Based S-Band Horn Antenna for CubeSat Application(Conference Paper)

Kokila, P., Gunasekar, T., Mohanasundaram, T., Senthilkumar, M., Senthil Kumar, T., Saravanakumar, P.

[a]Nandha Engineering College, Erode, Perundurai, India
[b]Kongu Engineering College, Erode, Perundurai, India
[c]M. S Ramaiah Institute of Technology, Bangalore, India

View additional affiliations ⌄

Abstract

The CubeSat is commonly used for low earth orbit for remote sensing and communication cube sat with 9 cm X 9cm are used in solar cell to convert the solar light which is stored in lithium- ion battery. The radio as tronomy is a sub field of the as tronomy that identifies the celestial object at radio frequency. The s-band frequency range of 5 GHz and wavelength of 1500nm is used to design horn antenna. Horn antenna is used in high - speed and inter -satellite links where high data rates are favored which is used to transmit bulk data. It is also used for remote sensing applications. Design and simulation of horn antenna which works at micro wave domain starts at frequency of 3GHZ, to improve the antenna medium gain. Pyramidal horn antenna is used and designed in the frequency of 5GHZ. When the same antenna is designed Changing with frequency of 10GHz and 15GHz Gain, Directivity value and Efficiency are improved From the results, VSWR value is reduced when the frequency is increased It shows that, by using horn antenna, the amount of reflection can be reduced While increasing the amount of radiated efficiency, powers radiated by an antenna to the power fed in the antenna's excitation port ratios are determined. © 2023 IEEE.

Author keywords

Cube satellite Directivity Gain Horn Antenna Radio astronomy Substrate Voltage Standing Wave Ratio

Indexed keywords

Engineering controlled terms:
Efficiency Horn antennas Lithium-ion batteries Microwave antennas Radio astronomy Remote sensing Solar cells

Engineering uncontrolled terms
Cube sat Cube satellite Cubesat Directivity Earth orbits Gain Power Remote communication Remote-sensing Voltage standing-wave ratio

Engineering main heading:
Orbits

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Benhmimou, B. , Oubahsis, N. , Gupta, N.

A Novel FR4-Based Slot Antenna with Circular Metasurface for Aerospace CubeSats

(2024) Lecture Notes in Networks and Systems

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7th International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud), I-SMAC 2023; Kirtipur; Nepal; 11 October 2023 through 13 October 2023; Category numberCFP23OSV-ART; Code 193991

A Novel Area Efficient TIEO based Reversible Logic Gates in QCA Paradigm(Conference Paper)

Kalpana, K., Paulchamy, B., Logamurthy, P., Suganyadevi, K., Saranya, R. ⊗

[a]Hindusthan Institute of Technology, Department of Ece, Coimbatore, India
[b]Nandha Engineering College, Department of Ece, Erode, India
[c]Sri Eshwar College of Engineering, Department of Ece, India

View additional affiliations ⌄

Abstract

One of the novel emerging nanotechnologies that appear to be excellent replacements for CMOS(Complementary Metal Oxide Semiconductor) technology is the QCA(Quantum dot Cellular Automata). There are many aspects of QCA technology that can be optimized, including the extremely low power consumption, quick switching times, and dense structures. In this work an area efficient QCA design of a reversible gate is introduced and to examine the usefulness of the suggested XOR gate. A revolutionary exclusive-OR (XOR) gate with eight cells introduced in this work. A novel plan of reversible gate is designed based on novel three input EXOR gate. Compared to foregoing QCA plans, the suggested layout design are applied with the least amount of QCA cells and occupies less with minimum delay. The submitted plan does not use of any wire crossing techniques. The proposed design accuracy and functionality is verified using QCADesigner Tool. The proposed design power analysis was done by QCADesigner E tool. © 2023 IEEE.

Author keywords

QCA Designer E tool | QCA designer Tool | Reversible Circuits | Reversible gates | Three input EXOR Gate | Two input EXOR gate

Indexed keywords

Engineering controlled terms: Cellular automata | CMOS integrated circuits | Logic gates | MOS devices | Oxide semiconductors | Timing circuits

Engineering uncontrolled terms: Area-Efficient | E-tools | Quantum dot cellular automaton designer E tool | Quantum dot cellular automaton designer tool | Quantum-dot cellular automata | Reversible circuits | Reversible gates | Three input EXOR gate | Two input EXOR gate

Engineering main heading: Semiconductor quantum dots

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3rd International Conference on Ubiquitous Computing and Intelligent Information Systems, ICUIS 2023; Gobichettipalayam; India; 1 September 2023 through 2 September 2023; Category numberCFP23UG3-ART; Code 199224

Artificial Intelligence and Supervised Learning based Solid Waste Segregation Mechanism using ESP 32(Conference Paper)

Srinevasan, M.,   Parameshwari, V.,   Abirami, T.,   Divyaa, N.

[a]Nandha Engineering College, Dept of Ece, Erode, India
[b]M. Kumarasamy College of Engineering, Dept of Ece, Karur, India
[c]Velalar College of Engineering and Technology, Dept of Ece, Erode, India

Abstract

Garbage separation must take place at the household level because it is time-consuming and frequently unsuccessful to do it at the disposal. This Proposed method attempts to decrease mannual effort in segregation of waste in order to achieve proper waste segregation with the least amount of effort. This proposed system suggests an automatic trash segregator system powered by IOT. In addition to detecting and classifying household rubbish into dry, moist, and metallic waste streams, it aids in real-time monitoring the levels of garbage in trash discharges. A metallic sensor is then used to determine whether there is any metal in the garbage after an Ultrosonic [radar based] has detected the arrival of the trash. Additionally, the trash is separated using the capacitive detector into dry and moist residue. The conveyor helps to move the waste to the proper bins before the platform rotates once it has been detected and segregated using a supervised learning-based algorithm. Additionally, the system uses ESP 32 to display a note to clean the trash can when it is occupied and to show the amount of compost in the trash discharges on the LCD screen. Experimental results show that the proposed method is effective in categorizing waste into moist and dry waste as well as metal and non-metal waste. © 2023 IEEE.

Author keywords

ESP 32   Liquid Crystal Display   moisture sensor   proximity sensor   Supervised Learning   Ultrasonic sensor   Waste segregation

Indexed keywords

Engineering controlled terms: Bins   Composting   Liquid crystal displays

Engineering uncontrolled terms   'Dry' [Artificial intelligence learning   Artificial supervised learning   ESP 32   Household level   Liquid-crystal display   Metallic wastes   Moisture sensors   Segregation mechanism   Waste segregation

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2023, Pages 338-345

4th International Conference on Smart Electronics and Communication, ICOSEC 2023; Trichy; India; 20 September 2023 through 22 September 2023; Category numberCFP23V90-ART; Code 193543

The Design, Simulation, and Measurement of a 30 GHz Microstrip Patch Antenna for Millimeter-Wave Applications(Conference Paper)

Shalini, E.,   Saranya, C.,   Nithya, S.,   Divya, S.,   Krishna, R.V.,   Vinnetia, S.C.

[a]Kxcel Engineering College, Department of ECE, Komarapalayam, India
[b]Nandha Engineering College, Department of ECE, Coimbatore, India
[c]Kpr Institute of Engineering and Technology, Department of ECE, Coimbatore, India

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Abstract

This study addresses the challenges of miniaturization and impedance matching for mmWave antennas to achieve efficient radiation in the desired frequency range. The problem statement focuses on the limitations of traditional antenna designs at mm Wave frequencies, which often result in bulky structures and poor impedance matching, leading to suboptimal radiation characteristics. To address these challenges, this study describes the design, simulation, and measurement of a 30 GHz microstrip patch antenna. With a measured reflection coefficient of -19.25 dB and a gain of 7.65 dB, the aerial structure strikes a chord at 30 GHz. It measures 14 × 18 × 0.586 mm3. The results of the measurements show that the proposed design is appropriate for millimeter wave band 5G wireless applications. The key innovation lies in enabling the antenna to be significantly smaller compared to conventional designs. The proposed impedance matching techniques further enhance the antenna's efficiency and radiation characteristics. The results demonstrate a significant improvement in the antenna's miniaturization, gain, and directivity when compared to traditional mmWave antenna designs. Extensive simulations and measurements validate the proposed design's performance in controlled environments. © 2023 IEEE.

Author keywords

Directivity   Frequency   Gain   Microstrip patch antenna   Millimeter wave   Radiation Pattern

Indexed keywords

Engineering controlled terms: 5G mobile communication systems   Directional patterns (antenna)   Impedance matching (electric)   Microstrip antennas   Microwave antennas   Miniature instruments   Radiation efficiency   Slot antennas

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Impacts of Laminating Core Materials on Permanent Magnet Synchronous Motor by Newton-Raphson Methodc(Article)

[Impacts des materiaux de stratification du noyau sur les moteurs synchrones a aimant permanent par la methode de Newton-Raphson]

Sundaramoorthy, P.,   Vijayakumar, A.,   Rajkumar, K.,   Ponnusamy, J.,   Chandrasekaran, G.,   Madhaiyan, V.   ☺

[a]Mohan Babu University (Formerly Sree Vidyanikethan Engineering College), Department of Electrical and Electronics Engineering, Tirupati, 517102, India
[b]Saranathan College of Engineering, Department of Electrical and Electronics Engineering, Tiruchirappalli, 620012, India
[c]Nandha Engineering College, Department of Electrical and Electronics Engineering, Erode, 638052, India

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Abstract

The permanent magnet synchronous motor (PMSM) has a more efficiency, high torque density, and high power density, but it suffers from torque ripple. This article describes the electromagnetic (EM) behavior of M19 29Ga material assists PMSM for 310 V, 5 A, and 1500 r/min. In addition, various materials as Losil 34050, Arnon 5, 50M290, M19 USS Transformer 72-29 gauge, and TR80 USS Transformer 80-29 gauge incorporated PMSM and which material has superiority, and with the superiority kept constant, changed the various magnet materials. The EEC 26-T350, MQP-14-12 835995, N45M, Recoma 22, Samarium Cobalt 20/30, Vacodym 890TP, and Vacomax 240 incorporated PMSM also investigated for EM finite-element analysis. The results of this study of the variable as torque ripple forecast the highest torque (T_max), lowest power output (T_min), and overall torque (T_avg). The superior motor among various materials unified PMSM by its ripple and field characteristics. The outcomings of the modeled motor are validated with numerical equations. © 2021 IEEE.

Author keywords

Losses   permanent magnet synchronous motor (PMSM)   temperature   thermal fields   torque density   torque ripple

Indexed keywords

Engineering controlled terms: Coremaking   Finite element method   Gages   Gravimetric analysis   Permanent magnets   Synchronous motors

Engineering uncontrolled terms   Core material   De-stratification   High torque density   Permanent magnet synchronoi motor   Permanent Magnet Synchronous Motor   Raphson methods   Thermal field   Torque density   Torque ripples   Transformer

Engineering main heading: Torque

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Block chain and Deep Learning Based Secure Communication using SAE-LSTM &salp Swarm Optimizer for Multivariate Industrial IoT-oriented Infrastructure

(2024) 2024 15th International Conference on Computing Communication and Networking Technologies, ICCCNT 2024

Melvyn Rodger, B.L. , Karthikeyan, A. , Manjula, M.

Power Factor Improvement using Modified STATCOM in Power System Distribution

(2024) 2024 15th International Conference on Computing Communication and Networking Technologies, ICCCNT 2024

Chandrasekaran, G. , Pavithara, P. , Dinesh, P.M.

Low Power, High Speed Current Starved Ring Oscillator based ADC using 18nm FinFET Technology

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Enhancing Power Quality in Smart Grids through Machine Learning Techniques(Conference Paper)

Vijayakumar, G.N.S.,   Sharma, V.,   Pradeep, S.,   Pratheeba, C.,   Balakrishnan, T.S.,   Jat, R.

[a]Department of Physics, R.M.K. Engineering College, Tamil Nadu, Kavaraipettai, 601206, India
[b]Department of Mechanical Engineering, Medi-Caps University, Madhya Pradesh, Indore, 453331, India
[c]Department of Electronics and Communication Engineering, S. A. Engineering College, Tamil Nadu, Chennai, 600077, India

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Abstract

The purpose of this exploration study is to probe the operation of machine literacy ways to ameliorate the quality of power within smart grids. In light of the growing objectification of renewable energy sources and distributed generation into contemporary power networks, it's of the utmost significance to ensure that power distribution is of a high quality. The purpose of this design is to probe how machine literacy algorithms can assay enormous quantities of data from smart grid detectors to identify and palliate power quality enterprises. The study makes use of advanced analytics. When it comes to soothsaying and managing voltage oscillations, harmonics, and other power quality issues, several different machine learning algorithms, including retrogression, bracket, and anomaly discovery, are being delved to determine how effective they are. This study sheds light on the eventuality of machine literacy to optimize power quality operation strategies in smart grids, the ultimate thing of which is to ameliorate grid trustability, stability, and effectiveness. This is fulfilled through a conflation of literature and case studies. © 2024 IEEE.

Author keywords

Anomaly detection   Harmonics mitigation   integration   Machine learning   Power quality   Renewable energy   Smart grids   Voltage regulation

Indexed keywords

Engineering controlled terms: Anomaly detection   Learning algorithms   Machine learning   Renewable energy   Smart power grids   Voltage control   Voltage regulators

Engineering uncontrolled terms   Anomaly detection   Harmonic mitigation   Machine learning techniques   Machine-learning   Power   Power distributions   Power networks   Renewable energies   Renewable energy source   Smart grid

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Machine Learning Techniques for Predictive Maintenance in Industrial IoT Systems(Conference Paper)

Vijayakumar, G.N.S.,   Sharma, V.,   Pradeep, S.,   Pratheeba, C.,   Balakrishnan, T.S.,   Jat, R.

[a]Department of Physics, R.M.K. Engineering College, Tamil Nadu, Kavaraipettai, 601206, India
[b]Department of Mechanical Engineering, Medi-Caps University, Madhya Pradesh, Indore, 453331, India
[c]Department of Electronics and Communication Engineering, S. A. Engineering College, Tamil Nadu, Chennai, 600077, India

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Abstract

The purpose of this exploration is to probe implicit operations of machine literacy ways for prophetic conservation within the environment of Industrial Internet of Effects (IIoT) grounded systems. As a result of the explosion of detector data in artificial settings, prophetic conservation has developed as an essential system for reducing time-out and maximizing the performance of means. The purpose of this study is to probe a variety of machine literacy algorithms, including retrogression, bracket, and anomaly discovery, which are specifically designed to examine streaming detector data and anticipate faults in outfits before they do. In addition, it investigates the difficulties that are connected with the perpetration of prophetic conservation results in IIoT systems. These difficulties include problems with data quality, the interpretability of models, and the scalability of the results. The purpose of this study is to give perceptivity into the utility and limitations of colorful machine learning approaches in the process of perfecting the trustability and effectiveness of artificial ministry. These perceptivity are handed through a complete examination of being exploration and case studies. © 2024 IEEE.

Author keywords

Anomaly detection   Asset performance optimization   Equipment failure prediction   Industrial IoT   Machine learning   Predictive maintenance   Sensor data analysis

Indexed keywords

Engineering controlled terms: Internet of things   Machine learning

Engineering uncontrolled terms   Anomaly detection   Asset performance optimization   Equipment failure predictions   Grounded systems   Industrial IoT   Machine learning techniques   Machine-learning   Performance optimizations   Predictive maintenance   Sensor data analysis

Engineering main heading: Anomaly detection

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Kumaresan, V. , Gudivaka, B.R. , Gudivaka, R.L.

Machine Learning Based Chi-Square Improved Binary Cuckoo Search Algorithm for Condition Monitoring System in IIoT

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Utilizing Machine Learning Techniques for Identifying and Diagnosing Integrated Circuit Faults(Conference Paper)

Vijayakumar, G.N.S.,   Sharma, V.,   Pradeep, S.,   Pratheeba, C.,   Balakrishnan, T.S.,   Jat, R.

[a]Department of Physics, R.M.K. Engineering College, Tamil Nadu, Kavaraipettai, 601206, India
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[c]Department of Electronics and Communication Engineering, S. A. Engineering College, Tamil Nadu, Chennai, 600077, India

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Abstract

The findings of the research that was carried out present a method that is driven by machine learning, which may be utilizedto conduct thermal testing of integrated circuits. To carry out this method, the current temperature distribution is compared to a reference distribution that is suitable for the energy state of the system. This comparison is made to ensure that the procedure is carried out smoothly. In addition, as part of this research endeavor, an investigation is being conducted into a methodology for the positioning of temperature sensors. This placement approach is advised for discovering and resolving issues that are associated with integrated circuits (ICs), and it is recommended that it be used. Our strategy for failure localization makes use of the average temperatures in some sub-areas of the integrated circuit, in addition to the interconnections that stand between those temperatures. This allows us to pinpoint the exact location of the failure. The results of the simulations that were performed for the sensor placement strategy, defect detection, and localization are presented in this research. The findings regarding the efficiency of the testing strategy are displayed through the utilization of statistical approaches to display the findings. © 2024 IEEE.

Author keywords

circuit problems Sensors measure temperature   Circuit testing   Diagnostics   multi-chip modules
Temperature-dependent   Testing ICs

Indexed keywords

Engineering controlled terms: Machine learning   Microprocessor chips

Engineering uncontrolled terms   'current   Circuit faults   Circuit problem sensor measure temperature   Circuit testing
Diagnostic   Machine learning techniques   Machine-learning   Multi chip modules
Temperature dependent   Thermal testing

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Design and Analysis of 4 Bit Multipliers Using Pass Transistor Logic and Gate Diffusion Input Technique Using 18nm FinFET Technology(Conference Paper)

Pavithara, P.,   Ramesh, M.,   Prabu, M.,   Kavin Kumar, K.,   Ponmurugan, P.,   Udaya Suriyan, V.

[a]Kongu Engineering College, Department of Electronics and Communication Engineering, Erode, India
[b]M.Kumarasamy College of Engineering, Department of Electrical and Electronics Engineering, Karur, India
[c]Nandha Engineering College, Department of Electrical and Electronics Engineering, Erode, India

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Abstract

Very Large-Scale Integration (VLSI) is a method for manufacturing integrated circuits, where an extensive number of transistors are intricately placed onto a single silicon chip. Complementary Metal Oxide Semiconductor (CMOS) stands out as a leading technology in computer chip design, while Pass-Transistor Logic (PTL) serves as a prevalent logic design technique, utilizing transmission gates or pass transistors instead of traditional inverters for logic gate implementation. The Gate Diffusion Input Technique (GDI) is known for speed and power efficiency. A 4× 4 array multiplier (AM) using Ripple-Carry Adder (RCA) finds applications in digital signal processing and computing, particularly in tasks like digital filtering, signal compression, image processing, and video processing. The speed of the 4× 4 AM using RCA is slower than the other multiplication methods that incorporate Carry-Look Ahead Adder (CLA). This work involves the design of 4× 4 AM using FinFET technology with PTL logic. The parameters like propagation delay, power, and power delay product for 4× 4 AM is estimated using the CADENCE Virtuoso Tool at 18nm technology node with a supply voltage of 1.8V. The existing AM using RCA has the power consumption of 724.43μW and propagation delay of 30.26 ns. The proposed AM using CLA with PTL logic experiences a delay of 10.10 ns and power consumption of 185.07μ W. This indicates that the proposed multiplier exhibits less delay and lower power consumption compared to other FinFET based multipliers. In addition, the proposed multiplier enables a maximum of 66.62 % improvement in speed and 79.12 % improvement in power when compared to its counterparts thereby showcasing its potential for improved efficiency in integrated circuit applications. © 2024 IEEE.

