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FACULTY PUBLICATION

RESEARCH PAPERS
APRIL 2025

TITLE:

Emerging Therapeutic Agents and
Nanotechnology-Driven Innovations in
Psoriasis Management(Review)

AUTHOR :

Kaur, T.,Hinge, N.,Pukale, S.,Ansari,
M.N.,Thajudeen, K.Y.,Nandave, M.,
Upadhyay, J.

JOURNAL NAME:

Frontiers in Bioscience - Landmark

DETAILS:

Published on March 2025



ABSTRACT:

Psoriasis has been a rising concern for over a decade, imposing significant challenges to individuals and society. Traditional topical therapy is non-targeted and acts systemically, with associated side effects. This increases the global burden both socially and economically. This review covers the evolution of drug molecules and nanotechnology-based approaches for the topical treatment of psoriasis, a chronic inflammatory skin disorder with no known etiology. Nanotechnology-based approaches offer promising solutions by reducing side effects, providing targeted delivery, protecting drug molecules from degradation, enhancing skin retention, and providing controlled release. Researchers have investigated the incorporation of various conventional and non-conventional therapeutic agents into nanocarriers for psoriasis treatment. The current understanding of the disease and its treatment using various therapeutic agents combined with novel formulation strategies will reduce the duration of treatment and improve the quality of life in psoriatic disease conditions. © 2025 The Author(s).

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001503672&doi=10.31083%2fFBL27910&origin=inward&txGid=5af90beff75f62d1e3250ccdac09d0fb>



TITLE:

Bioanalytical method validation of rifapentine and its metabolite in human plasma using the LC-MS/MS method, as well as its application to a pharmacokinetics study(Article)(Open Access)

AUTHOR :

Parghale, R.,Inapakolla, R.,Rao
Tikka, V.D.,Suvvaru, R.K.,Date, P.,
Gawade, V.,

JOURNAL NAME:

Journal of Applied Pharmaceutical Science

DETAILS:

Published on 2025



ABSTRACT:

A highly sensitive and specific LC-MS/MS technique was developed. It is validated for quantifying rifapentine and 25-desacetyl rifapentine in K2EDTA human plasma. The concentration ranges are 60.061 ng/ml to 8008.134 ng/ml for Rifapentine and 30.000 ng/ml to 4000.015 ng/ml for 25-desacetyl rifapentine. The separation of analytes were achieved using reverse phase chromatography employing a Supelco discovery C18 column (10 cm × 4.6 mm, 5 μm particle size). Detection was performed via electro spray ionization in positive ion mode $[M+H]^+$. A triple quadrupole mass spectrometer, with multiple reaction monitoring of specific ions for each analyte and their respective deuterated internal standards (IS) were used. Retention times for rifapentine and 25-desacetyl rifapentine were 2.45 minutes and 1.77 minutes, respectively. The retention time for the IS rifapentine D9 and 25-desacetyl rifapentine D8 were 2.30 minutes and 1.68 minutes, respectively. The total run time of the method was 8.00 minutes. No interfering peaks or matrix effects were noticed during validation, confirming the reliability of the results. The validation report encompasses standard curves, quality control sample recovery, stability of experiments, and meeting stringent criteria for sensitivity, reproducibility, and accuracy. This method has been effectively used in a rifapentine bioequivalency study with healthy adult Asian male volunteers, highlighting its suitability for pharmacokinetic investigations. © 2025 Rutuja Parghale et al.

Link -

<https://www.scopus.com/record/display.uri?eid=2-s2.0-105003139102&doi=10.7324%2fJAPS.2025.210914&origin=inward&txGid=6cbdbe85019ef04255ef690f3e567b9f>



TITLE:

Experimental and computational study on a morphed trailing edge airfoil for enhanced lift and stall characteristics(Article)

AUTHOR :

Raibole, K.V., Mali, K.V.

JOURNAL NAME:

International Journal of Sustainable Aviation

DETAILS:

Published on 2025



ABSTRACT:

The current study presents a morphed trailing edge methodology applied to a Clark-Y airfoil in order to improve the effective stall angle of the specific airfoil under definite conditions. A morph of 2° was provided to the trailing edge of the Clark-Y airfoil in consideration. The performance of the morphed wing was analysed by varying two parameters, the angle of attack (AOA) and the freestream flow velocity. The AOA was varied from 0° to 50° , while the flow stream velocity was 10 m/s and 12 m/s. The morphed airfoil showed a maximum increase in the lift-to-drag ratio at 15° and 10 m/s flow velocity. Although at the cost of lift force and a minor increase in drag, the stall angle of the airfoil is improved from 22° to 25° . Numerical simulations showed a maximum deviation of 12.7% with the experimental data, affirming the reliability of the simulations and the methodology. Copyright © 2025 Inderscience Enterprises Ltd.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002823399&doi=10.1504%2fIJSA.2025.145728&origin=inward&txGid=d06fd238e110d6e9614c55ff27f08fc1>



TITLE:

Innovative IoT-enabled mask detection system: A hybrid deep learning approach for public health applications(Article)

AUTHOR :

Dubey, P.,Keswani, V.,Dubey, P.,Keswani, G., Bhagat, D.