Author keywords

Array Multiplier   Delay   FinFET   GDI   Power   PTL   Wallace tree multiplier

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Vehicle Accident Detection and Locating Using GSM and GPS(Conference Paper)

Vijayakumar, M.,   Ramasamy, M.,   Jeyakumar, T.,   Dhivagar, S.,   Arun, V.,   Hemalatha, R.   ౭

[a]K.S.R. College Of Engineering, Department Of Electrical And Electronics Engineering, Tamil Nadu, Tiruchengode, 637215, India
[b]Nandha Engineering College, Department Of Electrical And Electronics Engineering, Tamil Nadu, Erode, 638052, India
[c]Mohan Babu University, Department Of Electrical And Electronics Engineering, Tirupati, India

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Abstract

The quickest development of innovation has made our way of life solace. The innovation likewise expanded the traffic gambles and the street accidents that happen habitually which cause colossal death toll because of deficient of crisis office. To have the option to plan an item utilizing an incorporated innovation will be useful to any designing issues and an immense commitment to the local area. In the aftermath of an accident, the amount of time that passes between the incident and the dispatch of crisis clinical faculties to the scene is a strong indicator of endurance rates. Dispensing with the time between when an accident happens and when the people on call are dispatched to the scene diminishes the death rate and can save lives. Using in-vehicle programmed accident location and warning systems is one approach to eliminating the delay between accident events and expert on-call dispatch. This framework means to alarm the precious ones of the individual in the vehicle about the accident to give prompt clinical guidance. A time clinical guide can help save lives, in this system when a vehicle meets with an accident, Sensors, for example, the Accelerometer and Eye flicker sensor identify a signal in the event of an accident and convey a message to the associated microcontroller. The area of the accident shipped off the recently coded numbers so prompt assistance can be given by the emergency vehicle or the family members concerned. GSM innovation is utilized to imply the vehicle position as latitude and longitude are organized through SMS. The location is determined by the use of GPS satellites, and afterward, a message is sent to the appropriate emergency response, and subsequently, the rescue vehicle service or family members may promptly reach the location. © 2024 IEEE.

Author keywords

Accelerometer   Alerting family member   ATmega 328   GPS module   GSM module   Rescue of the victim

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Intelligent Automation in Long Vehicles through LDR Sensor Technology for Accident Prevention(Conference Paper)

Jamuna, P.,   Kavin Kumar, K.,   Murugesan, A.,   Karthikeyan, G.,   Dineshkumar, S.,   Sangeetha, M.   👤

[a]Nandha Engineering College, Department Of Electrical And Electronics Engineering, Erode, 638052, India
[b]Kongu Engineering College, Department Of Electronics And Communication Engineering, Erode, Perundurai, 638060, India
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Abstract

Transportation plays a significant role in everyday life. Moving individuals or goods from one location to another is called transportation. The import and export of goods significantly impact the country's economy. Road transport is a crucial land transport used for importing and exporting goods. Heavy vehicles like trucks, containers, and tailors are used for transportation. Driving at night can be challenging since the vehicle's visibility is reduced, which increases the risk of serious accidents. Even shipping goods through North India during fog and mist is more difficult for lengthy lorries. The drivers have been killed in numerous accidents in the past. The visibility of heavy vehicles must be improved to avoid accidents. Heavy vehicles employ the side lamp to increase visibility and communicate their presence to other vehicles. To set up the side lamp such that it turns on and off automatically, depending on the quantity of light. The automatic heavy vehicle indicator light system ensures great visibility in low-light conditions, increasing safety by effectively and reliably adjusting to ambient light levels through the use of an LDR-based circuit. Because of its affordability and practicality, it enhances road safety while lowering power consumption for energy efficiency. © 2024 IEEE.

Author keywords

LDR Sensor   Light Intensity   Transportation   Visibility   Wavelength Sensitivity

Indexed keywords

Engineering controlled terms: Accidents   Energy efficiency   Motor transportation   Roads and streets

Engineering uncontrolled terms   Heavier vehicles   Import and exports   Intelligent automation   Land transport   LDR sensor   Light intensity   North India   Road transports   Sensor technologies   Wavelength sensitivity

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Low Power and Enhanced Data Retention Time in DRAM in FinFET Technology(Conference Paper)

Sathyasree, K.,   Kavin Kumar, K.,   Sivaselvi, S.,   Santhosh Babu, A.V.,   Deebika, R.,   Banumithra, B.   👤

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View additional affiliations ⌄

Abstract

Modern technologies require huge amounts of storage space and fast access to data for uninterrupted high-quality audio and video processing. Random Access Memory (RAM) operates at higher frequencies and allows the CPU to access the files faster. It stores frequently required data so that it can be retrieved rapidly. RAM cells are classified into SRAM and DRAM. For storage SRAM cell uses two cross-coupled inverters and DRAM cell uses a capacitor. SRAM cells are more reliable but require more than 6 transistors for its storage, which consumes more area and power than the DRAM cell, where it uses less than 4 transistors for its storage. But DRAM suffers from frequent refresh issues, due to leakage across the capacitor. The leakage current is reduced to minimize the frequent refresh issue and for that several leakage reduction techniques are incorporated to design the DRAM cell to enhance the Data Retention Time (DRT). Modified Self Controllable Voltage Level Circuit (MSVL) based DRAM cells are proposed in this project. MSVL 3T and 4T DRAM cells have less leakage power and better hold performance than the conventional, Sleepy Keeper and SVL based DRAM cells. Various parameters such as dynamic power, leakage power, retention time and delay are measured and compared with other DRAM cells. 18 nm FinFET technology is designed using the CADENCE Virtuoso Tool. The proposed DRAM cell has superior hold performance than previous designs, according to simulation findings. The frequent refresh rate has been reduced and finally the power consumed due to it has also been minimized. © 2024 IEEE.

Author keywords

(CADENCE Virtuoso) (Data Retention Time) (DRAM) (FinFET) (MSVL)

Indexed keywords

Engineering
controlled terms: (Cells) (Cytology) (FinFET) (Static random access storage) (Video signal processing)

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Performance Improvement of Lithium-ion Battery for Battery EVs(Conference Paper)

Ramani, G.,   Kavin Kumar, K.,   Chitra, M.,   Panneer Selvam, M.,   Selvam, N.,   Sudha, S.   ⚇

[a]Nandha Engineering College, Department Of Electrical And Electronics Engineering, Erode, Perundurai, 638052, India
[b]Kongu Engineering College, Department Of Electronics And Communication Engineering, Erode, Perundurai, 638060, India
[c]Velalar College Of Engineering And Technology, Department Of Electrical And Electronics Engineering, Erode, India

View additional affiliations ⌄

Abstract

To maintain optimal battery performance and endurance, it is critical to understand the complex interplay between the chemical and physical components that determine how they function. Statistical approaches are used in this study to identify the variable components that influence the dependent variable, which is the battery temperature. These factors include the capacitor's current impedance, cycle depth, discharge rate, and state of charge. It is critical to optimize the target variable in order to maximize the battery's chemical activity and achieve peak performance. To investigate the impact of temperature and dynamic factors on battery performance, as well as to determine whether there is a correlation between the two variables. The study's findings reveal insights that can help create techniques to increase the longevity and functionality of electric vehicle (EV) batteries by identifying elements that influence their usage levels. © 2024 IEEE.

Author keywords

Battery EVs   LabVIEW   Lithium-ion Battery   Rechargeable Battery technology   State of Charge

Indexed keywords

Engineering controlled terms: Battery management systems   Charging (batteries)

Engineering uncontrolled terms   Battery EV   Battery performance   Battery technology   Chemical component   LabVIEW   Performance   Physical components   Rechargeable battery technology   States of charges   Statistical approach

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Journal of Engineering Science and Technology Review

Volume 17, Issue 2, 2024, Pages 215-222

Improving the Groundnut Oil Extraction Efficiency using RSM and Central Composite Design (CCD) Optimization Techniques(Article)(Open Access)

Maheswari, C.,   Shankar, S.,   Alexander, S.A.,   Ramani, G.,   Maheswari, P.   👤

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[b]School of Electrical Engineering, Vellore Institute of Technology, Tamilnadu, Vellore, 632 014, India
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Abstract

Extracting groundnut oil from the groundnut seeds without modifying its quality become a critical task nowadays. This study utilized direct press method to extract groundnut oil from the seeds, then second-order response surface methodology (RSM) experiment is employed in conjunction with a five-level factorial Central Composite Design (CCD) for optimization. The interactions between the process factors are investigated, including pressure (A), groundnut size (B), Steam flow rate (C) and time (D). At a pressure of 80 MPa, a peanut size of 0.33 mm, a steam flow rate of 10 kg/h, and a time of 75 minutes, the maximum oil extraction efficiency of 55% is reached. Similarly, Saponification factor of 198 is reached at a pressure of 80 MPa, groundnut size of 0.3 mm, steam flow rate of 10 kg/h and a period of 60 minutes, whereas Iodine value 98 is achieved at a pressure of 80 MPa, groundnut size of 3 mm, steam flow rate of 10 kg/h and time of 75 minutes. The experimental R^2 results show that the surface model prediction model is highly accurate, with an R^2 value of 0.98. Overall, RSM in conjunction with the CCD will assist in identifying the critical operational parameters for extracting oil using a press type extraction equipment. The weighted K nearest neighbouring algorithm is also used in this work to predict the oil extraction efficiency (target output) based on the training data sets of pressure, groundnut size, Steam flow rate and time as input factors. © 2024 School of Science, DUTH. All Rights Reserved.

Author keywords

Ground nut seed   Iodine value   Oil extraction   RSM method   Saponification factor

Indexed keywords

Engineering
controlled terms: Efficiency   Extraction   Flow rate   Hydrolysis   Iodine   Steam

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2023 International Conference on Sustainable Communication Networks and Application, ICSCNA 2023; Theni; India; 15 November 2023 through 17 November 2023; Category numberCFP23DW8-ART; Code 196100

Controller Design for Earthquake Excitations Using Smart Base-Isolated Structure(Conference Paper)

Yamunarani, T.,   Vijayalakshmi, R.,   Karthikeyan, G.,   Pratheep, V.G.,   Siva Ramkumar, M.,   Prabu, R.

[a]K S R Institute for Engineering and Technology, Department of Biomedical Engineering, Tamilnadu, Tiruchengode, India
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Abstract

Traditional rigid structure buildings can result in higher floor accelerations and considerable inter-floor variations, jeopardizing their safety. Using isolation systems reduces structures' lateral movement, lowering floor accelerations and slippage. In recent years, the base-isolation function has been maintained by utilizing an isolation system and active control devices. This work proposes using a discrete proportional-integral-derivative controller to manage a nonlinear base-isolated structure actively. The proportional-integral-derivative (PID) controller is widely utilized in various control applications due to its user-friendly interface and effective performance. The study looked at the control response of a nonlinear base-isolation system of linear elastomeric and nonlinear friction pendulum bearings under the effect of near-fault seismic excitation. Numerical models simulate the behaviour of a reference structure with nonlinear base isolation. The effectiveness of the proposed controller is assessed using a variety of measures. The suggested control method efficiently mitigates base drift. It increases the responsiveness of the superstructure in the face of a sequence of near-fault earthquakes by applying active control force to the structure of base-isolated. © 2023 IEEE.

Author keywords

Active feedback control force   Base-drift   Base-Isolation   Discrete PID controller   Frictional bearing
Performance indices   Superstructure responses

Indexed keywords

Engineering controlled terms: Acceleration   Earthquakes   Faulting   Feedback   Floors   Friction
Proportional control systems   Rigid structures   Three term control systems
Two term control systems

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Journal of Intelligent and Fuzzy Systems

Volume 46, Issue 1, 10 January 2024, Pages 3029-3043

Securing energy horizons: Cloud-driven based machine learning methods for battery management systems(Article)

Zekrifa, D.M.S.,   Saravanakumar, R.,   Nair, S.,   Pachiappan, K.,   Vetrithangam, D.,   Kalavathi Devi, T.,   Ganesan, T.,   Rajendiran, M.,   Rukmani Devi, S. ⚇

[a]Higher School of Food Science and Agri-Food Industry, Ahmed Hamidouche Av, Oued Smar, Algiers, Algeria
[b]Department of Wireless Communication, Institute of ECE, Saveetha School of Engineering, Savetha Institute of Medical and Technical Science, Tamil Nadu, Chennai, India
[c]Department of Computer Science and Engineering (Data Science), Shri Ramdeobaba College of Engineering and Management, Maharashtra, Nagpur, India

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Abstract

The increasing need for effective energy storage solutions has led to the prominence of lithium-ion batteries as a crucial technology across multiple industries. The proficient administration of these batteries is imperative in order to guarantee maximum efficiency, prolong their longevity, and uphold safety measures. This study presents a novel methodology for enhancing battery management systems (BMS) through the integration of cloud-based solutions, artificial intelligence (AI), and machine learning approaches. In this study, we present a conceptual framework that utilises cloud computing to augment the practical functionalities of battery management systems (BMS) specifically in the context of lithium-ion batteries. The incorporation of cloud computing facilitates the implementation of scalable data storage, remote monitoring, and processing resources, hence enabling the execution of real-time analysis and decision-making processes. By leveraging the capabilities of machine learning and artificial intelligence, our methodology focuses on addressing crucial battery metrics, including the state of charge (SoC) and state of health (SoH). Through the ongoing collection and analysis of data obtained from battery systems that are deployed in real-world settings, the framework iteratively improves its predictive models, hence facilitating precise assessment of battery states. Ensuring safety is a crucial element in the management of batteries. The solution we propose utilises anomaly detection algorithms driven by artificial intelligence to detect potential safety issues, facilitating prompt responses and mitigating dangerous circumstances. In order to showcase the efficacy of our methodology, we offer practical implementations in several industries, encompassing the integration of renewable energy, use of electric vehicles, and optimisation of industrial processes. Through the utilisation of cloud-based machine learning techniques, we are able to enhance the efficiency of energy storage and consumption, while simultaneously enhancing the dependability and security of battery systems. This study highlights the potential of the proposed framework to revolutionise battery management paradigms, thereby guaranteeing secure and efficient energy prospects for a sustainable future. © 2024 - IOS Press. All rights reserved.

Author keywords

artificial intelligence   Battery management system   cloud-based solutions   machine learning   state of charge   state of health

Indexed keywords

Engineering controlled terms: Anomaly detection   Charging (batteries)   Cloud computing   Decision making   Digital storage   Energy storage   Iterative methods   Learning systems   Lithium-ion batteries   Machine learning

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Wu, D. , Xu, Z. , Wang, Q.

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(2024) Journal of Electronic Materials

Miraftabzadeh, S.M. , Longo, M. , Di Martino, A.

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2023 International Conference on Self Sustainable Artificial Intelligence Systems, ICSSAS 2023; M.P. Nachimuthu M.Jaganathan Engineering CollegeErode; India; 18 October 2023 through 20 October 2023; Category numberCFP22DN7-ART; Code 195071

Efficient Brain-Computer Interface for Attention Detection in Health Care Industry(Conference Paper)

Sharmila, M.,   Manjula, M.,   Muthu Yogesh, B.,   Keerthana, S.,   Vijayakumar, P.,   Selvam, N.

[a]Velalar College of Engineering and Technology, Department of Biomedical Engineering, Erode, India

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Abstract

A cognitive component of brain activity is attention. The effectiveness of other activities, including the learning process and crucial ones, are greatly impacted. Here, several methods are employed to categorize human attention according to ERP. The Electroencephalography (EEG) signal known as the Event-Related Potential (ERP) P300 is an evoked potential that has been linked to a number of cognitive functions, including response choice and attention. This study utilize the MOABB ERP Dataset bi2013a in this case. This was derived from a study conducted at GIPSA-lab in 2013 by the University of Grenoble Alpes, the CNRS, and Grenoble-INP. With the use of statistical Time domain analysis techniques like means and standard deviation of the filtered EEG data, the P300 ERP may be recovered from the raw EEG signal. Distinct P300 classifiers were utilized in this study, four of which were based on Riemannian geometry: CSP LDA, ERPCov TS LR, ERPCov MDM, as well as LR, LDA, and SVM classifiers. By analysing the data, it is concluded that LR performs better than the competition and generates positive test results on categorising the p300 ERP, which directly indicates the attention of the individual individuals. © 2023 IEEE.

Author keywords

Attention   Brain-Computer Interface   Event-Related Potential   P-300

Indexed keywords

Engineering controlled terms: Brain   Brain computer interface   Electrophysiology   Geometry   Learning systems   Support vector machines   Time domain analysis

Engineering uncontrolled terms   Attention   Attention detection   Brain activity   Cognitive components   Event related potentials   Grenoble   Healthcare industry   Human attention   Learning process   P-300

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Volume 24, Issue 5, 2023, Pages 1669-1679

WIRELESS SENSOR NETWORKS FOR IMPROVED GARBAGE MONITORING AND ENVIRONMENTAL SUSTAINABILITY USING LEACH PROTOCOL BASED(Article)

Ramesh, G.,   Babitha Thangamalar, J.,   Pachiappan, K.,   Megala, J.   ⊙

[a]Department of Information Technology, K.L.N. College of Engineering, Pottapalayam, Madurai, 630 612, India
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Abstract

Garbage can have a significant impact on the environment and contributes to pollution. Improperly managed garbage can also end up in the environment as litter, which can have a variety of negative impacts. Effective garbage management is essential for the negative impact reduction of garbage on the environment and preventing pollution. This can include measures such as reducing waste generation, properly disposing of garbage, and recycling. In this paper, we will discuss the impact of garbage on environmental sustainability and explore some of how it can be effectively managed. Wireless sensor networks (WSNs) offer a promising solution for monitoring and managing garbage in urban environments. The suggested algorithm's objective is to keep the network operational for longer in the face of growing network size. The technique uses a three-tiered structure to reduce the workload of the Cluster heads (CHs) and ensure that CHs are chosen at randomised. In addition to using a TDMA (Time division multiple access) protocol through multi-hop broadcasts for intra-cluster interactions, LEACH (Low energy adaptive clustering hierarchy) makes use of the Harmony search optimising method to determine the most efficient routes. In this research, the ef-ficiency of LEACH + HMO and other WSN routing algorithms is compared in relation to changes in the size of the network. Simulation findings reveal that in terms of system lifespan, delivery of packets ratio, productivity, and consumption of energy, LEACH + HMO is superior to the compared procedures for large-scale WSN. © 2023, Scibulcom Ltd. All rights reserved.

Author keywords

environmental sustainability   garbage monitoring   Harmony search optimisation algorithm   LEACH protocol
wireless sensor networks

Indexed keywords

GEOBASE Subject Index: algorithm   monitoring system   recycling   sensor   sustainability   waste disposal
waste management

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27 November 2023, Pages 374-399

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(Book Chapter)

Pachiappan, K.,   Anitha, K.,   Pitchai, R.,   Sangeetha, S.,   Satyanarayana, T.V.V.,   Boopathi, S.   👤

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Abstract

Modern agriculture faces numerous challenges, ranging from rising global food demand to water scarcity. To address these issues, the incorporation of intelligent machines, the Internet of Things (IoT), and artificial intelligence (AI) in agricultural water processing has become critical. This chapter investigates these technologies' transformative potential for optimizing water usage, increasing crop yields, and ensuring sustainable agricultural practices. It delves into the key concepts and applications, emphasizing the advantages and disadvantages of this novel approach. Farmers can make data-driven decisions, automate irrigation processes, and adapt to changing environmental conditions by leveraging AI and IoT-enabled systems, ultimately contributing to a more efficient and environmentally friendly agricultural sector. ©️ 2024, IGI Global. All rights reserved.

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Electricity Generation of Dynamic Bifacial Solar Panels Using IoT(Conference Paper)

Govindasamy, P.,   Ramraj, B.,   Singaram, G.,   Sasirekha, P.,   Sabarivelu, V.,   Rajan, S.

[a]Government College of Engineering, Department of Electrical and Electronics Engineering, Tamilnadu, Erode, 638316, India

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Abstract

Recently, there has been a surge in interest in photovoltaic (PV) panels with dual-sided capabilities. The increasing availability of bifacial photovoltaic (PV) modules on the market has resulted in higher energy generation capabilities as compared to traditional single-sided solar panels. Because of its increased ability to absorb and apply backside irradiation, this technology beats monofacial panels. Bifacial photovoltaic (PV) technology is a method of capturing light from both incidence and albedo surfaces. This process causes a rise in power density. Integration of these resources into the electrical system has the potential to improve energy efficiency and supply reliability. Bifacial modules have dual-sided qualities and are deliberately positioned to ensure alignment with the roof surface. This process prevents any reflected light from reaching the cells beneath. In comparison to conventional modules, bifacial modules have exhibited higher performance on flat corporate roofs and ground-mounted arrays. There is more spatial freedom in these settings for rotating the modules and redirecting the light to the back of the modules. The goal of this research is to assess the efficacy of bifacial solar panels in Qatar's winter and summer climates. © 2023 IEEE.

Author keywords

(Adam optimizer) (Binary cross-entropy loss function) (Multi-Layer Perceptron (MLP)) (Neural networks)

Indexed keywords

Engineering controlled terms:
(Energy efficiency) (Internet of things) (Multilayer neural networks) (Roofs) (Solar concentrators) (Solar power generation)

Engineering uncontrolled terms
(Adam optimizer) (Binary cross-entropy loss function) (Cross entropy) (Electricity-generation) (Entropy loss function) (Multi-layer perceptron) (Multilayers perceptrons) (Neural-networks) (Optimizers) (Solar panels)

Engineering main heading:
(Solar panels)

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Islam, M.I. , Jadin, M.S. , Ishak, R.

Assessing the Early Performance of Bifacial Floating PV System: A Comparative Study

(2024) 14th IEEE International Conference on Control System, Computing and Engineering, ICCSCE 2024 - Proceedings

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Ravichandran, V., Singaram, G., Velmurugan, J., Sivaramkrishnan, M., Karthikeyan, J., Kumar, N.S. ⚲

[a]Nandha Engineering College, Department of Electrical and Electronics Engineering, Tamilnadu, Erode, India
[b]Annasaheb Dange College of Engineering and Technology, Department of Electrical Engineering, Sangli, Maharashtra, Ashta, 416301, India
[c]Psna College of Engineering and Technology, Department of Electrical and Electronics Engineering, Dindigul, 624622, India

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Abstract

EVs are becoming more popular because they are less expensive and better for the environment. However, charging their batteries on a daily basis is difficult. Several obstacles must be overcome before wireless charging for electric vehicles (EVs) becomes widely used. Because alternatives to cable charging are inefficient, this is the main source of concern. Because of transmission losses, more expensive and time-consuming charging procedures are required. Standardization, compatibility with a wide range of electric vehicles, and the impact of wireless charging on batteries are among the other challenges. It is difficult to encourage widespread adoption due to the high cost of establishing a wireless charging infrastructure. Before electric vehicles can be powered by wireless charging, it must be improved (EVs). Despite its promise to revolutionize electric vehicle charging, these barriers remain. EVs are becoming more popular due to their lower operating costs and environmental impact. Electric vehicle owners must keep their batteries charged at all times. Most cable charging techniques necessitate that an electric vehicle be permanently connected to a charging station, making daily use difficult. Wireless charging for EVs will solve this problem. This novel concept has the potential to charge electric vehicles remotely. Wireless charging uses magnetic fields to charge an electric vehicle's battery. This novel method of charging electric vehicles could make them more convenient and accessible. Wireless charging needs a few tweaks before it can be widely adopted. © 2023 IEEE.

Author keywords

Control Circuitry | Electric Vehicle | Power Conversion | Rectifier | Safety Features | Wireless Charging

Indexed keywords

Engineering controlled terms: Cables | Charging (batteries) | Electric rectifiers | Electric vehicles | Environmental impact | Operating costs | Rectifying circuits | Secondary batteries

Engineering uncontrolled terms Charging infrastructures | Control circuitry | Electric vehicle charging | High costs | Lower operating costs | Power conversion | Rectifier | Safety features | Transmission-loss | Wireless charging

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Optimizing the Design and Development of PMSG-based Wind Energy Conversion System

(2024) 7th International Conference on Inventive Computation Technologies, ICICT 2024

Ravi Sankar Reddy, T. , Kumaraswamy, I.

Performance Analysis of CFSR-DC-DC Converter for EV Applications

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[c]Department of Electrical and Electronics Engineering, Nandha Engineering College, Tamil Nadu, Erode, 638 052, India

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Abstract

Garbage can have a significant impact on the environment and contributes to pollution. Improperly managed garbage can also end up in the environment as litter, which can have a variety of negative impacts. Effective garbage management is essential for the negative impact reduction of garbage on the environment and preventing pollution. This can include measures such as reducing waste generation, properly disposing of garbage, and recycling. In this paper, we will discuss the impact of garbage on environmental sustainability and explore some of how it can be effectively managed. Wireless sensor networks (WSNs) offer a promising solution for monitoring and managing garbage in urban environments. The suggested algorithm's objective is to keep the network operational for longer in the face of growing network size. The technique uses a three-tiered structure to reduce the workload of the Cluster heads (CHs) and ensure that CHs are chosen at randomised. In addition to using a TDMA (Time division multiple access) protocol through multi-hop broadcasts for intra-cluster interactions, LEACH (Low energy adaptive clustering hierarchy) makes use of the Harmony search optimising method to determine the most efficient routes. In this research, the ef-ficiency of LEACH + HMO and other WSN routing algorithms is compared in relation to changes in the size of the network. Simulation findings reveal that in terms of system lifespan, delivery of packets ratio, productivity, and consumption of energy, LEACH + HMO is superior to the compared procedures for large-scale WSN. © 2023, Scibulcom Ltd. All rights reserved.

Author keywords

environmental sustainability   garbage monitoring   Harmony search optimisation algorithm   LEACH protocol   wireless sensor networks

Indexed keywords

GEOBASE Subject Index: algorithm   monitoring system   recycling   sensor   sustainability   waste disposal   waste management

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SENSOR FAILURE IDENTIFICATION AND SEGREGATION USING WAVELET PERFORMANCE ANALYSIS FOR WSN BASED STATUS SURVEILLANCE SYSTEM OF A WIND TURBINE(Article)

Sengottaiyan, S.M.,   Rajaiah, J.,   Shanmugasundaram, R.,   Ponnusamy, J.

[a]Department of Electrical and Electronics Engineering, Mahendra College of Engineering, Tamilnadu, Salem, 636106, India
[b]Department of Electrical and Electronics Engineering, KSR Institute for Engineering and Technology, Tamilnadu, India
[c]Department of Electrical and Electronics Engineering, Vardhaman College of Engineering, Telangana, India

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Abstract

One of the most useful renewable energy sources is wind, from which electrical power can be generated using a turbine system for long periods. The reliability of a wind turbine mainly depends on the maintenance work carried out at the site. The Status Surveillance System (SSS) is an important factor for wind turbines to guarantee uninterrupted power supply to the end user. However, the condition monitoring system based on the Wireless Sensor Node (WSN), housed with the current sensor node, is more vulnerable to failure due to circumstantial faults. Due to sensor faults, the data used for decision-making on maintenance are corrupted. This paper devises a robust and reliable mechanism called Sensor Failure Identification and Segregation (SFIS) to detect and detach corrupted data to effectively perform work related to wind turbine failure detection. The short-circuit fault is addressed by a wavelet transient approach to restore the corrupted data, while the invariable anomaly fault is analyzed with the help of the cross-correlation method. Hence, the interference fault can be analyzed using a dynamic time-warping approach. The proposed mechanism is compared with the existing Adaptive Neuro-Fuzzy Inference System (ANFIS) method that uses Supervisory Control and Data Acquisition (SCADA) to prove its reliability and robustness. SFIS offers a reliable and cost-effective solution for wind turbine maintenance work. © INTERNATIONAL JOURNAL OF INDUSTRIAL ENGINEERING.

Author keywords

Cross-Correlation Technique   Current Sensors   Fault Identification   Interference Fault   Invariable Anomaly Fault
Wavelet Transient Approach   Wind Turbine   Wireless Sensor Node

Indexed keywords

Engineering controlled terms: Adaptive control systems   Condition based maintenance   Condition monitoring
Cost effectiveness   Data acquisition   Decision making   Failure (mechanical)   Forecasting
Fuzzy neural networks   Fuzzy systems   Outages   Safety engineering   Sensor nodes
Wind turbines

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8th International Conference on Communication and Electronics Systems, ICCES 2023; Coimbatore; India; 1 June 2023 through 3 June 2023; Category numberCFP23AWO-ART; Code 191286

A Review of the Challenges in EV Wireless Charging Technology(Conference Paper)

Ravichandran, V.,   Singaram, G.,   Velmurugan, J.,   Sivaramkrishnan, M.,   Karthikeyan, J.,   Kumar, N.S.

[a]Nandha Engineering College, Department of Electrical and Electronics Engineering, Tamilnadu, Erode, India
[b]Annasaheb Dange College of Engineering and Technology, Department of Electrical Engineering, Sangli, Maharashtra, Ashta, 416301, India
[c]Psna College of Engineering and Technology, Department of Electrical and Electronics Engineering, Dindigul, 624622, India

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Abstract

EVs are becoming more popular because they are less expensive and better for the environment. However, charging their batteries on a daily basis is difficult. Several obstacles must be overcome before wireless charging for electric vehicles (EVs) becomes widely used. Because alternatives to cable charging are inefficient, this is the main source of concern. Because of transmission losses, more expensive and time-consuming charging procedures are required. Standardization, compatibility with a wide range of electric vehicles, and the impact of wireless charging on batteries are among the other challenges. It is difficult to encourage widespread adoption due to the high cost of establishing a wireless charging infrastructure. Before electric vehicles can be powered by wireless charging, it must be improved (EVs). Despite its promise to revolutionize electric vehicle charging, these barriers remain. EVs are becoming more popular due to their lower operating costs and environmental impact. Electric vehicle owners must keep their batteries charged at all times. Most cable charging techniques necessitate that an electric vehicle be permanently connected to a charging station, making daily use difficult. Wireless charging for EVs will solve this problem. This novel concept has the potential to charge electric vehicles remotely. Wireless charging uses magnetic fields to charge an electric vehicle's battery. This novel method of charging electric vehicles could make them more convenient and accessible. Wireless charging needs a few tweaks before it can be widely adopted. © 2023 IEEE.

Author keywords

Control Circuitry   Electric Vehicle   Power Conversion   Rectifier   Safety Features   Wireless Charging

Indexed keywords

Engineering controlled terms: Cables   Charging (batteries)   Electric rectifiers   Electric vehicles   Environmental impact   Operating costs   Rectifying circuits   Secondary batteries

Engineering uncontrolled terms   Charging infrastructures   Control circuitry   Electric vehicle charging   High costs   Lower operating costs   Power conversion   Rectifier   Safety features   Transmission-loss   Wireless charging

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(2024) 7th International Conference on Inventive Computation Technologies, ICICT 2024

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7th International Conference on Intelligent Computing and Control Systems, ICICCS 2023; Vaigai College Engineering (VCE)Madurai; India; 17 May 2023 through 19 May 2023; Category numberCFP23K74-ART; Code 189354

A Review of an off Grid Solar DC System for Rural Houses(Conference Paper)

Pratheeba, C., Muthuvinayagam, M., Siva Ramkumar, M., Rohith Bhat, C., Maniraj, P., Kumar, N.S.

[a]Nandha Engineering College, Department of Electrical and Electronics Engineering, Erode, India
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[c]Karpagam Academy of Higher Education, Faculty of Engineering, Department of Electrical and Electronics Engineering, Coimbatore, India

View additional affiliations ⌄

Abstract

Despite its importance. more than 800 million people still lack access to electricity. Individuals in many rural areas lack access to a consistent supply of energy due to the high cost of grid extension. Off-grid solar systems enable rural residents to connect to the energy 2rid and power their homes' lights. appliances. and other electronic equipment. This document provides a brief overview of a solar power system that can be used to Dower remote homes. Solar panels. a charge controller. batteries. and an inverter make up the system. Sunlight is converted into direct current by solar panels. which is then stored in batteries. The charge controller regulates the charging and discharging cycles of the battery pack in order to keep the cells healthy and long-lasting. The inverter converts the stored DC electricity into the alternating current (AC) power that appliances and other AC loads require. The proposed method is intended to be simple and low-cost. making it an appropriate option for regions with limited resources and low growth. The system can be customized to meet the exact energy needs of the house by adding additional solar panels or batteries. Furthermore. the structure is made up of discrete components. making it easier to assemble and maintain. Off-grid solar power systems are a cost-effective and efficient wav of bringing electricity to areas that are not connected to the power grid. The proposed system describes the design and installation of a solar-powered. direct current (DC) power source for isolated dwellings. The strategy promotes long-term economic growth and raises the living standards of rural families. © 2023 IEEE.

Author keywords

Battery Inverter Microgrid Off Grid Solar Inverter Solar Panel

Indexed keywords

Engineering controlled terms: Battery management systems Battery Pack Charging (batteries) Cost effectiveness Electric impedance measurement Electric inverters Electric loads Oscillators (electronic) Rural areas Solar energy

Engineering uncontrolled terms: Battery Charge controllers Energy Inverte Microgrid Off-grid solar Off-grids Solar inverter Solar panels Solar Power Systems

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Recent Trends and Future Direction for Data Analytics

14 May 2024, Pages 289-306

Future Trends in Data Analytics (Book Chapter)

Thangamani, S.,   Saranya, R.   👤

Nandha Engineering College, India

Abstract

Data analytics stands at the precipice of an unprecedented transformation, driven by technological breakthroughs, shifting user demands, and evolving industry landscapes. This abstract delineates forthcoming trends poised to redefine the fabric of data analytics in the foreseeable future. The future of data analytics is characterized by a convergence of cognitive computing, ethical AI, hybrid cloud architectures, augmented data management, blockchain technology, edge intelligence, and continuous intelligence. By embracing these transformative trends, organizations can unlock the full potential of data analytics, foster innovation, and drive sustainable growth in an increasingly data-driven world. AI-Powered Automation and machine learning algorithms are set to revolutionize data analytics by automating repetitive tasks, uncovering hidden patterns, and delivering actionable insights at scale. Ethical data governance with growing concerns about privacy, security, and algorithmic bias, ethical data governance emerges as a cornerstone of responsible data practices. © 2024, IGI Global.

👤 Thangamani, S.; Nandha Engineering College, India

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A Comparative Analysis of Diverse Classification Techniques in Machine Learning for Predicting Poker Hands(Conference Paper)

Jayadharshini, P.,   Vasuki, C.,   Santhiya, S.,   Sathiyaseelan, S.,   Chinnappan, D.P.,   Srinesh, S.

[a]Kongu Engineering College, Department of Artificial Intelligence, Erode, Tamilnadu, Perundurai, India
[b]Nandha Engineering College, Department of IT, Tamilnadu, Erode, India

Abstract

This paper introduces an innovative approach to predicting poker hands through the application of machine learning algorithms. In our study, we delve into the realm of predictive analytics, exploring the effectiveness of various classification techniques on a comprehensive dataset of poker hands with known outcomes. The utilized algorithms encompass K-Nearest Neighbors (KNN), Logistic Regression, Adaboost, Decision Trees, Random Forest, LightGBM classifier, XGBoost, and Naive Bayes. Leveraging the inherent capabilities of these algorithms, we conduct an in-depth analysis of features extracted from the cards and their combinations, aiming to enhance predictive accuracy. To facilitate this investigation, we utilize a CSV file containing the pertinent data required for training and testing the models. The wide array of algorithms chosen permits a detailed assessment of their effectiveness in forecasting poker hands, taking into account measures like accuracy, sensitivity, and F1 measure. Integrating KNN, Logistic Regression, Adaboost, Decision Trees, Random Forest, LightGBM-classifier, XGBoost, and Naive Bayes offers a comprehensive understanding of the strengths and weaknesses of these algorithms in predicting poker hands. This research not only advances the field of predictive modeling in poker games but also contributes valuable insights into the optimal choice of algorithms for similar classification tasks. © 2024 IEEE.

Author keywords

Logistic Regression   Machine Learning   Naïve Bayes   Poker Hand   XGBoost

Indexed keywords

Engineering controlled terms: Adaptive boosting   Adversarial machine learning   Contrastive Learning   Decision trees   Logistic regression   Machine learning   Nearest neighbor search   Random forests

Engineering uncontrolled terms   Classification technique   Comparative analyzes   Innovative approaches   Logistics regressions   Machine-learning   Naive bayes   Nearest-neighbour   Poker hand   Random forests   Xgboost

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Predictive Machine Learning Approaches for Estimating Residential Rental Rates in India(Conference Paper)

Jayadharshini, P.,   Ragunath, R.,   Prabhakaran, D.,   Krishnasamy, L.,   Abinaya, N.,   Priyanka, S.   ○

[a]Kongu Engineering College, Department of Artificial Intelligence, Tamilnadu, Erode, India
[b]Nandha Engineering College, Department of Information Technology, Tamilnadu, Erode, India
[c]Christ University, Department of Cse, Bangalore, India

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Abstract

As urban areas like Chennai and Bangalore witness a continuous surge in land and housing prices, accurately estimating the market value of houses has become increasingly crucial. This presents a formidable challenge, prompting a growing demand for an accessible and efficient method to predict house rental prices, ensuring dependable forecasts for future generations. In response to this need, this study delves into the core factors influencing rental prices, with a keen focus on location and area. Leveraging a dataset comprising ten essential features tailored for detecting Rental Price in Metropolitan cities, the research meticulously preprocesses the data using a Python library to ensure data cleanliness, laying a robust foundation for constructing the predictive model. Employing a diverse range of Machine Learning algorithms, including Random Forest, Linear Regression, Decision Tree Regression, and Gradient Boosting, the study evaluates their efficacy in forecasting rental prices. Notably, feature extraction underscores the significance of area and property type in shaping rental prices. In comparison with existing methodologies, this research adopts gradient boosting as its preferred approach, achieving the most satisfactory predictive outcomes. Evaluation metrics are meticulously analyzed to validate the model's performance. Through this comprehensive analysis, the study not only offers valuable insights into rental price prediction but also ensures a rigorous comparison with existing approaches, maintaining originality and relevance in addressing the pressing challenges of housing market dynamics. © 2024 IEEE.

Author keywords

Decision Tree Algorithm   Gradient Boosting Technique   Linear Regression Model   Random Forest Algorithm   Rental Rate

Indexed keywords

Engineering controlled terms: Adversarial machine learning   Contrastive Learning   Decision trees

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Cluster-based context-aware route service management for smart intelligent autonomous vehicles with industrial transport system(Article)

Nagappan, G.,   Maheswari, K.G.,   Siva, C.,   Shobana, M.

[a]Department of computer science and engineering, Saveetha Engineering College, Tamil Nadu, Chennai, India
[b]Department of Information Technology, Government College of Engineering, Tamil Nadu, Erode, India
[c]Department of Information Technology, Nandha Engineering College, Tamil Nadu, Erode, India

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Abstract

Industrial transport system refers to the movement of goods, raw materials, and finished products within and between industrial facilities such as factories, warehouses, and distribution centers. It includes a variety of modes of transport such as trucks, forklifts, conveyor belts, and automated guided vehicles (AGVs). Context-aware route service management refers to system that can dynamically manage and optimize the routes taken by vehicles in transportation system based on contextual information. Our proposed framework for industrial transport systems and smart intelligent autonomous vehicles utilizes cluster-based context-aware routing (CCAR), which includes several significant contributions. Firstly, modified elephant herding optimization (MEHO) algorithm is used to efficiently group autonomous vehicles for routing. Secondly, an improved gravitational search (IGS) algorithm is used for cluster head (CH) selection responsible for transferring context information between vehicles (V2V). Thirdly, a deep hybrid multi-graph neural network (DHMG-NN) is designed for optimal neighboring roadside unit (RSU) node selection through different design constraints to ensure data dissemination between vehicles and infrastructure (V2I). Finally, we validate the effectiveness of our CCAR framework using various simulation scenarios. Our framework achieves a reduction of up to 78% in computation time and an improvement of up to 25% in customer satisfaction ratio and 15% higher than the overall performance ratio compared to the existing frameworks. © 2023 John Wiley & Sons Ltd.

Author keywords

cluster head   clustering   context-aware routing   industrial transport system   roadside unit

Indexed keywords

Engineering controlled terms:	Automatic guided vehicles Belt conveyors Customer satisfaction Freight transportation Transportation routes Warehouses
Engineering uncontrolled terms	Autonomous Vehicles Cluster-based Cluster-heads Clusterings Context-Aware Context-aware routing Industrial transport system Roadside units Routings Transport systems
Engineering main heading:	Information management

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1st International Conference on Computer Science and Emerging Technologies, CSET 2023; Hybrid, Bangalore; India; 10 October 2023 through 12 October 2023; Category numberCFP23TZ3-ART; Code 195632

Monitoring and Alerting for Horizontal Auto-Scaling Pods in Kubernetes Using Prome Theus(Conference Paper)

Abirami, T.,   Vasuki, C.,   Jayadharshini, P.,   Vigneshwaran, R.R.