JOURNAL NAME:

MethodsX

DETAILS:

Published on June 2025



ABSTRACT:

The integration of IoT and deep learning has revolutionized real-time monitoring systems, particularly in public health applications such as face mask detection. With increasing public reliance on these technologies, robust and efficient frameworks are critical for ensuring compliance with health measures. Existing models, on the other hand, often have problems, such as being slow to compute, not being able to work well in a wide range of environments, and not being able to adapt well to IoT devices with limited resources. These shortcomings highlight the need for an optimized and scalable solution. To address these issues, this study utilizes three datasets: the Kaggle Face Mask Dataset, the Public Places Dataset, and the Public Videos Dataset, encompassing varied environmental conditions and use cases. The proposed framework integrates ResNet50 and MobileNetV2 architectures, optimized using the Adaptive Flame-Sailfish Optimization (AFSO) algorithm. This hybrid approach enhances detection accuracy and computational efficiency, making it suitable for real-time deployment. The novelty of the paper lies in combining AFSO with a hybrid deep learning architecture for parameter optimization and improved scalability. Performance metrics such as accuracy, sensitivity, precision, and F1-score were used to evaluate the model. The proposed framework achieved an accuracy of 97.8 % on the Kaggle dataset, significantly outperforming baseline models and demonstrating its robustness and efficiency for IoT-enabled face mask detection systems. • The article introduces a novel hybrid framework that combines ResNet50 and MobileNetV2 architectures optimized with Adaptive Flame-Sailfish Optimization (AFSO). • The system demonstrates superior performance, achieving 97.8 % accuracy on the Kaggle dataset, with improved efficiency for IoT-based real-time applications. • Validates the framework's robustness and scalability across diverse datasets, addressing computational and environmental challenges. © 2025 The Author(s)

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001582499&doi=10.1016%2fj.mex.2025.103291&origin=inward&txGid=c6323a359b648832559e3a2dd27f4215>



TITLE:

Hoop tensile strength testing of glass/jute hybrid filament wound composite tubes(Article)

AUTHOR :

Shrigandhi, G.D., Kothavale, B.S.

JOURNAL NAME:

International Journal on Interactive Design
and Manufacturing

DETAILS:

Published on April 2025



ABSTRACT:

The filament winding process is the most suitable method for fabricating axisymmetric products like pressure vessels and pipes. As raw materials, synthetic carbon, glass, and aramid fibers are still used. Although few natural fibers have high specific strength compared to synthetic fibers, they are not explored for filament-winded products due to the need for continuous fibers and lack of proper investigation into their suitability for filament winding. Few research on the crushing, flexural, and compressive strength of natural fiber wound tubes for structural applications have been conducted. Still, their usage for tubes subjected to internal pressure remains unreported. This study compares the apparent hoop tensile strength of a Jute yarn/E-glass hybrid composite tube with that of a non-hybrid E-glass tube. Jute yarn/E-glass hybrid tube samples were fabricated by filament winding with two stacking sequences. A split disk test is conducted to investigate the hoop tensile strength of Jute yarn/E-glass hybrid ring specimens. The burst pressure obtained from the split disk test method is compared with the model simulated in ANSYS ACP software. Experimental results reveal that hoop tensile strength is improved by increasing the hoop angle. Furthermore, simulation results suggest that the burst pressure of a Jute/E-glass hybrid pressure vessel was comparable to that of a non-hybrid E-glass pressure vessel. So, there is scope to add jute fiber for pressure vessels and pipes subjected to internal pressure. After testing for hoop tensile strength, a morphological examination was conducted using a scanning electron microscope. A thermal analysis of a hybrid tube was performed, and the results demonstrated thermal stability up to 280 °C. © The Author(s), under exclusive licence to Springer-Verlag France SAS, part of Springer Nature 2024.

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TITLE:

Shape memory alloys: a resilient structural engineering material(Review)

AUTHOR :

Kangda, M.Z., Ubaid, A., Sathe, S.,
Wadki, V., Razvi, S.W.N., Raikar,
R.G.

JOURNAL NAME:

Multiscale and Multidisciplinary
Modeling, Experiments and Design

DETAILS:

Published on May 2025



ABSTRACT:

The structural engineering domain plays a prominent role in various civil engineering applications. The main objective of a structural engineer is to provide stability to structures subjected to different types of natural and man-made generated loads namely earthquake loads, wind loads, and surface and underground-induced blast loads. In the recent past, isolation systems various damping devices, and the installation of shape memory alloys have improved the ability of different civil engineering structures. Shape memory alloys are considered to be effective damping devices by considering their potentials in the form of super-elastic behavior, generation of high recovery stresses, high damping capacity, high resistance to fatigue and corrosion, and work output with a high power-to-weight ratio, and an excellent recentering mechanism. Recovering residual deformation even after strong ground excitation is a distinct property of Shape memory alloys. Researchers have also combined seismic isolation systems and shape memory alloys to mitigate the response of the structure under erratic loading conditions. The present study highlights a review of the properties of shape memory alloys and their mechanical characteristics, phase transformation, and the working principle of shape memory alloys. The study directs the future scope of shape memory alloys as a resilient structural engineering material and its role in vibration control devices. The study also focuses on the methodology to produce economical shape memory alloys to meet the material standards of the construction industry and thus become a reliable structural engineering material. © The Author(s), under exclusive licence to Springer Nature Switzerland AG 2025.