[a]Kongu Engineering College, Department of Information Technology, Tamilnadu, Erode, India
[b]Nandha Engineering College, Department of Information Technology, Tamilnadu, Erode, India
[c]Kongu Engineering College, Department of Artificial Intelligence, Tamilnadu, Erode, India

Abstract

Software application that is deployed in a cloud environment as opposed to being hosted on a local server or machine is referred to as a cloud application. It is a piece of software that combines local and cloud-based components. The existing model uses remote servers that are accessed through a web browser and an ongoing internet connection to process logic. For deploying the application in cloud computing, currently there is no adequate infrastructure and adequate order in deploying with achieving the zero-down time. Organizations are using one time deployment for deploying their application and upgrading that application will lead to crash down and result in down time in deployment. For monitoring and alerting the cause of error in deployment of the application, there is no specific solution for that. Thus by using multiple tools like Kubernetes, helm, Prometheus, Grafana, etc... using together and optimized, we can achieved the above scenario in the most optimized manner. Cloud applications offer businesses quick time to market and agility because they can be updated, tested, and deployed quickly. This speed may result in cultural changes in how businesses operate. Cloud applications offer businesses quick time to market and agility because they can be updated, tested, and deployed quickly. This speed may result in cultural changes in how businesses operate. © 2023 IEEE.

Author keywords

Amazon Elastic Compute Cloud (EC2)   Amazon Web Service (AWS)   Elastic Kubernetes Service (EKS)   Grafana   Helm   Kubernetes   Prometheus

Indexed keywords

Engineering controlled terms: Application programs   Commerce   Computation theory

Engineering uncontrolled terms   Amazon elastic compute cloud (EC2)   Amazon web service   Amazon web services   Cloud applications   Elastic compute clouds   Elastic kubernetes service   Grafana   Helm   Kubernetes   Prometheus

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4th International Conference on Sustainable Goals in Materials, Energy and Environment, ICSMEE 2024; Department of Civil Engineering, Mangalam College of EngineeringKerala; India; 2 May 2024 through 3 May 2024; Code 199883

Improving Fire Resistance in E-Vehicles: A Study on MPP-Enhanced S-Glass/Phenolic Hybrid Composites(Conference Paper)(Open Access)

Sakthivel, S., Magibalan, S., Jeyaprakasam, S., Venkatraman, J.

Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, 638 052, India

Abstract

The automotive industry has benefited greatly from the advancements in fireproof, high-strength fiber-reinforced polymer matrix composites during the last several decades. S-Glass/Phenolic hybrid composites made by hydraulic compression molding are the subject of this investigation into the effects of Melamine Polyphosphate (MPP) on their thermal and fire performance. In addition to studying the morphology of the samples, researchers analyzed the thermal and fire performances of hybrid laminates made with neat laminates and varying compositions of MPP (ranging from 3% to 15% by weight). Tests included UL 94, limiting oxygen index (LOI), and the impacts of accelerated heat ageing on the behavior of the hybrid specimens. The results demonstrated that specimens filled with higher MPP performed better in a fire compared to neat samples. According to the results in UL 94 horizontal burning test and vertical burning test, specimens filled with 12 and 15 wt. % MPP demonstrated a reduced flame spreading rate and fulfilled the V-0 criteria. Simultaneously, the energy absorption capacity of hybrid configurations is severely limited by heat ageing, due to its temperature and duration dependent. The research proved that the suggested S-Glass / Phenolic / Melamine Polyphosphate hybrid composites were suitable for creating environmentally friendly electric vehicle battery housings and fire-resistant automotive parts. © 2024 The Authors, published by EDP Sciences.

Author keywords

E-Vehicles   Fire Resistance   Limiting Oxygen Index   Phenolc Resin   Thermal Performance

Magibalan, S.; Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, India;

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Sakthivel, S.,   Magibalan, S.,   Jeyaprakasam, S.,   Venkatraman, J.   👤

Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, 638 052, India

Abstract

The automotive industry has benefited greatly from the advancements in fireproof, high-strength fiber-reinforced polymer matrix composites during the last several decades. S-Glass/Phenolic hybrid composites made by hydraulic compression molding are the subject of this investigation into the effects of Melamine Polyphosphate (MPP) on their thermal and fire performance. In addition to studying the morphology of the samples, researchers analyzed the thermal and fire performances of hybrid laminates made with neat laminates and varying compositions of MPP (ranging from 3% to 15% by weight). Tests included UL 94, limiting oxygen index (LOI), and the impacts of accelerated heat ageing on the behavior of the hybrid specimens. The results demonstrated that specimens filled with higher MPP performed better in a fire compared to neat samples. According to the results in UL 94 horizontal burning test and vertical burning test, specimens filled with 12 and 15 wt. % MPP demonstrated a reduced flame spreading rate and fulfilled the V-0 criteria. Simultaneously, the energy absorption capacity of hybrid configurations is severely limited by heat ageing, due to its temperature and duration dependent. The research proved that the suggested S-Glass / Phenolic / Melamine Polyphosphate hybrid composites were suitable for creating environmentally friendly electric vehicle battery housings and fire-resistant automotive parts. © 2024 The Authors, published by EDP Sciences.

Author keywords

E-Vehicles   Fire Resistance   Limiting Oxygen Index   Phenolc Resin   Thermal Performance

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4th International Conference on Sustainable Goals in Materials, Energy and Environment, ICSMEE 2024; Department of Civil Engineering, Mangalam College of EngineeringKerala; India; 2 May 2024 through 3 May 2024; Code 199883

Eco-Friendly Waste Management: A Segregation and Composting System for Domestic Use(Conference Paper)(Open Access)

Arjunraj, R.,   Ancelin Nishanth, M.A.,   Niji Jeba Mahiban, J.,   Vishwanath, G.,   Santhosh, E.   ⯎

Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, 638 052, India

Abstract

The proper disposal of home garbage has recently emerged as a pressing issue on a global scale. Also, the city government has been trying to get people to separate their dry and moist trash. But there is still a problem with trash management and a big domestic population that isn't helping out. This paper details the process of creating a waste management system that separates organic kitchen trash into dry and moist categories. Both models are part of the proposed system: The first step is to design a bin that can separate dry and moist trash. Additionally, a composting facility is showcased for the purpose of transforming organic waste into compost. Twenty homes'worth of garbage was fed into the suggested model, and the results show promise for trash segregation and composting. © 2024 The Authors, published by EDP Sciences.

Author keywords

(Compost) (Dry Waste) (Sorter Bin) (Trash Management) (Wet Waste)

⯎ Arjunraj, R.; Department of Mechanical Engineering, Nandha Engineering College, Tamilnadu, Perundurai, India;

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Department of Mechanical Engineering, Nandha Engineering College, Tamil Nadu, Perundurai, 638 052, India

Abstract

Cutting fluid plays an important role in machining operations like milling, drilling, reaming, etc. In production industry such as automobile industries, aerospace industries, etc., soluble cutting fluids are mainly used for machining operations. The maximum service life of the cutting fluid is about 3 to 4 months in that industry, when they mixed with water, the cutting fluid will get dried out or converted into vapour due to heat generation and due to friction between the cutting tool and the components. The repeated use of cutting fluid for machining operations, the chemical and physical property of the cutting fluid will be changed. The proper mixing ratio of cutting fluid can be done with the help of Arduino nano device and valves, sensors. Automatic cutting fluid filling process can be done by proper Arduino coding. In the present study, the pH sensor is used to detect the pH level of cutting fluid and the Solenoid valves are electromagnetic valves, these valves are used to maintain the proper flow of cutting fluid and water mixture ratio, whenever the cutting fluid pH value differs from the fixed value, the pH sensor will indicate in Arduino nano. The mixing of cutting fluid and water is carried out by stirrer mechanism, which is attached at just above the cutting fluid tank. Control valve is used to control the flow of cutting fluid during the machining operation. The electric signal from touch sensor will stops automatically, when the cutting fluid in the tank reaches its maximum limit. In this paper, cutting fluid pH value is maintained automatically by Arduino nano device for CNC Machine in industries is discussed. © 2024 The Authors, published by EDP Sciences.

Author keywords

Arduino nano   Machining operation   PH sensor   Rapid flood mode   Soluble cutting fluids

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The Determination of the Stress Field Surrounding a Quasi-Constrained Inclusion in a Chromium-3.5nickel Alloy(Conference Paper)

Ashok Kumar, B.,   Vimal Raja, M.,   Vel Prakhash, V.L.,   Vinosh, M.,   Shastry, P.P.G.

[a]Nandha Engineering College, India
[b]Kalaignar Karunanidhi Institute of Technology, India
[c]Sri Krishna College of Engineering and Technology, India

Abstract

A method is proposed for estimating the stress field near a semi constrained inclusion. The volume of the stress-free misfit inclusion was separated into totally restricted and only loosely constrained parts. To achieve this, a fictional notch mirroring the inclusion matrices was introduced, and misfit displacement was applied. An elastic finite element analysis under a planar stress condition was conducted to identify the stress field surrounding a hydride blister in the Cr-3.5Ni pressure tube alloy. By assuming the orientation of hydride platelets in the matrix, the precision of computations was demonstrated. Our findings unveil distinct characteristics in the hydride platelet's axial dimension and orientation, highlighting their resistance to self-reorientation, even in the presence of radial hydrides. The consistent size and spacing of hydride platelets around the blister, despite nearby radial hydrides, emphasize the alloy's unique behavior. This study contributes essential insights into the stress dynamics and microstructural intricacies of hydride blister formation, crucial for ensuring the structural integrity of pressure tubes in nuclear reactors. © 2024 Author(s).

Author keywords

displacement   elastic   pressure   Stress

Indexed keywords

Engineering controlled terms: Binary alloys   Chromium alloys   Nuclear reactors   Platelets   Stresses

Engineering uncontrolled terms   Displacement   Elastic   Finite element analyse   Hydride platelets   Inclusion matrices   Radial hydrides   Semi-constrained   Stress condition   Stress field   Stress free

Engineering main heading: Hydrides

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Effect of SnO$_2$ and Ag nano-additives on the performance, combustion and emission characteristics of diesel engine fueled with mango seed biodiesel(Article)

Senniangiri, N.,   Bensam Raj, J.,   Brucely, Y.,   Herbert bejaxhin, A.B.

[a]Department of Mechanical Engineering, Nandha Engineering College (Autonomous), Tamilnadu, Erode, India
[b]Department of Mechanical Engineering, Muthayammal Engineering College, Tamilnadu, Rasipuram, India
[c]Department of Mechanical Engineering, SRM TRP Engineering College, Tamilnadu, Tiruchirappalli, India

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Abstract

The emission from diesel engine leads to global warming and health issues. Alternative fuel is the better choice to solve the aforementioned issues. Bio-fuels have the potential to decrease the engine emission. This research works deals with the performance, combustion and emission characteristics of diesel engine operated with mango seed biodiesel blended with SnO$_2$ and Ag particles. A test was conducted at different loading conditions on the single cylinder, four stroke, and vertical diesel engine. Three types of fuel blends were prepared viz. BD containing 25% methyl ester of mango seed oil and 75% diesel fuel, BD with 50 ppm Ag nanoparticles and BD with 50 ppm SnO$_2$ nanoparticles. Experimental results were compared with the performance, combustion and emission results of diesel fuel. The BD–Ag biodiesel showed 4.4% higher BTE than the pure biodiesel due to the high thermal conductivity of Ag particles. Moreover, the BD–Ag biodiesel exhibited 16.7% more HRR than pure biodiesel owing to better heat transfer ability of Ag particles. In addition, the BD–Ag biodiesel displayed the maximum reduction in CO, UBHC and smoke density of 27.8%, 14.3%, and 11.8%, respectively, compared with that of diesel fuel. © 2022 Taylor & Francis Group, LLC.

Author keywords

combustion   diesel engine   emission   mango seed biodiesel   nanoparticles   performance

Indexed keywords

Engineering controlled terms:	Biodiesel Combustion Diesel fuels Fruits Fuel additives Global warming Heat transfer Nanoparticles Smoke
Engineering uncontrolled terms	Ag particles Combustion characteristics Emission Emission characteristics Health issues Mango seed biodiesel Mango seeds Nano additives Performance Performance characteristics
Engineering main heading:	Diesel engines

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Mathivanan, B. , Kumaragurubaran, B. , Bensam Raj, J.

Performance, combustion and emissions characteristics of lanthanum zirconate coated DI engine fueled with nannochloropsis algae bio-diesel containing tin oxide nanoparticles

(2024) Petroleum Science and Technology

Seela, C.R. , Potnuru, B.K. , Chintada, V.B.

Analysis of hybrid nano-emulsified Jatropha methyl ester-diesel blend (B20) in a direct injection engine: an experimental study

(2023) Global Nest Journal

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Design and Fabrication of FDM Adapter Head Setup for CNC Milling Machine(Conference Paper)

Deepan Kumar, S., Balakrishnan, S., Saminathan, S., Arun Raj, V., Dhayaneethi, S., Soundrapandian, E., Veath Prakash, B.

[a]Bannari Amman Institute of Technology, India
[b]Nandha Engineering College, India
[c]Kongu Engineering College, India

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Abstract

The 3D printing technology is an Additive Manufacturing process which is capable of producing the complex shapes. At present there is no other technologies integrating the 3D printing and the CNC machine, thus we adapting a new design of 3D printing setup for CNC machine with some special feature as extruder, it is based on the Fusion Deposition Modelling (FDM) process with the help of the parts like Extruder, Heat Bed, Arduino boards where we are going to design a head of the printer which is to be attached with the BT40 commonly used Tool holder for the CNC milling machines. This extruder plays a vital role in this CNC milling machine for producing 3D printed components of different material and different colour. And this setup is capable of printing high resolution and complex shapes with different material and different colour by means of the heated filament. The post processing process like milling and surface finish can also be done by the CNC Machine. This setup is cost effective. © 2023 SAE International. All rights reserved.

Indexed keywords

Engineering controlled terms:
3D printing Computer control systems Extruders Machine components Milling (machining)

Engineering uncontrolled terms:
3-D printing 3D-printing Additive manufacturing process CNC machine CNC milling machine Complex shapes Deposition modeling Modeling process Printing technologies Tool holders

Engineering main heading:
Cost effectiveness

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Deep Learning Approach for Optimum Power Management Using IoT in EV Battery Management System

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Industrial waste fly ash experimental research on the thermal, mechanical, and electrical characteristics of AA8011 metal matrix composites

(Article in press ❓)

Magibalan, S.,   Mohanavel, V.,   Sivapragasam, A.,   Kulandaivel, A.,   Kannan, S.,   Jazaa, Y.   👤

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ᶜDepartment of Mechanical Engineering, Amity University Dubai, Dubai, 345019, United Arab Emirates

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Abstract

This novel research examined the response performance of monolithic aluminum alloy AA8011 reinforced with an industrial by-waste fly ash. The developed composites were fabricated by stir casting route with close consideration on the parametric process, and four varying weight compositions were established. Following the solidification of the composites, they were characterized by an optical microscope and the crystalline phase was revealed by X-ray diffraction. The micrograph revealed an even distribution of fly ash along the interface of grain boundaries with minimum porosity. The X-ray diffraction confirmed the peak intensity of the aluminum and the major constituents of fly ash, which were SiO_2, Al_2O_3, and Fe_2O_3 with no traceable intermetallic compound. Likewise, the mechanical strengths (flexural, impact, and compressive) were evaluated. The flexural and compressive strengths increased with the different percentages of fly ash, whereas the impact strength decreased. The corrosion rate was deduced from the anodic and cathodic extrapolation curves, and the result showed resistance to corrosion attack following the incorporation of the unreactive fly ash particles. The thermal behavior was analyzed using a thermogravimetric analyzer (TGA) and differential thermal analyzer (DTA). Researches reveal that TGA and DTA, in their respective capacities, were able to lower the composite mass loss elevated thermal properties, from around 667.6 °C, within the condition of fly ash addition as a ratio of the temperature increase. © 2023, The Author(s), under exclusive licence to Springer-Verlag London Ltd., part of Springer Nature.

Author keywords

Aluminum alloy 8011   Impact behavior   Mechanical testing   Metal matrix composites   Optical microscopy

Indexed keywords

Engineering controlled terms: Alumina   Aluminum alloys   Aluminum oxide   Corrosion rate   Corrosion resistance   Differential thermal analysis   Fly ash   Grain boundaries   Hematite   Impact strength   Mechanical testing   Metallic matrix composites   Silica   X ray diffraction

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Mishra, R.R. , Panda, A. , Sahoo, A.K.

Characterization and machinability analysis of aluminium-based metal matrix composites (MMC): A critical review

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Performance Improvement of Proton Exchange Membrane Fuel Cell by Modified Flow Field Design(Article)

Saminathan, J.,   Marappan, M.,   Angappamudaliar Palanisamy, S.K.,   Ramasamy, S.   ⚲

[a]Dept. of Mechatronics Engineering, SNS College of Technology, Tamil Nadu, Coimbatore, 641035, India

[b]Fuel Cell Research Lab, Dept. of Mechanical Engineering, Nandha Engineering College, Tamil Nadu, Erode, 638052, India

[c]Dept. of Mechanical Engineering, PSG College of Technology, Tamil Nadu, Coimbatore, 641004, India

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Abstract

The power output of proton exchange membrane fuel cells (PEMFCs) is built upon the uniform distribution of reacting gases and the mitigation of flooding of water on the cathode side of the fuel cell. This paper proposes a new flow field, which was modified from conventional serpentine flow fields (SFFs) by dividing the channel into three segments. In each of the segments, the flow channel length was decreased and increased gradually. This new modified flow field (MFF) was compared with SFF, both numerically and experimentally. Numerical and experimental investigations were carried out for an active area of 25 cm2. The MFF created an even distribution of gases and better water management than the SFF on PEMFCs. From the study, it is found that the new MFF improved power output compared to SFFs in numerical simulation and experimental analysis. © 2023 American Society of Civil Engineers.

Indexed keywords

Engineering controlled terms:	Channel flow Proton exchange membrane fuel cells (PEMFC) Serpentine

Engineering uncontrolled terms	Cell-be Cell/B.E Cell/BE Flow-field design Modified flow fields Performance Power output Proton-exchange membranes fuel cells Serpentine flow fields Uniform distribution

Engineering main heading:	Flow fields

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Volume 24, Issue 4, August 2023, Pages 705-713

Enhancing micromachining precision with novel electrolyte combinations: an investigation(Article)

Gunasekaran, S.,   Periyagounder, S.,   Subramaniam, M.   ⍟

[a]Mechatronics Engineering, Sona College of Technology, Salem, India
[b]Mechanical Engineering, Nandha Engineering College, Erode, India

Abstract

Electrochemical micromachining is a non-traditional machining process used for drilling at the micro level. The process is challenging to control due to its reliance on reaction parameters like over-cut, material removal rate, and taper. The removal rate of material (MRR) and overcut are key responses observed during the process. Recent studies have focused on investigating the effect of process parameters such as Electrolyte concentration, voltage, and duty cycle on electrochemical micromachining. Researchers have found that variations in the Electrolyte type, combination, and duty cycle can significantly impact material removal rate and overcut. In this work, the combination of novel electrolyte and the optimal temperature was maintained to carry out the experiments. The removal rate of material and overcut are critical responses observed during the process in which electrolyte concentration has shown to impact these responses significantly. SEM (Scanning Electron Microscope) images have been used to analyze the resulting drill surfaces, providing valuable insights into the microstructure and morphology of the drilled holes. © 2023, Hanyang University. All rights reserved.

Author keywords

(EMM) (L9 orthogonal array) (RSM) (SEM) (SS316L)

⍟ Gunasekaran, S.; Mechatronics Engineering, Sona College of Technology, Salem, India;

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Vishnu, A. , Subramanian, M.

Impact of incorporating Gr particles in dielectric fluid on machining performance of AA7050/SiC/Al2O3 hybrid composites

(2024) Journal of Ceramic Processing Research

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Investigations on the tribological behaviour, toxicity, and biodegradability of kapok oil bio-lubricant blended with (SAE20W40) mineral oil(Article)

Shankar, S., Manikandan, M., Karupannasamy, D.K., Jagadeesh, C., Pramanik, A., Basak, A.K.   👤

[a]Department of Mechatronics Engineering, Kongu Engineering College, Tamil Nadu, Erode, 638 060, India
[b]Department of Mechanical Engineering, Nandha Engineering College, Tamil Nadu, Erode, 638 052, India
[c]Department of Mechanical Engineering, Kongu Engineering College, Tamil Nadu, Erode, 638 060, India

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Abstract

Vegetable oil becomes a viable alternative to mineral or synthetic oils due to its biodegradable nature. In this work, one such vegetable-based non-edible oil (kapok oil) is blended with a mineral-based oil (SAE20W40) at 15 and 30% ratio (by volume), and its changes in thermal, tribological, and corrosive properties were evaluated. Four-ball tribometer is utilized to assess its dynamic friction coefficient and the wear scar diameter of the worn out area on the ball. Biodegradability and toxicity test of kapok oil were examined and compared with the palm and mineral oil through bacterial growth and brine shrimp assay methods, respectively. The results showed that the dynamic friction coefficient and specific wear rate of the blended oil were lesser than the mineral oil. The mineral oil produced a higher roughness average (R_a) value than that of the blended oil. Kapok oil shows an adequate tribological properties (anti-friction and anti-wear) in contrast to the other vegetable oils. Overall, kapok oil had a high biodegradability nature and lower toxicity than the mineral oil. © 2021, The Author(s), under exclusive licence to Springer-Verlag GmbH, DE part of Springer Nature.

Author keywords

Biodegradable   Four-ball tribometer   Kapok oil   SAE20W40   Toxicity

Indexed keywords

Engineering controlled terms:
Biodegradability   Friction   Mineral oils   Minerals   Palm oil   Tribology   Wear of materials

Engineering uncontrolled terms:
Bio lubricants   Biodegradable   Blended oil   Dynamic friction coefficient   Four-ball   Four-ball tribometer   Kapok oil   Sae20w40   Tribological behaviour   Tribometers

Engineering main heading:
Toxicity

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Luo, X. , Wu, S. , Wang, D.
Sustainable development of cutting fluids: The comprehensive review of vegetable oil
(2024) Journal of Cleaner Production

Liu, J. , Yi, C. , Zhang, Y.
Structure-activity relationship study of anti-wear additives in rapeseed oil based on machine learning and logistic regression
(2024) RSC Advances

Hamnas, A. , Panicker, U.G.
Sustainable bio-lubricant blends from mustard oil and castor oil: physico-chemical, thermal, rheological, and tribological characterizations for eco-friendly alternatives to commercial engine oil
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Investigations on the microbial activity and anti-corrosive efficiency of nickel oxide nanoparticles synthesised through green route

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Mohamed Kasim Sheit, H.,   Seeni Mubarak, M.U.,   Mohan, K.S.,   Gunavathy, K.V.,   Subhapriya, P.,   Varusai Mohamed, M.K.

[a]PG and Research Department of Chemistry, Jamal Mohamed College (Autonomous), Affiliated to Bharathidhasan University, Tamil Nadu, Tiruchirappalli, 620 020, India
[b]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638 052, India
[c]Thin Film Research Centre, Kongu Engineering College, (Autonomous), Tamil Nadu, Erode, 638 060, India

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Abstract

Researchers have shown considerable interest in the environmentally friendly synthesis of several nanoparticles particularly metal nano particles due to their multifaceted applications. The target of the current research includes the synthesis of nickel oxide nanoparticles (NiO-NPs) through the green route using the bark extract from Acacia Nilotica, and analyzed their chemical and surface morphological features using XRD, SEM, EDX, IR, UV-vis and photoluminescence spectroscopy. In addition, the corrosion inhibition ability and antimicrobial activity of the extract were also studied. The XRD analysis indicated that the NiO exist in the form of nanoparticles. It showed the formation of pure cubic NiO-NP with a prominent peak at 43.28° reflected from the plane (200). The crystallite size was found to be 15.83 nm. The SEM micrographs revealed that NiO-NPs appeared to be a bulk cluster-like structure on their surface.The EDX analysis displayed the presence of Ni and oxygen atoms. The photoluminescence spectrum demonstrated that the green synthesized metal oxide nanoparticles have a modified emission band due to the presence of oxygen deficiencies and induced surface imperfections. The Fourier transform infrared spectroscopy (FTIR) confirmed the association of peaks with the C-H and Ni-O bonds. The UV-vis study showed a maximum absorption at 264 nm. A study on the inhibition efficiency towards microbes confirmed that the prepared NiO-NPs have a good inhibition against selected microbes such as S. aureus, E. coli, Candida albicans, A. Niger. The mass loss system showed restraint 93.68 % effectiveness in the mild steel, and the electrochemical study supported the formation of a defensive protective layer on the cathodic locales of the carbon steel surface inhibiting corrosion. © 2024 Walter de Gruyter GmbH, Berlin/Boston 2024.

Author keywords

Acacia Nilotica   anti-microbial activity   corrosion inhibition efficiency   electrochemical studies   NiO-NPs

Indexed keywords

Engineering controlled terms: Corrosion inhibitors   Corrosion protection   Crystallite size   Efficiency   Fourier transform infrared spectroscopy   Metal nanoparticles   Nickel oxide   Oxygen   Particle size analysis   Photoluminescence   Steel corrosion   Synthesis (chemical)   X ray diffraction

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Karthi, G.B. , Suvaikin, M.Y. , Sheit, H.M.K.

Synthesis and Spectroscopic Investigation of N-(Morpholinofurfuryl) Maleimide and its Copper (II) Complex uses in Biological Applications

(2024) Inorganic Chemistry Communications

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Volume 8, Issue 4, April 2024, Article number 219

On Some Impulsive Fractional Integro-Differential Equation with Anti-Periodic Conditions(Article)(Open Access)

Alruwaily, Y., Venkatachalam, K., El-hady, E.-S. 👤 👤

[a]Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, 72388, Saudi Arabia
[b]Department of Mathematics, Nandha Engineering College (Autonomous), TN, Erode, 638052, India

Abstract

We investigate a class of boundary value problems (BVPs) involving an impulsive fractional integro-differential equation (IF-IDE) with the Caputo–Hadamard fractional derivative (C-HFD). We employ some fixed-point theorems (FPTs) to study the existence of this fractional BVP and its unique solution. The boundary conditions (BCs) established in this study are of a more general type and can be reduced to numerous specific examples by defining the parameters involved in the conditions. In this way, we extend some recent nice results. At the end, we use an example to verify our results. © 2024 by the authors.

Author keywords

boundary value problems Caputo–Hadamard fractional derivative impulsive integro-differential equations

Funding details

Funding sponsor	Funding number	Acronym
Deanship of Scientific Research, University of Jordan		DSR

Funding text

👤 Alruwaily, Y.; Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, Saudi Arabia;
👤 El-hady, E.-S.; Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, Saudi Arabia;

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Lv, X. , Zhao, K. , Xie, H.
Stability and Numerical Simulation of a Nonlinear Hadamard Fractional Coupling Laplacian System with Symmetric Periodic Boundary Conditions
(2024) Symmetry

Venkatachalam, K. , Marappan, S.K.
RESULTS ON IMPULSIVE ψ-CAPUTO FRACTIONAL INTEGRO-DIFFERENTIAL EQUATIONS WITH BOUNDARY CONDITIONS
(2024) Bangmod International Journal of Mathematical and Computational Science

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Exploring the Frontier of Electrocardiogram Analysis Using rGO Nanoelectrodes

S. Kavitha, R.K. Bhoopesh and K.S. Mohan

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Abstract

The growing popularity of long-term, continuous, and unsupervised tracking of human physiological data for health care monitoring and preventive treatment has made biomedical applications of nanotechnology a major research focus. Generally, the monitoring and prevention of diseases in humans is performed through the collection of biomedical data and signals. In current methodologies, the transducers used to acquire human physiological data do not perform to the desired standard. For example, the silver (Ag) electrodes used to acquire electrocardiogram (ECG) data introduce distortion along with the information. In the proposed work, reduced graphene oxide (rGO) nanoparticles were prepared through chemical reduction and characterized using field-emissionscanning electron microscope (FE-SEM) and Raman analysis for biomedical applications. Subsequently, graphene nanoparticles-coated electrodes were fabricated and found to be suitable for obtaining human biomedical data for further analysis. A development board for ECG analysis was created, along with an android application, to monitor the performance of graphene nanoparticles coated electrodes in comparison to traditional electrodes. The comparison is performed in terms of the quality of the signal, the ratio of the signal to noise (SRN), and the impedance of the electrode to skin contact. Using Internet of Things (IoT), this monitoring can be done anytime and anywhere.

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Investigations on the enhanced anti-microbial activity of one step synthesized ZnO, WO$_3$, and rGO nano particles and fabrication of rGO nano electrode for EMG biomedical application(Article)

Subramaniam, K.,   Mohan, K.S.,   Bhoopesh, R.K.,   Gunavathy, K.V.

[a]Department of Electronics and Communication Engineering, Nandha Engineering College (Autonomous), Perundurai, Tamil Nadu, Erode, 638 052, India

[b]Department of Physics, Nandha Engineering College (Autonomous), Perundurai, Tamil Nadu, Erode, 638 052, India

[c]Thin Film Research Center, Kongu Engineering College (Autonomous), Perundurai, Tamil Nadu, Erode, 638 060, India

Abstract

The proposed study aims to synthesize ZnO, WO$_3$, and rGO nano particles (NPs) using simple and effective chemical reduction technique and to investigate its biomedical applications. According to the XRD results, synthesized NPs had hexagonal, monoclinic, and cubic crystal forms. The FESEM micro image shows sheet-like structure for rGO NPs, an algal crystal structure for ZnO, and a bulk cluster formation for WO$_3$ NPs. The value of band gap was found to be 5.75, 5.37 and 3.01 eV for ZnO, WO$_3$, and rGO NPs respectively. The presence of diverse functional groups in the produced NPs was verified using Fourier-transform infrared spectroscopy. Investigations against different microorganisms indicated an augmentation in the antibacterial activity for ZnO and WO$_3$ NPs. Electrodes coated with rGO NP were made and discovered to be effective in collecting human biomedical data more effectively. The performance of rGO NP coated electrodes was compared using a development board for electromyography analysis along with an android application for monitoring purposes. The quality of the signal, the ratio between the signal and the background noise, as well as the level of impedance between the electrode and the skin was observed to be better than conventional electrodes. © 2024 Walter de Gruyter GmbH, Berlin/Boston.

Author keywords

anti-microbial study   EMG analysis   graphene nanoelectrode   rGO   WO$_3$ ZnO

Indexed keywords

Engineering controlled terms: Crystal structure   Energy gap   Fourier transform infrared spectroscopy   II-VI semiconductors   Medical applications   Synthesis (chemical)   ZnO nanoparticles

Engineering uncontrolled terms: Anti-microbial   Anti-microbial activity   Anti-microbial study   Biomedical applications   EMG analyse   Graphene nanoelectrode   Nanoelectrode   Nanoparti-cles   RGO   Synthesised

Engineering main heading: Tungsten compounds

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Zeitschrift fur Physikalische Chemie

2024

A study of the effect of cerium ion doping concentration on the structural, electrical, and thermoelectric properties of $CaMnO_3$ nanoparticles

(📄 Article in press ❓)

Samimuthu, B.,   Manoranjitham, R.,   Mohan, K.S.,   Backiyalakshmi, N.,   Muthukrishnan, M.   👤

[a]Department of Physics, K. Ramakrishnan College of Engineering (Autonomous), Tamil Nadu, Tiruchirappalli, 621112, India

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[c]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638052, India

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Abstract

Universally, energy loss in the form of heat is predominant and this heat is irrecoverable waste heat that leads to global warming. Clean, green, eco-friendly, cost-effective, and renewable energy sources are the possible solutions for this energy crisis and global warming issues. Thermoelectric power generation is a promising technology by converting this irrecoverable waste heat directly into electricity without any greenhouse gas emission. Nanostructured $CaMnO_3$ at various cerium concentrations have been successfully prepared by sol–gel hydrothermal method followed by annealing and sintering. Pure and doped samples were systematically characterized by DSC, powder XRD, RAMAN, SEM with EDAX and FTIR spectroscopy. Electrical and thermoelectrical measurements were carried out on the sintered pellets. The XRD analyses confirmed the formation of orthorhombic perovskite structure for all the samples and the average particle size lies in the range of 50–60 nm. FTIR analysis shows the presence of $CaMnO_3$ nanoparticles without any impurities. The temperature dependence of physical properties was performed and analyzed between room temperature and 600 °C. Electrical resistivity strongly depends on the nature of substituent ions and negative values indicate that the electrons are major charge carriers. Large Seebeck coefficient value and high-power factor make $Ca_{1-x}Ce_xMnO_3$ an efficient thermoelectric material for energy storage applications. © 2024 Walter de Gruyter GmbH. All rights reserved.

Author keywords

Annealing   Hydrothermal   Manganite   Power factor   Seebeck coefficient   Sintering

Indexed keywords

Engineering controlled terms:
Cost effectiveness   Energy dissipation   Energy policy   Fourier transform infrared spectroscopy   Global warming   Greenhouse gases   Manganites   Nanoparticles   Particle size   Particle size analysis   Perovskite   Seebeck coefficient   Solar energy   Sols   Temperature distribution   Thermoelectric power   X ray diffraction

Engineering uncontrolled terms:
Annealing   Cerium ion doping   Cost effective   Eco-friendly   Effective energy   Hydrothermal   Ion doping concentrations   Power factors   Renewable energy source   Thermoelectric properties

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Karthi, G.B. , Suvaikin, M.Y. , Sheit, H.M.K.

Synthesis and Spectroscopic Investigation of N-(Morpholinofurfuryl) Maleimide and its Copper (II) Complex uses in Biological Applications

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Journal of Materials Science: Materials in Electronics

Volume 35, Issue 8, March 2024, Article number 600

Effect of A-site and B-site ion substitution on the electrical and thermoelectric properties of nanostructured perovskite $CaMnO_3$(Article)

Mary, S.B., Mohan, K.S., Krishnan, M.M.

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[b]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638 052, India

[c]Department of Physics, Sona College of Technology (Autonomous), Tamil Nadu, Salem, 636 005, India

Abstract

The impact of A-site and B-site ion substitution (A-site: Sr and B-site: Co) on the electrical and thermoelectric properties of the perovskite $CaMnO_3$ nanoparticles has been investigated. The perovskite nanoparticles have been prepared by sol–gel hydrothermal method at 200 °C followed by annealing at optimum temperature. Thermal, structural, morphological, elemental, functional, optical, electrical, and thermoelectric properties of the samples have been performed using TG-DTA analysis, powder X-ray Diffraction, Raman analysis, Scanning Electron Microscopy with Energy Dispersive X-ray Analysis, Fourier Transform Infrared Spectroscopy, UV–Vis spectroscopy, and thermoelectric measurement. Powder XRD analysis reveals the perovskite structure and the optimized annealing temperature. Surfactants reduced the average particle size which improves the thermopower. The decrease in substitution ionic size causes an increase in lattice parameters and unit cell volume. Oxygen-deficient nanoparticles were observed with symmetric Raman lines and the mesoporous structured nanoparticles enhanced the surface area leading to higher electrical conductivity. The temperature dependence thermoelectric measurement was performed between ambient temperature and 673 K. The electrical resistivity depends on the nature of substituent ions. The absolute Seebeck coefficient values for pure $CaMnO_3$, A-site, and B-site substituted were -312, -287, and $98 \mu VK^{-1}$, respectively. The systematic analysis revealed that ion substitution at the A-site and B-site influenced significant changes in the crystal structure and the type of carrier concentration. © The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2024.

Indexed keywords

Engineering controlled terms:
Carrier concentration ｜ Crystal structure ｜ Electric conductivity ｜ Energy dispersive X ray analysis ｜ Fourier transform infrared spectroscopy ｜ Ions ｜ Manganese compounds ｜ Particle size ｜ Particle size analysis ｜ Perovskite ｜ Scanning electron microscopy ｜ Sols ｜ Temperature distribution ｜ Thermoelectric equipment ｜ Thermoelectricity ｜ X ray diffraction analysis

Engineering uncontrolled terms:
Functional properties ｜ Hydrothermal methods ｜ Ion substitution ｜ Morphological properties ｜ Nano-structured ｜ Optimum temperature ｜ Solgel(hydrothermal) ｜ Thermal ｜ Thermoelectric measurements ｜ Thermoelectric properties

Cited by 2 documents

Masood, M.K. , Khan, W. , Alam, M.M.

Computational study of hydrostatic pressure effect on MgSiO3 perovskite oxide for photocatalytic water splitting application

(2024) International Journal of Hydrogen Energy

Mohamed Kasim Sheit, H. , Seeni Mubarak, M.U. , Mohan, K.S.

Investigations on the microbial activity and anti-corrosive efficiency of nickel oxide nanoparticles synthesised through green route

(2024) Zeitschrift fur Physikalische Chemie

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Document details - Anti-corrosive efficiency of salvadora persica plant stick powder on SS 316L orthodontic wire in artificial saliva

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Results in Chemistry

Volume 12, December 2024, Article number 101894

Anti-corrosive efficiency of salvadora persica plant stick powder on SS 316L orthodontic wire in artificial saliva(Article)

Sheit, H.M.K., Mohan, K.S., Srinivasan, P., Muthu, S.E., Dinesh, A., Rajeswari, B., Priya, L.S., Gnanasekaran, L., Iqbal, M. 👤

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[c]Department of Chemistry, Kongu Engineering College (Autonomous), Tamil Nadu, Erode, 638 060, India

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Abstract

The efficacy of stainless steel 316L (SS 316L) orthodontic wire in mitigating corrosion within artificial saliva was scrutinized both in the presence and absence of Salvadora persica (SP) stick powder, employing electrochemical methodologies. Potentiodynamic polarization assessments demonstrated a notable cathodic shift in the corrosion potential of SS 316L upon the introduction of SP extract, which signifies a reduction in anodic dissolution rates. A marked enhancement in linear polarization resistance was recorded, corresponding to a diminished corrosion current density, thereby evidencing substantial corrosion mitigation. Data obtained from electrochemical impedance spectroscopy corroborated these observations, revealing an augmentation in impedance and charge transfer resistance alongside a reduction in double-layer capacitance, indicative of suppressed charge transfer at the SS 316L/electrolyte interface. Open-circuit potential (OCP) metrics demonstrated that the system incorporating SP presented more negative values relative to the control, reinforcing the inhibitory effect exerted by the constituents of SP. UV–Visible and FTIR spectral analyses substantiated the existence of bioactive compounds within SP powder, with minor shifts in spectral bands noted on the SS 316L surface subsequent to immersion, suggesting adsorption of SP constituents. Scanning electron microscopy (SEM) and atomic force microscopy (AFM) imaging of SS 316L specimens exposed to SP-enhanced artificial saliva exhibited diminished surface degradation in comparison to the control samples. These findings imply that constituents of SP, characterized by polar functional groups (e.g., O, N, and S), engage with SS 316L ions, thereby facilitating the formation of a protective layer and augmenting corrosion resistance. This investigation underscores the prospective application of Salvadora persica in prolonging the durability of SS 316L orthodontic devices utilized within an oral milieu. © 2024 The Author(s)

Author keywords

(EIS) (Orthodontic wires) (Salvadora Persica plant stick powder) (SEM and AFM) (SS 316 L)

Funding details

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Chemical Physics Impact

Volume 8, June 2024, Article number 100521

Investigation on the corrosion inhibition efficiency of 2, 4-diphenyl-3-aza bicyclo[3.3.1] nonan-9-one in carbon steel immersed in acidic media(Article) (Open Access)

Sheit, H.M.K., Mohan, K.S., Gunavathy, K.V., Syed abuthahir, S.S., Mohamed, M.V., Subhapriya, P., Samsathbegum, A., Sindhuja, G.H. 👤

[a]PG and Research, Department of Chemistry, Jamal Mohamed College (Autonomous), Affiliated to Bharathidasan University, Tamil Nadu, Tiruchirappalli, 620 020, India
[b]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638 052, India
[c]Thin Film Research Centre, Kongu Engineering College (Autonomous), Tamil Nadu, Erode, 638 060, India

View additional affiliations ⌄

Abstract

The current research investigates the corrosion resistant efficiency of 2,4-diphenyl-3-azabicyclo[3.3.1] nonan − 9–one (PABN) as inhibitor in carbon steel in 0.5 M H_2SO_4 environment through experimental and theoretical approaches. The weight loss methodology demonstrates that 0.10 ppm of nonan-9-one compound effectively inhibits corrosion in carbon steel submerged in an acidic environment with an efficiency of inhibition as high as 97.2 %. The polarization studies reveals the function of the compound as an inhibitor at the anodic site, influencing the kinetics of carbon steel corrosion effectively. Impedance spectra under alternating current conditions elucidate the influence of the protective film formed by the action of PABN compound on the electrical behavior and corrosion resistance in carbon steel material. This existence of the protective film composed of carbon steel and PABN compound is affirmed through different techniques such as SEM, EDX and AFM. The DFT analysis anticipates the interaction patterns of the inhibitor with the surface of carbon steel using quantum chemical calculations, analyzing the molecular interactions between the molecules of the inhibitor and the surface of carbon steel, providing insights into PABN's corrosion inhibitory properties. © 2024

Author keywords

(2, 4-diphenyl-3-azabicyclo[3.3.1] nonan-9-one)　(Acidic medium)　(Anti corrosion efficiency)　(Carbon steel)　(Corrosion inhibition)
(DFT)

Funding details

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Sheit, H.M.K. , Mohan, K.S. , Mary, S.B.