Link: <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002729132&doi=10.1007%2fs41939-025-00836-w&origin=inward&txGid=30829f6de1c7df2fee1585cfe2b51f15>



TITLE:

Indian Monuments Classification using
Different Techniques: A
Survey (Conference Paper)

AUTHOR:

Lele, J.M., Kulkarni, P.V.

JOURNAL NAME:

2025 1st International Conference on AIML-
Applications for Engineering and
Technology, ICAET 2025

DETAILS:

Published on 17 January 2025



ABSTRACT:

India has an extensive collection of cultural heritage, including 37 UNESCO-listed architectural sites that indicate the country's rich history and diverse heritage. This heritage provides a common thread, connecting generations over time and inspiring amazement and respect in visitors. Regardless of the attractiveness of these historical sites, getting accurate and comprehensive information about them is an important challenge. Traditionally, visitors depended on tour guides or academic experts to provide knowledge about the architectural and historical significance of these monuments. However, this approach has limitations, including the availability of qualified staff members, the risk of inaccuracies, and the difficulty of effectively communicating complex details to a large audience. In the last few years, technological developments in machine learning and deep learning technologies have opened new opportunities for analyzing and interpreting heritage sites using monument images. These techniques have the potential to speed up the monument identification process while providing visitors with precise and comprehensive information, thereby improving the overall tourist experience in India. This paper aims to survey existing research in this field, with the goal of developing a computerized decision-making system capable of accurately classifying monument images, thereby contributing to a more enriching and immersive tourism experience in India. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002477546&doi=10.1109%2fICAET63349.2025.10932316&origin=inward&txGid=a2607a30339129895d6ca394e54b369>





TITLE:

Exploring Nihongo: A Survey on
Japanese E Learning
Sources(Conference Paper)

AUTHOR :

Deshpande, M.R.,Patankar, R.,Rane, R.

JOURNAL NAME:

2025 1st International Conference on AIML-
Applications for Engineering and
Technology, ICAET 2025

DETAILS:

Published on 17 January 2025



ABSTRACT:

The survey explores the wealth of online resources and datasets that are necessary for data collecting, providing an in depth overview of the development of Japanese language learning systems and apps. This survey focuses on the application of machine learning and natural language processing (NLP) to simplify complex Japanese grammar patterns, improving learning outcomes for non-native speakers. Interestingly, the survey discusses these strategies' implementation not just in Japanese but also in other languages, demonstrating their versatility and promise for cross-linguistic learning platforms. The study aims to provide interpreters, translators, and Japanese language learners with a useful resource by combining information from many sources and research projects. It seeks to provide a helpful environment in which students can easily navigate the complexities of the Japanese language and interpreters and translators may use modern technologies and approaches to increase efficiency and accuracy. The research discusses how essential it is to include techniques for assessment and feedback into these systems so that learners can track their progress, get individualized feedback, and modify their learning approaches as necessary. The survey aims to enable people with different levels of proficiency to interact creatively and enrich the Japanese language through its thorough study. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002483713&doi=10.1109%2fICAET63349.2025.10932252&origin=inward&txGid=b404bad026f47b986756ae8fd714618c>



TITLE:

Influence of aggregate gradation on the performance of fibre-reinforced pervious concrete(Article)

AUTHOR :

Sathe, S., Gholap, B.

JOURNAL NAME:

Proceedings of the Institution of Civil Engineers: Structures and Buildings

DETAILS:

Published on 29 April 2025



ABSTRACT:

The influence of aggregate gradation on the performance of pervious concrete (PC) mixes was investigated, employing aggregates of nominal sizes 4.75-9.5 mm, 9.5-12.5 mm and 12.5-20 mm. The effects of polypropylene fibre (PF) and glass fibre (GF) were also examined, varying their volumetric proportions from 0.1% to 0.4% in increments of 0.1%. For all the mixes, the cement-to-aggregate ratio was held constant at 0.30, while the water-to-cement ratio was maintained at 0.34. The addition of PF or GF to the PC mixes resulted in a slight improvement in compressive strength (f_c), in the range ≈ 0.3 -2.6%. With optimal percentages of the fibres (0.3% PF, 0.2% GF), the increase in flexural strength (f_{cr}) and split tensile strengths (f_{st}) was 1-6% across all mixes. While the fibre reinforcement slightly enhanced f_{cr} and f_{st} , it had no significant impact on f_c , porosity (P), permeability coefficient (k), sulfate resistance and abrasion resistance. The smaller aggregate size enhanced mechanical properties and abrasion resistance through increased particle interlocking and surface contact, but reduced the porosity and permeability of the PCs. A regression model was developed to correlate k-P, f_c -P and weight loss due to abrasion and Cantabro revolutions. The model demonstrated a high degree of accuracy. © 2025 Emerald Publishing Limited: All rights reserved.

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TITLE:

A Recap into the Application of
Natural Language Processing for
Identification of Cognitive Impairment
in Patients (Conference Paper)

AUTHOR :

Ghorpade-Aher, J.,
Desai, U.