Assessing the anti-corrosive properties of 2,6-bis-furan-2ylmethylene-cyclohexanone as a carbon steel inhibitor in 0.5M HCl solution

(2025) Journal of Molecular Structure

Sheit, H.M.K. , Mohan, K.S. , Srinivasan, P.

Anti-corrosive efficiency of salvadora persica plant stick powder on SS 316L orthodontic wire in artificial saliva

(2024) Results in Chemistry

Sheit, H.M.K. , Kani, S.M. , Sathiq, M.A.

Anti-corrosive Efficiency of Expired Propranolol Drug as a Corrosion Inhibitor on Mild Steel in Acid Medium

(2024) High Temperature Corrosion of Materials

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2024, Pages 492-499

5th International Conference on Mobile Computing and Sustainable Informatics, ICMCSI 2024; Lalitpur; Nepal; 18 January 2024 through 19 January 2024; Category numberCFP24US4-ART; Code 198792

Design and Development of a Novel Algorithm to Predict Fake Logo using Learning based Digital Image Analysis Methodology(Conference Paper)

Nagajothi, N., Memon, S., Mohan, G., Vadar, P.S., Soni, A., Sahaya, S.P.   ⚇

[a]AP/ Mathematics Nandha Engineering College, Erode, 52, India
[b]Bharati Vidyapeeth (Deemed to be University), Institute of Management, Kolhapur, India
[c]K.S.Rangasamy College of Technology, Department of Mathematics, TamilNadu, Tiruchengode, 637215, India

View additional affiliations ⌄

Abstract

In the realm of fake logo detection, the continuous surge in digital content manipulation necessitates advanced and efficient methodologies for safeguarding brand integrity. This study explores the application of diverse machine learning models, ranging from traditional algorithms like K-Nearest Neighbors (KNN) and Support Vector Machines (SVM) to sophisticated deep learning (DL) architectures such as VGG19, Inception, and Convolutional Neural Networks (CNN). The proposed methodology combines feature extraction using VGG19 with classification using an Inception model, presenting a novel approach to enhance detection accuracy. Evaluation metrics, including accuracy, precision, specificity, and sensitivity, which enhance the performance of each model. Computational efficiency is also analyzed, providing a comprehensive understanding of the trade-offs between accuracy and processing speed. The proposed methodology emerges as a promising solution, achieving a remarkable accuracy of 97% while maintaining efficiency. This study contributes to the evolving landscape of fake logo detection, offering valuable insights for practical implementation in scenarios demanding precision, speed, and reliability. © 2024 IEEE.

Author keywords

Deep Learning Model   Fake Logo Detection   Inception Model   VGG-19

Indexed keywords

Engineering controlled terms: Computational efficiency   Convolutional neural networks   Deep learning   E-learning   Economic and social effects   Fake detection   Feature extraction   Learning algorithms   Learning systems   Nearest neighbor search

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Journal of Structural Chemistry

Investigation of the Molecular Structure and DFT Insights into (4-(4-nitrophenyl)-9-(phenylsulfonyl)-9H-carbazole-2,3-diyl)Bis(p-tolylmethanone) (Article)

Muppuli, M.V.,   Rajesh, K.,   Anitha Rexalin, D.,   Anandan, K.,   Gayathri, K.,   Mani, A.,   Devendran, P.,   Thayanithi, V.,   Kurinjinathan, P.,   Suresh Kumar, M.   ⚲

[a]Department of Physics, Centre for Hydrogen Energy Research (HER), Academy of Maritime Education and Training, Kanathur, India
[b]Department of Physics, Centre for Nanotechnology, Academy of Maritime Education and Training, Kanathur, India
[c]Department of Physics, Tagore Engineering College, Chennai, India &amp; Department of Physics, Muthayammal Engineering College (Autonomous), Rasipuram, India

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Abstract

Abstract: Carboxylate molecules are distinguished as potential compounds in the largely emergent chemical world of heterocyclic compounds showing alike pharmacological characteristics. The knowledge of a mixture of synthetic pathways and different physicochemical parameters of such compounds are of special interest to medicinal chemists to produce combinatorial collections and carry out in-depth searches of lead molecules. Among various groups of the compounds studied, carboxylate moieties stand out as unique in features due to their biological, pharmacological, and medicinal properties. The synthesis, crystal structure, conformation, and density functional theory study of the (4-(4-nitrophenyl)-9-(phenylsulfonyl)-9H-carbazole-2,3-diyl)bis(p-tolylmethanone) derivative are reported in detail. The carboxylate moiety is in the planar conformation with C–H⋯O hydrogen bonds and Van der Waals forces. Density functional theory is utilised to investigate the carboxylate derivative. Similar to co-crystal ligands, carboxylate compounds exhibit potent interactions with the target protein. The supramolecular properties are measured and validated using Hirshfeld surface studies. © Pleiades Publishing, Ltd. 2024.

Author keywords

carboxylate   density functional theory   Hirshfeld surface analysis   molecular modeling studies

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Research Journal of Chemistry and Environment

Volume 28, Issue 1, January 2024, Pages 38-42

Photocatalytic degradation of methylene blue dye from aqueous solution using TiO$_2$ doped Activated carbon(Article)

Saravanan, N. 👤

Department of Chemistry, Nandha Engineering College, Tamil Nadu, Erode, 638 052, India

Abstract

The effluent coming out from the textile, paper and food industries containing dye is strongly coloured and reveals very harmful effects on living beings. In order to reduce wastewater pollution, the degradation of dye into non-toxic form is desirable. The photo catalytic degradation of methylene blue is reported in the present study. The irradiation of aqueous solution of methylene blue dye in presence of photo catalyst and UV light was carried out in the batch photo reactor. Titanium dioxide TiO2 /CFAC was used as photo catalyst for the study. The rate of decolorisation was estimated from residual concentration spectrophotometrically. Effects of various operating parameters such as the irradiation time, initial pH and the amounts of catalyst on the degradation of the dyes were investigated. Results show that the degradation kinetics fitted well to pseudo second order rate law. The maximum decolorizing efficiency occurred in less than 50min with 50mg of TiO2 /CFAC catalyst dose. © 2024 World Research Association. All rights reserved.

Author keywords

decolorisation   methylene blue   Photocatalyst   spectophotometrically

Indexed keywords

GEOBASE Subject Index: activated carbon   aqueous solution   catalyst   degradation   irradiation   reaction kinetics   wastewater treatment

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Document details - Synthesis, magnetic and dielectric properties of poly(m-phenylenediamine)/ZnNiFe₂O₄ nanocomposites

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Inorganic Chemistry Communications

Volume 161, March 2024, Article number 111983

Synthesis, magnetic and dielectric properties of poly(m-phenylenediamine)/ZnNiFe$_2$O$_4$ nanocomposites(Article)

Sathish Kumar, K., Sundaram, K., Anand, S., Vijayalakshmi, M., Logesh, M., Anbarasu, D., Asha, I., Kannapiran, N.

[a]Department of Chemistry, Karpagam Academy of Higher Education, Tamil Nadu, Coimbatore, 641021, India
[b]Department of Chemistry, KSR College of Engineering, Tamil Nadu 637215, Tiruchengode, India
[c]Department of Chemistry, Nandha Engineering College, Tamil Nadu, Erode, 638052, India

View additional affiliations ∨

Abstract

The different concentration of ZnNiFe$_2$O$_4$ nanoparticles dispersed Poly(m-phenylenediamine) (PmPD)/ZnNiFe$_2$O$_4$ nanocomposites were synthesized by in-situ chemical oxidative polymerization method and using auto combustion method for preparation of ZnNiFe$_2$O$_4$ nanoparticles. The synthesized PmPD/ZnNiFe$_2$O$_4$ nanocomposites were characterized by XRD, FTIR, SEM, TEM, TGA and VSM. The formation and crystalline size of PmPD/ZnNiFe$_2$O$_4$ nanocomposites were confirmed through XRD and FTIR. The surface, morphology and shape of the PmPD/ZnNiFe$_2$O$_4$ nanocomposites were studied by SEM and TEM. The concentration of ZnNiFe$_2$O$_4$ influenced the thermal stability of PmPD/ZnNiFe$_2$O$_4$ nanocomposites. The hysteresis loop of ZnNiFe$_2$O$_4$ and PmPD/ZnNiFe$_2$O$_4$ nanocomposites confirmed their ferromagnetic behaviour. The dielectric constant of samples was analysed with different temperatures and frequencies. © 2023 Elsevier B.V.

Author keywords

Dielectric constant   PmPD   SEM   TEM   ZnNiFe$_2$O$_4$

Kannapiran, N.; Department of Chemistry, Karpagam Academy of Higher Education, Tamil Nadu, Coimbatore, India;

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One-step facile synthesis of the photocatalyst using pyrolyzed terephthalic acid and m-phenylenediamine composite for Cr(VI) reduction in aqueous solutions

(2024) Journal of Molecular Structure

Aswini, G. , Sundaram, K. , Venkatachalapathi, S.

Synthesis, characterization, magnetic and morphological properties of poly(m-phenylenediam... nanocomposites

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Document details - Humidity activated ultra-selective room temperature gas sensor based on W doped MoS₂/RGO composites for trace level ammonia detection

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Analytica Chimica Acta

Volume 1287, 25 January 2024, Article number 342075

Humidity activated ultra-selective room temperature gas sensor based on W doped MoS_2/RGO composites for trace level ammonia detection(Article)

Linto Sibi, S.P., Rajkumar, M., Manoharan, M., Mobika, J., Nithya Priya, V., Rajendra Kumar, R.T.

[a]Department of Physics, PSG College of Arts and Science, Tamil Nadu, Coimbatore, 641014, India
[b]Advanced Materials and Devices Laboratory (AMDL), Department of Nanoscience and Technology, Bharathiar University, Tamil Nadu, Coimbatore, 641046, India
[c]Department of Physics, Nandha Engineering College, Tamil Nadu, Erode, 638052, India

Abstract

The lack of highly efficient, cost effective and stable ammonia gas sensors functionable at room temperature even in extreme humid environments poses significant challenge for the future generation gas sensors. The prime factors that impede the development of such next generation gas sensors are the strong interference of humidity and sluggish selectivity. Herein, we fabricated tungsten doped molybdenum disulphide/reduced graphene oxide composite by an in-situ hydrothermal method to exploit the adsorption, dissolution (solubility), ionization and transmission process of ammonia and thereby to effectuate its trace level detection even in indispensable humid environments. The protype based on 5 at.% Tungsten doped MoS_2/RGO (W5) gas sensor exhibited 3.8-fold increment in its response to 50 ppm of ammonia when the relative humidity varied from 20 % to 70 % with ultra-high selectivity at room temperature. The as prepared gas sensor revealed a practical detection limit down to 1 ppm with a substantial response and rapid recovery time. Furthermore, W5 gas sensor exhibited a 42-fold increment in response to 50 ppm of ammonia relative to its pristine (MoS_2/RGO) MG composite with a RH of 70 %. The proton hopping mechanism accountable for such an enormous enhancement in ammonia sensing and its potential for breath sensor are briefly annotated. © 2023 Elsevier B.V.

Author keywords

Edge site enrichment Humidity activated gas sensor Proton conductive Highly selective ammonia gas sensor Room temperature gas sensor Tungsten doped MoS_2/RGO VOC

Indexed keywords

Engineering controlled terms: Ammonia Chemical sensors Cost effectiveness Gas detectors Gases Graphene Ionization of gases Layered semiconductors Sulfur compounds Tungsten compounds

Engineering uncontrolled terms Ammonia gas sensors Edge site enrichment Edge sites Gas-sensors Humid environment Humidity activated gas sensor Proton conductive highly selective ammonia gas sensor Room temperature gas sensor Trace level Tungsten doped MoS2/RGO

Engineering main heading: Molybdenum compounds

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Bai, J. , Zhao, S. , Wang, W.

In-situ construction of SnO2 nanolayer-SnS2 nanosheets heterostructures for enhanced NO2 sensing at room temperature and their DFT investigation

(2024) Journal of Alloys and Compounds

Sun, Y. , Zheng, Y.

Application of MOS gas sensors for detecting mechanical damage of tea plants

(2024) Journal of Agricultural Engineering

Huang, L. , Li, T. , Zeng, W.

Two-dimensional Mo3-TiS2 monolayer hosting high moisture resistance and abundant surface-chemisorbed oxygen for effective detection of SF6 decomposition gases: Atomic-scale study

(2024) Applied Surface Science

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Optimizing signal smoothing using HERS algorithm and time fractional diffusion equation(Article)

Praba Jayaraj, A.,   Nallappa Gounder, K.,   Rajagopal, J.

[a]Department of Mathematics, Nandha Engineering College, Tamil Nadu, India
[b]Department of Mechanical Engineering, Kalaignar Karunanidhi Institute of Technology, Tamil Nadu, India
[c]Department of Mathematics, Kongu Engineering College, Tamil Nadu, India

Abstract

Signal processing is often affected by various sources of noise that can distort or modify the signals. Removing these noises from the original signal is a crucial step in signal processing, and researchers have proposed several approaches to address this issue. However, achieving an optimized solution remains a challenge. In this study, we introduce a novel approach called the Hybrid Ebola-based Reptile Search (HERS) model based on Time Fractional Diffusion Equation (TFDE). The TFDE is a conventional diffusion equation used for preserving the peak smoothness of spectra signals. In our proposed technique, we consider the processing spectrum of the signal as the reference signal, which serves as the design for the diffusion equation. By applying the diffusion function, we achieve signal peak preservation and smoothing, referred to as the filtering of diffusion. One potential challenge with the time fractional order diffusion equation is its susceptibility to variations in the time step size. To address this, we employ the HERS algorithm to select an optimal time step size that enables efficient signal smoothing. To validate the effectiveness of the proposed technique, we conduct simulations and compare the results with conventional techniques such as the wavelet model, Savitzky-Golay, and regularization techniques. The performance evaluation confirms the superiority of our proposed HERS-TFDE approach in noise removal and signal smoothing. This research aims to contribute to the development of an optimized solution for noise removal in signal processing, leveraging the Hybrid Ebola Reptile Search algorithm and TFDE. The findings have the potential to enhance various signal-processing applications where noise reduction is critical.
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Author keywords

Diffusion equation   Diffusion filtering   Ebola search algorithm   Peal preserving smoothing signal   Reptile search algorithm   Spectrum signal

Indexed keywords

Engineering controlled terms: Diffusion   Diseases   Learning algorithms   Partial differential equations

Engineering uncontrolled terms   Diffusion equations   Diffusion filtering   Ebola search algorithm   Peal preserving smoothing signal   Reptile search algorithm   Search Algorithms   Signal smoothing   Spectrum signals   Time fractional diffusion equation

Engineering main heading: Signal processing

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Document details - Some Results on Fractional Boundary Value Problem for Caputo-Hadamard Fractional Impulsive Integro Differential Equations

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Some Results on Fractional Boundary Value Problem for Caputo-Hadamard Fractional Impulsive Integro Differential Equations(Article)(Open Access)

Alruwaily, Y., Venkatachalam, K., El-hady, E.-S. ⦸ ⦸

[a]Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, Saudi Arabia
[b]Department of Mathematics, Nandha Engineering College (Autonomous), Erode, 638052, India

Abstract

The results for a new modeling integral boundary value problem (IBVP) using Caputo-Hadamard impulsive fractional integro-differential equations (C-HIFI-DE) with Banach space are investigated, along with the existence and uniqueness of solutions. The Krasnoselskii fixed-point theorem (KFPT) and the Banach contraction principle (BCP) serve as the basis of this unique strategy, and are used to achieve the desired results. We develop the illustrated examples at the end of the paper to support the validity of the theoretical statements. © 2023 by the authors.

Author keywords

boundary value problems   Caputo-Hadamard fractional derivative   impulsive   integro differential equations

Funding details

Funding sponsor	Funding number	Acronym
Deanship of Scientific Research, University of Jordan		DSR

⦸ Alruwaily, Y.; Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, Saudi Arabia;
⦸ El-hady, E.-S.; Mathematics Department, College of Science, Jouf University, P.O. Box 2014, Sakaka, Saudi Arabia;

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Teshome Beyene, M. , Daba Firdi, M. , Temesgen Dufera, T.

Existence and stability of solution for a coupled system of Caputo–Hadamard fractional differential equations

(2024) Fixed Point Theory and Algorithms for Sciences and Engineering

Alruwaily, Y. , Venkatachalam, K. , El-hady, E.-S.

On Some Impulsive Fractional Integro-Differential Equation with Anti-Periodic Conditions

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14th International Conference on Computing Communication and Networking Technologies, ICCCNT 2023; Delhi; India; 6 July 2023 through 8 July 2023; Category numberCFP2352J-ART; Code 194774

The Exploitation of Artificial Intelligence in Developing English Language Learner's Communication Skills(Conference Paper)

Gomathi, R.,   Maheswaran, S.,   Mythili, M.,   Nandita, S.,   Sathesh, S.,   Murugesan, G.,   Duraisamy, P.

[a]Kongu Engineering College, Department of English, Erode, Perundurai, India
[b]Kongu Engineering College, Department of Electronics and Communication Engineering, Erode, Perundurai, India
[c]Nandha Engineering College, Department of English, Erode, Perundurai, India

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Abstract

Today the world run only with the English language. To learn English there are many reputed applications for the peoples to make use of it. But most of it are paid, if it is of free then the content provided is not a satisfiable one to get the language entirely. In order to provide a useful and beneficial learning for free of cost we proposed a way with the utilization of Artificial Intelligence. A website is developed with the Artificial Intelligence to monitor the performance of the peoples who enrolled in it. Website is developed on game based for bringing interest to learn the language. There are multiple levels to be unlocked with interesting challenges and question solving. By this, peoples start to develop their English knowledge with cracking the levels. Here the Artificial Intelligence play a major role in building the question set and the level difficulty for each individual while crossing each level. This is done by analysing the marks obtained in each level. The database is stored and then fed into the Artificial Intelligence model to make evaluation of the individual performance. According the analysis made by the intelligence the level difficulty is set up. So, by this the individual stats to understand the meaning and usage of the word in each scenario. Compare to the proposed methodologies of existing website there is no such involvement of Artificial Intelligence for the analysis making and for building the levels. This era has a lot of development in the technologies with the Artificial Intelligence. Working with Artificial Intelligence make each individual to be strong and confident in their domain. This website will develop the individual to become confident person on speaking with the English language. © 2023 IEEE.

Author keywords

Artificial Intelligence   English Learning   Website development

Indexed keywords

Engineering controlled terms: Artificial intelligence

Engineering uncontrolled terms   Communication skills   English languages   English Learning   Game-Based   In-buildings   Intelligence models   Learn+   Multiple levels   Performance   Website development

Engineering main heading: Websites

Cited by 5 documents

Bishnoi, S. , Gaonkar, G.V. , Pandey, A.K.

Assessing the Suitability of Applied Cryptography Algorithms to Protect Block chain Networks

(2024) 2024 15th International Conference on Computing Communication and Networking Technologies, ICCCNT 2024

Giri, R.K. , Mishra, A. , Rongali, A.S.

An innovation analysis of LZ77 and LZ78 Compression Algorithms for Data Compression & Source Coding

(2024) 2024 15th International Conference on Computing Communication and Networking Technologies, ICCCNT 2024

Bagade, J.V. , Dari, S.S. , Dhivrani, R.

Automation Through Machine Learning: Reinvigorating Cyber Security

(2024) 2024 15th International Conference on Computing Communication and Networking Technologies, ICCCNT 2024

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Materials Today: Proceedings

Volume 92, 2023, Pages 1597-1601

2nd International Conference on Multifunctional Materials, ICMM 2022; Hyderabad; India; 22 December 2022 through 24 December 2022; Code 195740

Improvised surface property of Al-7075 alloy by laser shock peening technique(Conference Paper)

Thiruneelakandan, R.,   Balamurugan, R.,   Prakasam, R.

[a]Department of Physics, Nandha Engineering College, Erode, Perundurai, 638 052, India
[b]Department of Physics, Kumaraguru College of Technology, Tamil Nadu, Coimbatore, 641 049, India

Abstract

The laser shock peening process helps in the alteration of surface roughness in metals and alloys to develop the mechanical properties of the tools. Q-switched Nd YAG laser of wavelength 1064 nm, with high energy with a pulse repetition rate of 5 Hz, and pulse duration of 4 ns employed to increase the surface feature and mechanical factors of Al-7075. The shock peening process rises the average roughness of the sample in the treated portion associated with the untreated area of the metal due to the deformation by shock waves talked into by plasma. Pulse width, laser energy, and wavelength are some of the indispensable factors for optimization in the peening process to progress the characterization of the specimen. The micro-hardness and roughness of the Al-7075 sample surface raise linearly with laser energy. Copyright © 2023 Elsevier Ltd. All rights reserved.

Author keywords

Laser shock peening   Micro-hardness   Q-switched Nd YAG laser   Roughness

Indexed keywords

Engineering controlled terms:
Aluminum alloys   Microhardness   Neodymium lasers   Pulse repetition rate   Shock waves   Yttrium aluminum garnet

Engineering uncontrolled terms
1064 nm   Al 7075   Al 7075 alloy   Energy   Laser shock peening   Laser's energy   Metals and alloys   Micro-hardness   Properties of Al   Q-switched Nd:YAG laser

Engineering main heading:
Surface roughness

Funding details

Cited by 2 documents

Jiang, Y. , Liu, X. , Wang, Y.

Investigation of Residual Stress Distribution and Fatigue of 7050-T7451 Alloy Hole Components with Laser Shock and Ultrasonic Extrusion

(2024) Metals

Greco, A. , Sgambitterra, E. , Guagliano, M.

Measurement of laser shock peening induced residual stress by nanoindentation and comparison with XRD technique

(2024) Journal of Materials Research and Technology

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A hybrid incomplete decision system using fuzzy sets and rough set theory with varying object sets and values(Article)

Megala, A., Veeramani, C. ⌐

[a]Department of Mathematics, Nandha Engineering College, Tamilnadu, Erode, India
[b]Department of Applied Science (Mathematics), PSG College of Technology, Tamilnadu, Coimbatore, India

Abstract

Researchers in science and engineering face various obstacles due to a lack of specific and full data. Many different approaches have been devised to deal with these restrictive requirements, but two notable schools of thought are the fuzzy set (FS) theory and the rough set (RS) theory, both of which have spawned many extensions and hybridizations. Although RS theory originated from an indiscernibility relation (also known as an equivalence relation in mathematics), emphasis rapidly shifted to similarity or coverings (and their fuzzy analogues). Many other hybrid schemes were suggested with this goal in mind. The gap between those concepts shrank because to this thorough analysis. Fuzzy set theory is a legitimate way to convey the ambiguity of assessment data, yet it is still inadequate for dealing with certain intricate problems in the actual world. In reality, decision makers will undoubtedly provide different kinds of ambiguous and nuanced assessments. Atanassov's intuitionistic fuzzy set theory broadened the application of fuzzy set theory by imbuing it with an element of uncertainty. Sometimes in real life, you have to deal with a neutral element on top of the indeterminate one. Picture fuzzy sets were developed specifically for this purpose. Membership roles may be positive, neutral, or negative/refusal. In contrast, hesitant fuzzy sets and its hybrid models are useful when decision makers are on the fence about which option to choose. As a binary relation on a set, a graph is symmetric. It is a staple in mathematical modelling and is used in almost every scientific and technological discipline. Graph theory has been essential in the mathematical modelling and subsequent resolution of several real-world situations. Information about connections between things is often best represented using graph theory, which uses vertices to stand in for the items and edges for the relationships between them. The suggested dynamic algorithm is better to the static approach in dealing with the multidimensional dynamic changes of the hybrid incomplete decision system, according to a series of experiments carried out on nine UCI datasets. © 2023-IOS Press. All rights reserved.

Author keywords

graph theory   Intuitionistic fuzzy set theory   rough set theory   varying object sets and values

Indexed keywords

Engineering controlled terms: Decision making   Decision theory   Fuzzy set theory   Fuzzy sets   Rough set theory

Engineering uncontrolled terms   Decision makers   Fuzzy-set theory   Hybridisation   Incomplete decision system   Indiscernibility relation   Intuitionistic fuzzy set theory   Intuitionistic fuzzy sets   Object sets   Science and engineering   Varying object set and value

Engineering main heading: Graph theory

Cited by 1 document

Liu, Z. , Hezam, I.M. , Letchmunan, S.

Generalized Similarity Measure for Multisensor Information Fusion via Dempster-Shafer Evidence Theory

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Assimilation of cultural values in Wole Soyinka's the Strong Breed and Death and the King's Horseman(Conference Paper)

Ravindran, R.,   Mythili, M.,   Vijayalakshmi, R.,   Prabhakaran, S.   👤

[a]Department of English, K.Ramakrishnan College of Engineering (Autonomous), Tamilnadu, Tiruchirappalli, India
[b]Department of English, Nandha Engineering College (Autonomous), Tamilnadu, Erode, India
[c]Department of English, K.Ramakrishnan College of Technology (Autonomous), Tamilnadu, Tiruchirappalli, India

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Abstract

Culture plays an important role in rendering values to the people. Culture provides humans the way of running their life. It is the base by which people get influenced voluntarily and involuntarily. One can trace out the values of people from the values that have been followed in their culture. Globalization is definitely an enemy of culture as it welcomes acculturation and multiculturalism. Every ancient culture seems to have values which ultimately help the people to live life in a civilized way of its own. When the culture is lost, the values of it also start to degrade. Literature which replicates the society has responsibility of showing the values of culture and helps to transmit the values to the forthcoming generation. Hence this study attempts to decipher the cultural conflicts enumerated by WoleSoyinka'sThe Strong Breed and Death and the King's Horseman. © 2023 Author(s).

Author keywords

Acculturation   Cultural shock   Culture   Ritual   Society   Values

👤 Ravindran, R.; Department of English, K.Ramakrishnan College of Engineering (Autonomous), Tamilnadu, Tiruchirappalli, India;

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Edge sites enriched vanadium doped MoS_2/RGO composites as highly selective room temperature ammonia gas sensors with ppb level detection(Article)

Linto Sibi, S.P.,   Rajkumar, M.,   Govindharaj, K.,   Mobika, J.,   Nithya Priya, V.,   Ramasamy Thangavelu, R.K.   👤

[a]Department of Physics, PSG College of Arts and Science, Tamil Nadu, Coimbatore, 641014, India
[b]Advanced Materials and Devices Laboratory (AMDL), Department of Nanoscience and Technology, Bharathiar University, Tamil Nadu, Coimbatore, 641046, India
[c]Department of Physics, Nandha Engineering College, Tamil Nadu - 638052, Erode, India

Abstract

The unparalleled physical and chemical properties of 2D transition metal dichalcogenides (TMDCs) render them the potential to be next-generation high-performance gas sensors. Herein, we report the fabrication of vanadium-doped MoS_2/RGO (MG) nanocomposite gas sensors with substantial ammonia sensing traits at room temperature via an in situ hydrothermal method. The characterization results reveal that the incorporation of vanadium dopants into the host lattice triggered more active edge sites and augmented charge carrier transport across the heterojunctions. The as-formulated hierarchical structured gas sensors (V5) with an optimal vanadium doping concentration of 5 at% exhibited a high selective response of 21.8% towards 50 ppm of ammonia gas at room temperature and a pronounced lowest detection limit of 600 ppb. The V5 gas sensor reflected a 21-fold enhancement in the gas sensing response towards 50 ppm ammonia relative to the pristine MoS_2/RGO (MG). The changes attributed to the depletion layer of the p-n heterojunction formed by V@MoS_2/RGO upon interaction with ammonia gas molecules and the influence of humidity on the sensing parameters were briefly discussed. The prepared V5 gas sensor proves to be a potential candidate for real-time sub ppb level detection of ammonia at room temperature. © 2023 The Royal Society of Chemistry.

Indexed keywords

Engineering controlled terms: Ammonia · Chemical sensors · Gas detectors · Gases · Heterojunctions · Layered semiconductors · Room temperature · Vanadium

Engineering uncontrolled terms Ammonia gas · Ammonia gas sensors · Ammonia sensing · Dichalcogenides · Edge sites · Gas-sensors · Performance · Physical and chemical properties · Ppb level detection · Vanadium doped

Engineering main heading: Molybdenum compounds

Cited by 5 documents

Naresh, B. , Sreekanth, T.V.M. , Krishna, K.G.

Enhanced ammonia detection using rGO-wrapped Zn3V2O8 nanostructures

(2024) Sensors and Actuators A: Physical

Fan, Y. , Fang, J. , Wang, W.

The synergistic effect of Cd-doped and S-vacancies in CdxZn 2D nanosheets for high-performance triethylamine sensing
(2024) Talanta

Mirzaei, A. , Alizadeh, M. , Ansari, H.R.

Resistive gas sensors for the detection of NH3 gas based on 2D WS2, WSe2, MoS2, and MoSe2: a review

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Results in Surfaces and Interfaces

Volume 12, 1 August 2023, Article number 100143

Investigations on the effect of 2-[(furan-3ylmethylene)-amino]-benzenethiol on corrosion in carbon steel(Article)(Open Access)

Kasim Sheit, H.M.,   Kani, S.M.,   Sathiq, M.A.,   Abuthahir, S.S.S.,   Mohan, K.S.,   Mary, S.B.,   Gunavathy, K.V.

[a]PG and Research, Department of Chemistry, Jamal Mohamed College (Autonomous), Tamil Nadu, Tiruchirappalli, 620 020, India

[b]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638 052, India

[c]Department of Physics, K.Ramakrishnan College of Engineering (Autonomous), Tamil Nadu, Tiruchirappalli, 621 112, India

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Abstract

A Schiff base namely, 2-[(furan-3ylmethylene)-amino]-benzenethiol (2-FAB) was synthesized and its influence on the inhibition of corrosion in carbon steel immersed in 0.5 M H_2SO_4 was investigated by weight loss analysis, potentiodynamic polarization studies, electrochemical impedance spectroscopy (EIS), scanning electron microscopy (SEM), atomic force microscopy (AFM) and FT-IR spectroscopy. The weight loss measurements showed that 2-FAB has an excellent inhibiting efficiency of 95.51% at a concentration of 250 ppm. The inhibitor efficiency was found to depend on both the concentration and molecular structure of the inhibitor. Potentiodynamic polarization curves revealed that the studied inhibitors represent a mixed-type, predominantly cathodic control. An equivalent circuit is suggested based on an analysis of EIS data. Surface analysis using scanning electron microscope (SEM) and atomic force microscopy (AFM) show a significant morphological improvement on the mild steel surface with the addition of 2-FAB. The negative value of standard free energy of adsorption in the presence of inhibitor suggests the spontaneous adsorption of inhibitors on the carbon steel surface. The Temkin and Langmuir adsorption isotherms were found to provide a accurate description of the adsorption behavior of the inhibitor. Taken as a whole, this work demonstrates that 2-FAB shows promising results in resisting the deterioration of carbon steel in 0.5 M H_2SO_4 environment. The inhibitor forms a protective film on the surface of the carbon steel, significantly reducing its corrosion rate. © 2023 The Authors

Author keywords

Corrosion inhibitor   Schiff base   Sulfuric acid   Temkin's adsorption isotherm and SEM & AFM   Weight loss

Funding details

Funding sponsor	Funding number	Acronym
	620 020	
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Sheit, H.M.K. , Mohan, K.S. , Mary, S.B.
Assessing the anti-corrosive properties of 2,6-bis-furan-2ylmethylene-cyclohexanone as a carbon steel inhibitor in 0.5M HCl solution
(2025) Journal of Molecular Structure

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Anti-corrosive efficiency of salvadora persica plant stick powder on SS 316L orthodontic wire in artificial saliva
(2024) Results in Chemistry

Karthi, G.B. , Suvaikin, M.Y. , Sheit, H.M.K.
Synthesis and Spectroscopic Investigation of N-(Morpholinofurfuryl) Maleimide and its Copper (II) Complex uses in Biological Applications
(2024) Inorganic Chemistry Communications

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Volume 2, Issue 3, 1 September 2023, Article number 034601

L-Alanine Supported Autogenous Eruption Combustion Synthesis of Ni/NiO@RuO$_2$ Heterostructure for Electrochemical Glucose and pH Sensor(Article)(Open Access)

Padmanathan, N.,   Sasikumar, R.,   Thayanithi, V.,   Razeeb, K.M.   👤

[a]Micro-Nano Systems Centre, Tyndall National Institute, University College Cork, Dyke Parade, Lee Maltings, Cork, T12 R5CP, Ireland
[b]Department of Physics, Karpagam Academy of Higher Education, Tamilnadu, Coimbatore, 641021, India
[c]Department of Chemistry, PSG Institute of Technology and Applied Research, Tamilnadu, Coimbatore, 641062, India

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Abstract

Safety and quality control are important for long-term storage and preservation of food. Glucose and food pH are the two most common markers for evaluating food quality. Herein, we constructed a Ni/NiO@RuO$_2$ heterostructure-based two-way sensor via a novel eruption combustion pattern (ECP) using non-conventional amino acid as a propellant. This approach has the unique points of interests of in situ doping of oxides and the formation of heterojunctions, providing well-developed pores and high surface areas to enhance the material performance. The Ni/NiO@RuO$_2$ heterostructures have been tested as a bi-functional catalyst for glucose and pH sensing. The sensor exhibits a fast response time of <0.1 ± 0.02 s, a sensitivity of 641.95 ± 0.5 μA mM^{-1} cm^{-2} towards glucose with a 0.4 ± 0.08 μM detection limit and a linear response of 0.1 to 5 mM. As a pH sensor, it exhibits an acceptable sensitivity of −41.6 mV pH^{-1} with a response time of <50 s over a pH range of 2-12. Moreover, this bi-functional sensor based on Ni/NiO@RuO$_2$ performs well when applied to a selection of beverage samples. This study provides a new scalable and low-cost approach to fabricating hetero-oxide nanostructures with controllable heterojunctions for various sensor applications. © 2023 The Author(s). Published on behalf of The Electrochemical Society by IOP Publishing Limited

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European Regional Development Fund	12/RC/2276,13/RC/2077	ERDF
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Dabas, S. , Kumar, M. , Singh, D.V.
Recent Advances in Perovskite Nanomaterials for Sensing Applications
(2024) Journal of the Electrochemical Society

Wang, M. , Cai, J. , Bai, J.
Ni/N/MPC Nanocomposites Synthesized via Microwave-Assisted Biomass Conversion for Efficient H2O2Detection
(2024) Journal of the Electrochemical Society

Safdar, S. , Muzaffar, N. , Afzal, A.M.
Fabrication of MoFe2O4/Cr-MOF//activated Carbon Nanocomposite Electrode Material for High Performance Energy Storage and Fast Response for Gluten Detection
(2024) ECS Journal of Solid State Science and Technology

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Document details - Improved visible light response photocatalytic activity of CuWO₄/g-C₃N₄ nanocomposites for degradation of organic dyes

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Journal of Materials Science: Materials in Electronics

Volume 34, Issue 22, August 2023, Article number 1629

Improved visible light response photocatalytic activity of $CuWO_4$/g-C_3N_4 nanocomposites for degradation of organic dyes(Article)

Rathi, V., Mohan, K.S., Sathiyapriya, R., Sankar, A.   👤

[a]Department of Physics, Vivekanandha College of Technology for Women, Tamil Nadu, Namakkal, 637205, India
[b]Department of Physics, Nandha Engineering College, Tamil Nadu, Erode, 638502, India
[c]Department of Science and Humanity, Idhaya Engineering College for Women, Tamil Nadu, Chinnasalem, 606201, India

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Abstract

In this report, the high performance visible light induced photocatalytic performance of $CuWO_4$/g-C_3N_4 hybrid was photocatalysts by facile hydrothermal method. The structural order of the obtained catalysts was performed through X-ray diffraction and Raman analysis, which exposed the monoclinic phase (JCPDS Card No. 83-0951). The clear sheet like with wrinkle shape and spherical nanoparticles (30–35 nm) was found to be g-C_3N_4 and $CuWO_4$ samples, which is obtained by SEM and TEM analysis. The g-C_3N_4 modified $CuWO_4$ sample showed huge surface area (108 m^2 g^{-1}) and high porous nature (32.53 nm), which is identified by BET method. The significant reduction in the band gap (2.91–2.33 eV) and suppress the recombination rate of electron–hole pairs was also identified by UV–Vis absorption and Photoluminescence spectra results. The optimized ratio (3:1) of composite sample (CWG3) displayed high photocatalytic activity of RhB such as huge efficiency (95%), high first order kinetics (is 0.0913 min^{-1}) and long term stability (loss only 3.2). This might be attributed to the coactions between the $CuWO_4$ nanoparticles over the surface of g-C_3N_4 nanosheets. Moreover, slighter reduction in the band gap energy and privilege the reduction to the recombination process of electron–hole pairs are the important factors to enhancing the photocatalytic capability of the composite catalysts. © 2023, The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature.

Indexed keywords

Engineering controlled terms:	Energy gap · Nanoparticles · Photocatalytic activity · Photoluminescence · Rhodium compounds
Engineering uncontrolled terms	% reductions · Degradation of organic dyes · Electron hole pairs · Hydrothermal methods · Performance · Photocatalytic activities · Photocatalytic performance · Structural ordering · Visible light induced · Visible-light-response
Engineering main heading:	Copper compounds

Cited by 3 documents

Aravindraj, K. , Mohana Roopan, S.

Blue LED assisted indazolone preparation using reusable CuWO4/g-C3N5 nanocomposite

(2024) Journal of Photochemistry and Photobiology A: Chemistry

Sheit, H.M.K. , Mohan, K.S. , Gunavathy, K.V.

Investigation on the corrosion inhibition efficiency of 2, 4-diphenyl-3-aza bicyclo[3.3.1] nonan-9-one in carbon steel immersed in acidic media

(2024) Chemical Physics Impact

Sheit, H.M.K. , Kani, S.M. , Sathiq, M.A.

Anti-corrosive Efficiency of Expired Propranolol Drug as a Corrosion Inhibitor on Mild Steel in Acid Medium

(2024) High Temperature Corrosion of Materials
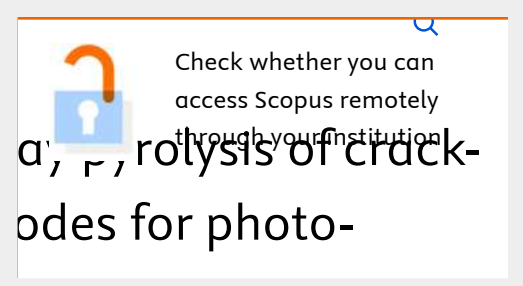
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Surfaces and Interfaces

Volume 39, July 2023, Article number 102887

Substrate heat-assisted spray pyrolysis of crack-free ytterbium sesquioxide-Si heterojunction diodes for photo-sensing applications(Article)

Mohan, K.S., Marnadu, R., Shin, Y., Gunavathy, K.V., Balasubramani, V., Ubaidullah, M., Shkir, M., Reddy, V.R.M., Kim, W.K.

[a]Department of Physics, Nandha Engineering College (Autonomous), Tamil Nadu, Erode, 638 052, India
[b]Department of Physics, Government Arts College for Women, Tamil Nadu, Nilakottai, 624 208, India
[c]School of Chemical Engineering, Yeungnam University, Gyeongsan, 38541, South Korea

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Abstract

A simple spray pyrolysis is used to develop ytterbium sesquioxide (Yb_2O_3) on aluminoborosilicate glass substrates at variable substrate temperatures. A cubic crystal system grows along the (222) plane as substrate temperature changes from 600 to 700 °C. Dispersed grains become cluster-like particles in film structures as the temperature rises. The Yb_2O_3 composition purity.is further ensured by energy dispersive x-ray analyses. Structure improves with optical spectrum transparency. The altered crystallite and grain size shifted the bandgap energy to higher wavelengths. Regarding Ag/n-Yb2O3/p-Si/Ag heterojunction diode performance, the barrier height increases from 0.67 to 0.70 as the substrate temperature rises. The film structure at 700 °C exhibited the best results, including an electrical conductivity of 2.503×10^{-15} S/cm and an activation energy of 0.129 kJ/mol. In addition, the estimated ideality factors (n) are 4.5 and 2.9 under dark and light conditions, respectively. © 2023

Author keywords

MIS diode | Spray pyrolysis | Substrate temperature | Thin films | Yb_2O_3

Funding details

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Ministry of Education, India	KKU-IFP-2-DA-4	MoE
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Sheit, H.M.K. , Mohan, K.S. , Mary, S.B.

Assessing the anti-corrosive properties of 2,6-bis-furan-2ylmethylene-cyclohexanone as a carbon steel inhibitor in 0.5M HCl solution

(2025) Journal of Molecular Structure

Akila, T. , Balasubramani, V. , Ali, S.K.