JOURNAL NAME:

2025 1st International Conference on AIML-
Applications for Engineering and
Technology, ICAET 2025

DETAILS:

Published on 17 January 2025



ABSTRACT:

Diseases and disorders causing cognitive decline reduce the quality of life of their victims drastically by hindering them from performing basic everyday tasks normally. The earlier a patient can be diagnosed and begin treatment, the better the prognosis tends to be and the application of technology in diagnostics has sped up the process considerably. Artificial Intelligence, Machine Learning and now Deep Learning are being used to aid doctors and diagnosticians in the swifter, more streamlined diagnosis of their patients. It has been observed that changes in the speech patterns of patients show up as a symptom early in the process of their declining cognition. This makes Natural Language Processing (NLP) a powerful tool to execute the early detection of psychological and neurological impairments using safer, less expensive means. Several approaches being applied to further this research include lexico-syntactic and acoustic analysis as well as tools like BERT transformer and LASSO Regression. Classification is attempted using Machine Learning models like Random Forest, Gradient Boosting or Support Vector Machine as well as neural networks. This studies the merits, demerits and novelties of some such studies and expands on the technology used therein. Still in the nascent stages of development, the application of NLP to diagnose and categorize cognitive decline face many hurdles such as limited access to data-sets, lack of explainability leading to low usability in real world scenarios and lower accuracy than is achieved by Machine Learning and Deep Learning. However, what little research does exist points to a promising future where cheaper, earlier and non-invasive diagnosis would be a reality for patients of cognitive decline. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002480562&doi=10.1109%2fICAET63349.2025.10932196&origin=inward&txGid=eacfd5ce5ee914ac1bfc8c7c8697af2e>





TITLE:

How does project-based-learning makes difference in secondary school mathematics(Article)

AUTHOR :

Chhabra, M., Gawande, A.

JOURNAL NAME:

Multidisciplinary Science Journal

DETAILS:

Published on 2025



ABSTRACT:

This study explores effects of project-based-learning (PBL) intervention on secondary school students' self-efficacy, interest-engagement, problem-solving attitudes and collaborative-learning approaches in mathematics. The primary objective is to evaluate extent to which PBL influences students' learning experiences, motivation and problem-solving skills. Theoretical Framework for study is grounded in constructivist learning theory. A quasi-experimental design implemented that involves 2880 student responses, classroom observations and interviews with subset of students and teachers. The study compared an experimental-group exposed to PBL with control-group following traditional instructional methods. Findings reveal that PBL encourages ownership of learning by integrating real-life problem-solving scenarios. Strong positive associations were observed between collaborative learning and interest-engagement, with significant influence on problem-solving attitudes. Increased interest and engagement positively influenced self-efficacy which leads to high-confidence and motivation in experimental-group compared to control-group. Qualitative observations indicate that PBL nurtured critical thinking, teamwork and engagement that resulted in stimulating classroom environment. PBL in enabled students to nurture critical skills that has potential to bright future in higher education and better decision-making for professional challenges. The study demonstrates PBL's potential to redefine mathematics pedagogy by creating meaningful, real-world problem-solving opportunities that enhance cognitive and collaborative capacities. Study reported significant improvements across all four constructs. © 2025 Malque Publishing. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001951012&doi=10.31893%2fmultiscience.2025550&origin=inward&txGid=af26541b0f904113c018aed5c189aac2>





TITLE:

Identification of Brain Tumors in
MRI Images Using Artificial
Intelligence of Things

AUTHOR :

Khekare, G., Majumder,
G., Yenurkar, G., Sakarkar, G.,
Dhanre, U.,

JOURNAL NAME:

AIoT Innovations in Digital Health:
Emerging Trends, Challenges, and Solutions

DETAILS:

Published on 1 January 2025



ABSTRACT:

This study aims to utilize Artificial Intelligence of Things for the identification of brain tumors in magnetic resonance images (MRI). The research aimed to address the pressing need for precise and efficient identification of brain tumors using advanced Artificial Intelligence (AI) methods. The main objectives of this research are to explore different artificial intelligence algorithms and preprocess MRI datasets, construct and train models, and evaluate their performance. In pursuing these objectives, extensive research was conducted on existing literature, methodologies, and state-of-the-art techniques in medical image analysis and machine learning. Two distinct datasets are utilized: one for binary classification (healthy vs. tumor) and another for multi-class classification of brain tumor types. The custom three-layer Convolutional Neural Network (CNN) is used with pre-trained models. These models exhibited superior accuracy and classification capabilities, contributing to improved medical diagnosis and treatment planning. The results underscore the potential of AI-driven methodologies in health data analysis, like for brain tumor identification. This research significantly advanced the understanding and application of artificial intelligence in digital health analysis, highlighting its potential to improve the medical field. © 2025 selection and editorial matter, Inam Ullah Khan, Salma El Hajjami, Shashi Kant Gupta, Hameedur Rahman, Thiagarajan Yogamoorthi, Inam Ullah and Muhammad Adnan Khan.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002892731&doi=10.1201%2f9781003469896-7&origin=inward&txGid=8d55fa9f9515a68f832af52e62f4f0bb>





TITLE:

Machine Learning based Plagiarism
Detection for Marathi Language

AUTHOR :

Sathe, S., Dandin, S.

JOURNAL NAME:

European Journal of Environmental
and Civil Engineering

DETAILS:

Published on 2025



ABSTRACT:

This study aims to assess the performance of permeable concrete (PC) with partially substituting ground-granulated blast furnace slag (GGBS) and fly ash (FA) for cement. The XRD and SEM of cement, FA, and GGBS were performed for material characterization. The performance of PC was assessed for compressive strength (CS), split tensile strength (STS), flexural strength (FS), acid attack (sulfate resistance test), density, porosity, and permeability by the falling head method. An experimental program was carried out to evaluate the performance of concrete by substituting 5, 10, 15, 20, and 25% of the mass of cement with FA and GGBS while varying the water-to-binder ratio from 0.3 to 0.45 with an increment of 0.05. The FA and GGBS were found to reduce the permeability and porosity of the concrete. The CS was optimum for FA and GGBS as cement replacement at 15 and 20%, respectively. The workability of the PC was increased as an increase in FA and GGBS content. Furthermore, a strong correlation was observed among permeability coefficient, compressive strength, and porosity, as evidenced by a coefficient of determination approaching unity. © 2024 Informa UK Limited, trading as Taylor & Francis Group.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001987738&doi=10.1080%2f19648189.2024.2417674&origin=inward&txGid=93919cfba4de8dda726ca1ae4e988330>



TITLE:

Deep Context-Aware Feature
Extraction for Anomaly Detection
in Surveillance Videos(Article)

AUTHOR :

Phapale, A.,Bhingarkar, S.

JOURNAL NAME:

Engineering, Technology and Applied
Science Research

DETAILS:

Published on April 2025



ABSTRACT:

Surveillance video analysis plays a crucial role in ensuring public safety and security. Developing a context-aware framework for anomaly detection in surveillance videos is motivated by the need for enhanced security, safety, and efficiency in various domains. Context-aware anomaly detection depends on spatiotemporal features that help the model understand the context of anomalies in surveillance videos. This study aimed to provide a novel deep learning-based context-aware approach to feature extraction to detect anomalies in surveillance videos. The proposed method integrates ResNet50 for spatial feature extraction and 3D Convolutional Neural Network (CNN) for temporal feature extraction. This method identifies six anomalous activities, namely abuse, arrest, fighting, robbery, shooting, and road accidents, using the UCF-Crime dataset. The proposed integrated ResNet50 and 3D CNN model achieves promising accuracy for the six classes, such as 95% for abuse, 93% for arrest, 95.22% for fighting, 94.44% for robbery, 93% for shooting, and 94.22% for road accidents. By combining spatiotemporal features, the proposed model detects anomalies in behavior and unexpected movements, which makes it useful for security monitoring where deviations from normal behavior indicate anomalous events. This research contributes to advancing the capabilities of surveillance systems, enhancing public safety, and enabling proactive security measures in diverse urban environments. © by the authors.

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TITLE:

Comparative phytochemistry and
chemotaxonomy

AUTHOR :

Marne, P.A., Pawar, A.T., Tagalpallewar,
A.A., Baheti, A.M.

JOURNAL NAME:

Pharmacognosy and Phytochemistry:
Principles, Techniques, and Clinical
Applications

DETAILS:

Published on 10 April 2025



ABSTRACT:

Throughout history, plants have played a crucial role in providing compounds for medicine. People have used these plants for healing since ancient times, often relying on their senses and past experiences. One of the primary challenges in comprehending the development of medicinal plants is their categorization. Taxonomists have devised various techniques for categorizing plants, encompassing morphological, anatomical, and chemotaxonomic classification. Chemotaxonomy is a modern approach to plant classification that involves studying the chemical diversity of plants and using this information to understand their evolutionary relationships. The interdisciplinary fields of chemotaxonomy and comparative phytochemistry focus on analyzing plant chemicals to categorize and elucidate evolutionary connections among different plant species. In chemotaxonomy, phytochemical variation among plants is systematically studied. Chemotaxonomy has made substantial contributions to taxonomic research. This chapter explores the basic principles, approaches, uses, and prospects for comparative phytochemistry and chemotaxonomy. © 2025 John Wiley & Sons, Inc. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002110716&doi=10.1002%2f9781394203680.ch17&origin=inward&txGid=fbb859dd11c6a568ef6c851b09117518>



TITLE:

Development of an Operationally
Efficient and Cost-Effective System
for Removal of Dye from
Wastewater Using Novel
Adsorbent(Article)

AUTHOR :

Topare, N.S.,Raut-Jadhav, S.,Khan, A.