Superior role of V2O5 and yttrium interface layers in enhancing MIS radical photodiode performance

(2024) Optical Materials

Kasim Sheit, H.M. , Mohan, K.S. , Amali Roselin, A.

Investigations on structural, morphological and UV light detection characteristics in p-ZrO2/ n-Si Heterostructure based devices

(2024) Optical Materials

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Vasundhara, S., Venkatesh, K.S., Manimegalai, V., Sundharesalingam, P., Sathyakala, S., Boopathi, S.

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[b]Department of Commerce and Business Management, Chaitanya University, India
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Abstract

This chapter delves into the integration of artificial intelligence (AI) in content marketing, highlighting its potential to revolutionize customer engagement strategies. It highlights the evolving consumer preferences in the digital age, the growing demand for personalized content experiences, and the challenges faced by marketers. AI's ability to analyze vast datasets and extract actionable insights enables businesses to create hyper-targeted content, driving higher engagement and conversion. The chapter also discusses how leading brands have successfully implemented AI-driven content strategies to enhance customer engagement and foster brand loyalty. AI-powered analytics provide actionable insights into content performance, enabling continuous refinement and optimization of marketing strategies. This chapter highlights the potential of AI-powered content strategies in boosting customer engagement and driving sustainable business growth in a competitive digital landscape. © 2024, IGI Global.

Vasundhara, S.; Department of Humanities and Mathematics, G. Narayanamma Institute of Technology and Science, India

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Driving profitable business growth through economical optimization, energy management, and industrial 5.0 innovations

(Book Chapter)

Pachuau, L.,   Bhaskar, D.N.S.,   Manimegalai, V.,   Varde, Y.,   Harshitha, Y.S.,   Murugan, S.

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[b]Department of Humanities and Social Sciences, Vasavi College of Engineering (Autonomous), Hyderabad, India
[c]Department of Management Studies, Nandha Engineering College (Autonomous), Erode, India

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Abstract

The chapter emphasizes the significance of economic optimization, energy efficiency, and Industrial 5.0 innovations in driving sustainable growth and profitability in today's business landscape. It highlights the strategic allocation of resources to maximize efficiency and minimize costs, using lean management principles, automation, and data analytics. Energy management is crucial for reducing operational costs and mitigating environmental impact, using renewable energy sources and smart technologies. Industrial 5.0, a new era of industrial transformation, combines automation, connectivity, and data exchange, with technologies like artificial intelligence, IoT, and blockchain. © 2024, IGI Global.

Pachuau, L.; Department of Management, Pachhunga University College, Aizawl, India

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An Efficient Way of Design of Framework using CNN and MLP Algorithms to find B Cancer(Conference Paper)

Beevi, S.Z., Aeron, A., Manimegalai, V., Maheshwaran, T., Abed, S.J., Al-Hilali, A. 👤

[a]Karpagam College of Engineering, Department of Cse, Myleripalayam, Coimbatore, India
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Abstract

Cancer is a formidable worldwide health concern, characterised by a notable death rate. Breast cancer is one of the main causes of this statistic, taking many lives annually. Prognostic progress has become more and more dependent on gene expression analysis, thanks to recent developments in deep learning algorithms and high-throughput sequencing technologies. Accompanying conventional diagnostic-imaging indicators such as breast density and tissue texture, which are extensively employed by medical professionals and automated technologies, accurate determination of cancer risk is extremely valuable in directing tailored screening and prophylactic measures. Deep learning has become a potent tool for classification and prediction problems in this setting, especially in the field of breast imaging. Here, we present a brand-new deep learning method intended to estimate the risk of breast cancer. Using the CNN and MLP architecture, our approach expands on transfer learning Specifically, our model incorporates risk indicators to improve the evaluation of breast cancer risk, exhibiting better results than current approaches. This paper also examines risk markers for breast cancer, explaining how to utilise them appropriately and outlining their advantages and disadvantages when used with different risk prediction models. It also explores the growing significance of deep learning in risk assessment, highlighting the ability of our suggested model to automate several medical imaging modalities. © 2024 IEEE.

Author keywords

Breast cancer | Cancer | Convolutional neural network (CNN) and multi-layer perceptron (MLP) | Deep learning | Prognosis

Indexed keywords

Engineering controlled terms: | Convolutional neural networks | Deep learning | Diagnosis | Diseases | Lung cancer

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2nd International Conference on Disruptive Technologies, ICDT 2024; GL Bajaj Institute of Technology and ManagementGreater Noida; India; 15 March 2024 through 16 March 2024; Category numberCFP24BZ5-ART; Code 198772

A Business Strategy for Insurance Companies Using Deep Learning for Risk Assessment and Mitigation(Conference Paper)

Ryali, N.,   Manimegalai, V.,   Nikkhel, A.,   Nadh, P.G.,   Bandaru, Y.C.,   Sai, P.V.

[a]Business School, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India
[b]Nandha Engineering College (Autonomous), Department of Mba, Erode, India

Abstract

An explanation of the model's projections that is straightforward and easy to understand is beneficial to stakeholders, financial institutions, and regulators. Several distinct kinds of tree-based classifiers, including deep neural networks (DNNs), were pitted against one another in this research project. This study's objectives were to (1) classify insurance risk based on historical data and (2) give the appropriate model for risk assessment in order to enhance the risk assessment capabilities of life insurance companies through the application of predictive analytics. The objective was to implement strategies that would simplify machine learning model comprehension for non-experts. The DNN classifier performed the best when compared to other classifiers, achieving an AVC value of 0.86 and an F1-score of 0.56 on the validation set. © 2024 IEEE.

Author keywords

(DL) (DNN) (insurance) (risk assessment)

Indexed keywords

Engineering controlled terms:	(Deep neural networks) (Insurance) (Predictive analytics)

Engineering uncontrolled terms	(Business strategy) (DL) (Financial institution) (Historical data) (Insurance companies) (Insurance risk) (Risk mitigation) (Risk-based) (Risks assessments) (Tree-based)

Engineering main heading:	(Risk assessment)

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Machine Learning-Enabled Business Intelligence For Dynamic Pricing Strategies In E-Commerce(Conference Paper)

Semwal, M.,   Akila, K.,   Manasa, M.,   Raj, P.S.,   Motukuru, Y.,   Karthik, P.

[a]Business School, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

[b]Nandha Engineering College (Autonomous), Department of Management Studies, Erode, India

Abstract

The ever-evolving landscape of e-commerce makes dynamic pricing strategies an absolute necessity for businesses that want to maximise their earnings and keep a leading edge in their respective industries. This study was conducted with the intention of determining whether or not the application of machine learning (ML) and business intelligence (BI) could result in the development of dynamic pricing strategies that are more successful. Many companies have been unsuccessful because they relied on pricing techniques that had become obsolete as a result of the constantly shifting nature of the digital market. This study addresses the need for a more dynamic and data-driven pricing approach in online environments, thereby bridging a gap in the existing body of research on the topic. Although machine learning has been shown to be helpful in a variety of business contexts, its potential for dynamic pricing in online stores has not yet been completely explored through its integration with business intelligence. This is despite the fact that machine learning has been valuable in a number of business situations. The currently available research does not provide a comprehensive understanding of the synergies that can be achieved by combining ML and BI in pricing optimisation. The Support Vector Machine (SVM), a machine learning technique, was selected as the primary tool for this study because of its ability to deal with intricate and nonlinear interactions included within enormous datasets. Combining technologies that are used for business intelligence in order to collect, process, and present important data results in the creation of a sophisticated framework that can be used to make decisions regarding pricing in real time. According to the findings, having a business intelligence system that is empowered with machine learning significantly improves a company's capacity to accurately price its products and services and to respond rapidly to changes in the market. Price decisions can be made that are both more precise and more sensitive to nuances thanks to the adaptability of the SVM model to changing market conditions. © 2024 IEEE.

Author keywords

Business Intelligence   Dynamic Pricing   E-commerce   Machine Learning   SVM

Indexed keywords

Engineering controlled terms: Costs   Learning systems   Support vector machines

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Business Intelligence In Industrial Organization Using An Ai-Driven Competitive Analysis Framework(Conference Paper)

Gowrabhathini, J.,   Tamilarasu, J.,   Rahithya, S.,   Sindhu Parimala, P.S.,   Hussain, S.S.,   Sri, C.N.

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Abstract

In this research, it examine how the integration of AI and BI might assist businesses in penetrating new areas that have not yet been explored. When applied to enormous datasets, Recurrent Neural Networks (RNNs) can reveal detailed patterns, correlations, and trends that might otherwise go unnoticed when utilising more conventional methods of data analysis. These revelations are made possible by the fact that RNNs are able to learn from their own past experiences. By adding artificial intelligence (AI) and other forms of machine learning into their business intelligence (BI) systems, companies can increase their understanding of customer behaviour as well as other key aspects of their operations. In addition to this, it explores the potential applications of AI in business intelligence, such as improving decision-making, streamlining operations, and paving the way for preventative measures. © 2024 IEEE.

Author keywords

(Artificial Intelligence (AI)) (Business Intelligence (BI) RNN) (DL)

Indexed keywords

Engineering controlled terms: (Decision making) (Information analysis)

Engineering uncontrolled terms   (Analysis frameworks) (Artificial intelligence) (Business intelligence recurrent neural network) (Business-intelligence) (Competitive analysis) (Conventional methods) (DL) (Industrial organization) (Methods of data analysis) (Pattern correlation)

Engineering main heading: (Recurrent neural networks)

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Enhancing Human Resources Management With AI-Powered Talent Acquisition Strategy Using Deep RESNET(Conference Paper)

Gowrabhathini, J.,   Arulini, K.,   Priya, T.H.,   Hemanandu, L.,   Veera Satya Bhargavi, S.N.,   Varshini, N.

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Abstract

In human resource management (HRM), artificial intelligence (AI) is becoming an increasingly popular tool for assisting firms in speeding up and improving the processes involved in talent acquisition. Finding and hiring exceptional people quickly and effectively is difficult using the standard HRM approach. We propose integrating Deep ResNet, a cutting-edge deep learning architecture that possesses exceptional feature extraction capabilities, with the systems that are already in place as a solution to this problem. While research into how Deep ResNet might be used to the talent acquisition process is lagging behind, the use of artificial intelligence in human resource management is becoming an increasingly popular trend. This research presents a novel approach to talent acquisition in HRM by utilising Deep Residual Networks (ResNet). The research employs a stringent research approach that incorporates data analysis, machine learning techniques, and real-world case studies. The purpose of this methodology is to establish whether or not the proposed AI-powered talent acquisition strategy is successful. Deep ResNet will be trained on a variety of datasets to increase its ability to locate and grade potential candidates. As a direct result of this, both the accuracy and the efficiency of the process of obtaining fresh talent are significantly improved. The purpose of this study is to provide empirical evidence confirming the efficacy of Deep ResNet in strengthening human resource management practises. © 2024 IEEE.

Author keywords

AI   Deep ResNet   Human Resources Management   Machine Learning   Talent Acquisition

Indexed keywords

Engineering controlled terms: Deep learning   Learning systems   Natural resources management   Resource allocation

Engineering uncontrolled terms   Acquisition process   Acquisition strategies   Cutting edges   Deep residual network   Extraction capability   Features extraction   Human resources management   Learning architectures   Machine-learning   Talent acquisition

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Rao Podile, V., Sangeetha, T., Sai Manikanta, D.G., Lakshmi, Y.L., Prasad, V.J., Aditya, G.

[a]Business School, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India
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Abstract

The field of energy is about to experience a pivotal turning point. As a result of recent developments in digital technology, there is a possibility that the generation of energy, as well as commerce and consumption, could experience fundamental upheavals. AI technology is the driving force behind the most recent paradigm shift in digitalization. The autonomous incorporation of new renewable energy sources, as well as the supply and demand for energy, will be governed by software that is both intelligent and operationally optimised to maximise efficiency. The successful completion of this mission absolutely requires the application of artificial intelligence. The application of AI strategies to the field of energy research is the primary focus of this investigation. This research was conducted with the intention of providing scholars and readers with a realistic starting point for future comparisons of artificial intelligence (AI) projects, aims, state-of-the-art applications, and obstacles, as well as responsibilities related to global governance. In this study, we looked at how artificial intelligence (AI) techniques outperform conventional models in a variety of contexts, such as controllability, large data handling, the prevention of cyberattacks, smart grid, the Internet of Things (IoT), robotics, energy efficiency optimisation, predictive maintenance control, and computing efficiency. Specifically, we looked at these areas. According to the findings of our research, AI is swiftly emerging as a game-changing tool for the highly competitive energy business, which is growing increasingly sophisticated, novel, and data-related. In addition, the energy industry is known for its intense level of competition. © 2024 IEEE.

Author keywords

Ai Business Intelligence Energy Sector Sustainability

Indexed keywords

Engineering controlled terms: Artificial intelligence Competition Data handling Energy efficiency Energy policy Internet of things Renewable energy Smart power grids

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Industrial Organization in the Industry 4.0 Era: Leveraging Machine Learning for Competitive Advantage(Conference Paper)

Semwal, M.,   Sivasankari, K.,   Kumar, S.K.,   Prasad, N.N.V.K.D.,   Raju, M.R.K.,   Sree, V.K.

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[c]Business School, Koneru Lakshmaiah Education Foundation, Vaddeswaram, India

Abstract

In this age of Industry 4.0, which is characterised by the confluence of digital and physical technologies, businesses have to adopt cutting-edge practises in order to keep their advantage over their competitors. By researching the revolutionary potential of machine learning (ML) applications in industrial organisation, the purpose of this research is to find strategies that offer competitive advantages. Traditional organisational paradigms for the manufacturing industry face considerable challenges when they are applied to the data- driven and dynamic setting of Industry 4.0. Businesses face a difficult problem when attempting to keep up with the rapid speed of technological change while simultaneously reducing the risks associated with doing so. A crucial concern is how to apply machine learning (ML) to these difficulties in the most effective way possible and how to reinvent existing forms of industrial organisation. The findings of this study are based, in part, on extensive reviews of the relevant previous literature, case studies, and empirical analyses. In order to demonstrate the complete effect that ML has on the dynamics of industrial organisations, the technique combines qualitative and quantitative research. The use of examples from the actual world and facts that are specific to the industry helps to strengthen the dependability of the findings. These findings shed light on the substantial efficiencies that can be achieved through the application of ML in the areas of supply chain optimisation, predictive maintenance, and adaptive production. Insights produced by machine learning also enable organisations to make informed strategic decisions, which in turn fosters a culture within the organisation that is flexible and open to change. © 2024 IEEE.

Author keywords

competitive advantage   industrial organization   Industry 4.0   machine learning   technological transformation

Indexed keywords

Engineering controlled terms: Competition   Engineering education   Industrial research   Machine learning   Supply chains

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Revolutionizing Business Intelligence: Harnessing AI and Machine Learning for Strategic Insights and Competitive Advantage(Conference Paper)

Girimurugan, B., Parthiban, K., Saxena, M., Talasila, G., Vamsi, N.S., Sai, P.T.

[a]Business School, Koneru Lakshmaiah Education Foundation, A.P., Vaddeswaram, 522302, India
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[c]College of Computing Sciences and Information Technology, Teerthanker Mahaveer University, Moradabad, India

Abstract

Optimizing Performance Management through Data Analytics and Artificial Intelligence in the Manufacturing Sector. There have been a lot of new breakthroughs and opportunities made possible as a result of the increased usage of machine learning and artificial intelligence in business intelligence. Because of these cutting-edge technological advancements, businesses are now able to perform data analysis, gain new insights, and make decisions that are superior to those made in the past. It important to note that predictive analytics are becoming increasingly popular. Using algorithms designed for machine learning, businesses are able to sort through mountains of data in order to make predictions about the future that are based on accurate information. Because of this, organisations have the opportunity to increase their efficiency, decrease risk, and anticipate the needs of their customers. With the help of business intelligence, companies are able to optimise their operations, find new chances for growth, and make decisions that are driven entirely by data, all of which have a direct influence on the bottom line of the firm. Another trend that is picking up steam is the employment of chatbots and digital assistants that are driven by Radial Basis Function (RBF). The possibilities that machine learning and artificial intelligence present in terms of business intelligence are extremely extensive. Automated data analysis, anomaly detection, demand forecasting, and dynamic pricing are examples of the types of technologies that assist businesses in streamlining processes, lowering expenses, and locating untapped sources of revenue. To summarise, there have been some fascinating new breakthroughs, as well as countless opportunities, in the area of using AI and machine learning to business intelligence. Businesses have the potential to acquire a competitive advantage, produce innovation, and unlock new levels of success in the digital world if they adopt these technologies and use them. © 2024 IEEE.

Author keywords

(Artificial Intelligence (AI)) (Business Intelligence (BI) RNN) (DL)

Indexed keywords

Engineering controlled terms: (Anomaly detection) (Competition) (Competitive intelligence) (Data Analytics) (Machine learning)
(Radial basis function networks)

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[a]Business School, Koneru Lakshmaiah Education Foundation, A.P., Vaddeswaram, 522302, India
[b]Nandha Engineering College (Autonomous), Department of Management Studies, Erode, 638052, India

Abstract

In today fast-paced economy, businesses are continuously searching for innovative new ways to differentiate themselves from their rivals. The purpose of this study is to investigate the intersections between machine learning and corporate strategy, with a particular emphasis on the ways in which predictive analytics might be utilised to direct strategic expansion within existing markets. As marketplaces evolve, it is becoming increasingly necessary for businesses to accurately predict future market trends as well as the activities of their customers in order to achieve sustained success. Many conventional company tactics are unable to keep up with the ever-changing nature of today marketplaces because they are so dependent on the past and on tried-and-true ways of analysis. Finding a means to use predictive analytics as a guide for strategic planning that satisfies the market desire for speed and insight while at the same time meeting that demand might be challenging. Even while predictive analytics is widely recognised as a valuable resource, the process of methodically incorporating it into company strategy for the purpose of entering new markets is still mostly undiscovered. This study bridges a knowledge vacuum and provides a new viewpoint on the decision-making process within companies by proposing a holistic framework that integrates approaches for machine learning with strategic planning. The research exploits vast amounts of data and makes use of complex machine learning strategies in a two-pronged approach. The process of assessing market data, customer behaviour patterns, and other external variables from the past is what is referred to as training predictive models. After that, these models are combined into a strategic framework, which assists business executives in identifying untapped revenue potential and developing the most effective techniques for extending their operations in order to maximise their profits. They provide evidence that the suggested methodology can be effective for predicting market moves and enhancing growth plans. Integrating predictive analytics helps improve decision making by casting light on complicated market dynamics and giving organisations an edge in a competitive and ever-changing environment. © 2024 IEEE.

Author keywords

Business strategy   Competitive advantage   Decision-making   Machine learning   Market expansion   Predictive analytics

Indexed keywords

Engineering controlled terms: Commerce   Competition   Machine learning   Predictive analytics   Strategic planning

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[b]Nandha Engineering College (Autonomous), Department of Management Studies, Erode, 638052, India

Abstract

Management of today supply chains is becoming increasingly important to the efficient operation of organisations all around the world. Concerns regarding trust and transparency persist even though supply networks are complex and frequently shrouded in secrecy. This research investigates the several ways that blockchain technology may be deployed so that data theft can be prevented and confidence in the system used to manage supply chains can be increased. In typical supply chain management systems, problems with trust, data quality, and openness are all too common. Fraud, counterfeiting, and information asymmetry all reduce supply chain efficiency, which in turn affects stakeholders and damages consumer trust. Even while blockchain has been identified for the difficulties in supply chains that it has the potential to solve, there has not yet been extensive study that bridges the gap between the theoretical possibilities and practical implementations of blockchain. The purpose of this study is to fill this void by providing an in-depth method and empirical data. The method of the study is a mixed-methods approach, and it includes a complete literature review, case studies of blockchain deployment across industries, and a quantitative analysis of blockchain effect on supply chain transparency and trust. All these elements are included in the report. The study primary objective is to provide actionable takeaways for corporations interested in shoring up the safety of their supply chains. The results indicate that increasing the use of blockchain technology greatly enhances supply chain management data security, transparency, and trust. Case studies provide evidence of successful deployments, and these studies can act as a reference for companies considering the adoption of blockchain technologies. © 2024 IEEE.

Author keywords

Blockchain   Data Security   Supply Chain Management   Transparency   Trust

Indexed keywords

Engineering controlled terms: Crime   Information management   Security of data   Supply chain management   Transparency

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