JOURNAL NAME:

Engineering Proceedings

DETAILS:

Published on 2024



ABSTRACT:

An important contributor to environmental degradation is the industrial revolution, which has occurred in developed and developing nations. The present investigation aimed to tackle the escalating apprehensions regarding the discharge of various types of dyes from the paint, textile, and dyeing sectors. This research focuses on the adsorption performance of a newly developed system that uses cotton pod shell powder (CPSP) as a novel adsorbent to remove dye industry wastewater. The system has been designed, manufactured, and tested to be operationally efficient and cost-effective. The CPSP is a new adsorbent with desirable properties such as favorable functional groups and porosity, and analysis of its functional groups and porous nature was carried out using FTIR and SEM. The experimental data from the developed system showed that inlet dye concentration (50, 100, and 150 ppm), bed height (10, 20, and 30 cm), and flow rate (10, 15, and 20 mL/min) significantly affect the adsorption of dye industry wastewater by CPSP. Breakthrough curves were shown to be flow rate and bed depth dependent, according to the data. Significant experimentation was conducted on the developed system, and under optimized conditions. It was shown that the breakthrough point was affected by both bed height and flow rate. Evidence suggested that decreasing flow rate and concentration and raising bed height led to improved breakthrough and exhaustion times. At a concentration of 100 ppm and a flow rate of 15 mL/min, a bed depth of 20 cm was found to have the highest absorption capacity. Adam-Bohart, bed depth service time, and Yoon-Nelson models were utilized to examine the adsorption data. The results revealed that the developed system is effective, and the data obtained in this work can provide optimum operating conditions, suggesting its scalability to an industrial level for dye removal from wastewater by adsorption using CPSP as a novel adsorbent. © 2024 by the authors. Licensee MDPI, Basel, Switzerland.

Link- <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003595233&doi=10.3390%2fengproc2024076102&origin=inward&txGid=c003353fbf3994b632e11318fc219b1f>



TITLE:

A Critical Review on Parameters
Affecting the Feasibility of
Underground Hydrogen
Storage(Review)

AUTHOR :

Bagchi, C.,Patwardhan, S.D.,
Iglauer, S.,Ben Mahmud, H.,
Ali, M.F.J

JOURNAL NAME:

ACS Omega

DETAILS:

Published on 1 April 2025



ABSTRACT:

The need and demand for energy are ever increasing with the rapid urbanization of the global population. Near-future economic development and consequent expected industrialization are the strongest indicators of the rising energy requirement. Though fossil fuel and coal are catering toward a major chunk of energy demand, their negative or adverse impact in terms of emission of greenhouse gases (GHGs) and carbon dioxide (CO₂) is causing global warming and imbalance in environmental conditions, leading to a search for commercially viable alternate energy types. As renewable energies like solar and wind are weather-dependent, the search for an alternate energy supply needs to be done even more urgently. Hydrogen (H₂), being a carrier of alternate energy and not an energy source, can deliver or store a significant amount of energy. The stored energy can be utilized for the generation of power, electricity, and heat. Further, hydrogen is very pure in nature and therefore is widely useful from a flexibility and efficiency standpoint. It represents the predominant constituent within the natural environment, totaling about three-fourths of the universe. Storage of hydrogen has gained significance in recent times, and subsurface storage is being looked upon as a viable alternative. However, the successful storage of hydrogen in the subsurface is a function of critical parameters like wettability, capillary pressure, relative permeability, diffusion, microbial activities, etc., which themselves are dependent upon rock types with their corresponding mineralogical compositions, along with associated pressures and temperatures. This work critically reviews the impact that these parameters would have on the storability of hydrogen in the subsurface, evaluates the best possible solution, and recommends a future course of action through insights derived, which need to be considered while considering underground hydrogen storage. © 2025 The Authors. Published by American Chemical Society.

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TITLE:

Harnessing biochemical innovations for sustainable oil recovery: perspectives from the Indian context on green enhanced oil recovery (GEOR) methods for matured petroleum fields(Review)

AUTHOR :

Kothawade, T.R.,Deshmukh, M.,Kumar, G.,Pathan, A.,Sangwai, J.

JOURNAL NAME:

Environmental Science and Pollution Research

DETAILS:

Published on March 2025



ABSTRACT:

Green enhanced oil recovery (GEOR) has emerged as an eco-friendly alternative to conventional oil recovery techniques, offering a more sustainable way to increase oil extraction while minimizing environmental harm. This review focuses on the potential of biochemicals, particularly biopolymers, and biosurfactants, in improving oil recovery in Indian oilfields. While these biochemicals, such as xanthan gum, scleroglucan, and HEC, have shown promising results in global oilfields, their application in India remains largely unexplored. By comparing the characteristics of Indian reservoirs with successful international case studies, this review highlights the feasibility and advantages of biopolymer-based EOR methods in India's unique reservoir conditions, including high temperatures, salinity, and other challenges. Despite the proven benefits of biopolymers, such as their environmental sustainability and operational efficiency, they have not yet been widely adopted in Indian oilfields. The review identifies key research gaps, including the need for a deeper understanding of microbial and biopolymer interactions, and stresses the importance of developing sustainable and cost-effective production methods for biopolymers. The findings suggest that integrating biopolymers into India's oil recovery processes could not only enhance extraction rates but also contribute to greener, more efficient practices. This review provides a comprehensive overview of the current state of biopolymer-based EOR and outlines future research directions, contributing to the development of more sustainable oil recovery techniques tailored to India's specific needs. © The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2025.

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TITLE:

Digital Defence: Harnessing the Power of Artificial Intelligence for Cybersecurity and Digital Forensics

AUTHOR :

Kumar, A., Chaudhary,
N.K., Shastri, A.S., Singh,
M., Kulkarni, A.J.

JOURNAL NAME:

Digital Defence: Harnessing the Power of Artificial Intelligence for Cybersecurity and Digital Forensics

DETAILS:

Published on 1 January 2025



ABSTRACT:

This book aims to provide a comprehensive overview of the applications of Artificial Intelligence (AI) in the area of Cybersecurity and Digital Forensics. The various chapters of this book are written to explore how cutting-edge technologies can be used to improve the detection, prevention, and investigation of cybercrime and help protect digital assets. Digital Defence covers an overview of deep learning and AI techniques and their relevance to cybersecurity and digital forensics, discusses common cyber threats and vulnerabilities, and how deep learning and AI can detect and prevent them. It focuses on how deep learning/artificial learning techniques can be used for intrusion detection in networks and systems, analyze and classify malware, and identify potential sources of malware attacks. This book also explores AI's role in digital forensics investigations, including data recovery, incident response and management, real-time monitoring, automated response analysis, ethical and legal considerations, and visualization. By covering these topics, this book will provide a valuable resource for researchers, students, and cybersecurity and digital forensics professionals interested in learning about the latest advances in deep learning and AI techniques and their applications. © 2025 selection and editorial matter, Ahlad Kumar, Naveen Kumar Chaudhary, Apoorva S. Shastri, Mangal Singh, Anand J. Kulkarni; individual chapters, the contributors.

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TITLE:

Analysing the Building Information Modeling for Construction in India – A Review (Conference Paper)

AUTHOR :

Sawant, S., Salgude, R., Shekokar, S., Dalvi, S.

JOURNAL NAME:

Lecture Notes in Civil Engineering

DETAILS:

Published on 12 August 2023



ABSTRACT:

This review article investigates the usage of Building Information Modelling (BIM) in Indian building projects. BIM, which allows building experts to generate digital models of structures, has gained popularity in recent years due to its ability to make construction more effective and efficient. This study thoroughly examines BIM and its potential to enhance Indian building methods. The introduction of BIM in India, including its adoption in the construction industry and the process followed to find relevant literature, are covered in the article's opening paragraphs. The numerous levels and dimensions of BIM and literature related to BIM in India are then discussed. This attempt also describes advantages, including enhanced project coordination, decreased construction time and costs, and better design and construction accuracy and disadvantages. The absence of standards and the need for specialized training for construction experts are only two difficulties in adopting BIM in India covered in the article. The review is concluded with a discussion of the possible effects that BIM may have on the building sector in the future of India. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

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TITLE:

Investigating the asymmetric impact of renewable energy consumption and trade openness for carbon emission abatement using N-ARDL approach: a case of India(Article)

AUTHOR :

Roy, H.,Rej, S.,Rajaiah, J.

JOURNAL NAME:

Management of Environmental Quality

DETAILS:

Published on 15 April 2025



ABSTRACT:

Purpose: This study investigates the asymmetric influence of renewable energy consumption (REC) and trade openness (TO) in the pathway of decarbonizing of Indian economy.

Design/methodology/approach: By exploiting fifty years of annual time series data spanning from 1970 to 2019 with the augmentation of nonlinear autoregressive distributed lag technique with the consideration of GDP and industry value added (IVA) as control variables. **Findings:** Our This research not only demonstrates the asymmetric association among the employed variables but also shows that negative shock to REC stimulates emissions, where as positive shock on the same policy variable promotes environmental quality improvement. Negative shock to TO is found to be associated with the corresponding increase of environmental quality, but the positive shock on the same intensifies environmental pollution. IVA is also found to be associated with intensifying environmental squalor. In addition, the research provides the empirical evidence of existence of “EKC” hypothesis in India as long-run coefficient associated with GDP looks smaller than short-run coefficient of GDP. **Research limitations/implications:** It was difficult to include may other causal variables due to nonavailability of data pertaining to those variables. **Practical implications:** Moreover, some policy guidelines have also been recommended for India at the end that may aid India to achieve net zero emissions by 2070.

Originality/value: This is an original research paper carried out by the authors and has not yet been submitted elsewhere. © 2023, Emerald Publishing Limited.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002568959&doi=10.1108%2fMEQ-01-2023-0012&origin=inward&txGid=91a08921aeda34802f427c140d94d74e>



TITLE:

Nature exposure and telomere length: A pathway to slower ageing and improved longevity(Review)

AUTHOR :

Mohol, P.,
Ghosh, A.,Kulkarni, S.,Madhavi,
N.,Jagtap, S

JOURNAL NAME:

Multidisciplinary Reviews

DETAILS:

Published on 2025



ABSTRACT:

Modern urban lifestyles often limit interactions with natural environments, contributing to negative health outcomes, including accelerated biological ageing. This review explores the relationship between nature exposure and telomere length, a critical biomarker of cellular ageing, and evaluates nature-based interventions such as greenspace exposure, forest bathing, and gardening in promoting longevity and well-being. A comprehensive literature search was conducted using PubMed, Scopus, Web of Science, and Google Scholar, analyzing observational, experimental, and meta-analytic studies. Findings indicate a strong association between regular engagement with natural environments and improved physical and mental health. Exposure to nature is linked to lower stress levels, enhanced cognitive function, and improved cardiovascular health, which collectively contribute to slower biological ageing. Furthermore, individuals residing in greener areas exhibit longer telomere lengths and reduced mortality rates, particularly from respiratory and cardiovascular diseases. Mechanistically, the benefits of nature exposure are attributed to reductions in oxidative stress, inflammation, and chronic stress, all of which are known contributors to telomere shortening. Despite these promising outcomes, several limitations exist. The predominance of observational studies makes it difficult to establish causality, and the exclusion of non-English studies may limit the generalizability of findings. Additionally, variations in study designs, differences in measuring nature exposure, and the influence of lifestyle factors present challenges in drawing definitive conclusions. This review highlights the need for integrating nature-based interventions into public health policies to promote healthy ageing and disease prevention. Future research should prioritize longitudinal studies and mechanistic investigations to better understand the biological pathways linking natural exposure to telomere preservation. By advocating for urban green spaces and nature-focused lifestyle modifications, this study underscores the potential of nature as a fundamental element of preventive healthcare and longevity enhancement. © 2025, Malque Publishing. All rights reserved.

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TITLE:

Passive battery thermal management of lithium ion battery using nano-enhanced phase change material: an experimental study(Article)

AUTHOR :

Hadawale, P.,
Sathe, A.

JOURNAL NAME:

Engineering Research Express

DETAILS:

Published on 30 June 2025



ABSTRACT:

This study examines the efficacy of phase change material (PCM) and nano-enhanced phase change material (NePCM) in regulating the thermal dynamics of lithium-ion batteries (LiBs) during rapid discharges. Lithium-ion batteries produce significant heat at high discharge rates, potentially resulting in performance decline and safety hazards, such as thermal runaway. To resolve this issue, layers of PCM (RT44HC) and NePCM were implemented around the battery cell, and their thermal performance was assessed at discharge rates of 1C, 2C, and 3C. Temperature profiles were examined under three conditions: bare cell (lacking thermal management), PCM, and NePCM. The findings indicate that both PCM and NePCM effectively mitigate temperature increases, with NePCM consistently exhibiting enhanced performance. At 1 °C, NePCM diminished the temperature increase by 33.3%, whereas at 3 °C, it attained a 21.3% reduction relative to the uncoated cell. The improved performance is due to the augmented thermal conductivity offered by nanoparticles in NePCM, enabling expedited and more uniform heat dissipation. NePCM demonstrated significant advantages at elevated discharge rates, where thermal management requirements are paramount. NePCM presents a viable solution for enhancing battery safety and operational stability, rendering it appropriate for use in electric vehicles and high-energy storage systems. © 2025 IOP Publishing Ltd. All rights, including for text and data mining, AI training, and similar technologies, are reserved.

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TITLE:

Flexible PVDF-HFP, Nickel MOF-based Hybrid Membrane as an Efficient Electrolyte for Lithium-Ion Batteries(Article)

AUTHOR :

Potdar, A.,
Biswas, S.,Thapa, D.K.,Kale,
B.,Kulkarni, M.V.,

JOURNAL NAME:

European Journal of Inorganic
Chemistry

DETAILS:

Published on 23 May 2025



ABSTRACT:

The present investigation demonstrates a highly stable composite polymer electrolyte (CPE) membrane (NiPF6), designed to enhance the performance of solid-state lithium-ion batteries. The new CPE membrane has been fabricated by the blending of Ni-BDC metal-organic framework (MOF) (BDC: 1,4-benzenedicarboxylate), lithium salt, and PVDF-HFP (poly (vinylidene fluoride-co-hexa fluoropropylene)). The XRD of the CPE membrane clearly shows the presence of 2D Ni-BDC MOF. The mechanical properties and flame test validate the robustness of the membrane. The detailed morphological study of the membrane shows the presence of a porous surface and a layered structure. The CPE membrane exhibits a high ionic conductivity i. e. 1.5×10^{-4} S/cm at room temperature, which has increased to 5.99×10^{-4} S/cm at 55 °C.

Considering the high ionic conductivity of the CPE membrane it has been used as an electrolyte for Li-ion cells. The Li-ion cell fabricated using the Ni-BDC CPE membrane has achieved a discharge capacity of 169.52 mAh/g @ 0.1 C rate, with impressive capacity retention(97 %). The cell showed a 149 mAh/g discharge capacity @1 C with 85 % retention over 300 cycles. Further, it delivered a capacity of around 128.55 mAh/g @ 2 C with 81 % capacity retention at 200 cycles. This enhancement is attributed to the incorporation of 2D Ni-BDC MOF, which has a porous and layered structure that might significantly improve the Li-ion conduction path. Hence, the enhancement in ionic conductivity is self-explanatory. The stable Li-ion conduction path might be formed at a higher C rate, hence the retention capacity has been increased @2 C rate compared to 1 C. More significantly, this is a promising approach for advancing solid-state lithium-ion battery technology by using new composite polymer electrolytes with efficient performance at room temperature. © 2025 Wiley-VCH GmbH.

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TITLE:

Cloud-based optimized deep learning framework for automated glaucoma detection using stationary wavelet transform and improved grey-wolf-optimization with ELM approach(Article)

AUTHOR :

Muduli, D.,Yaqoob,
S.I.,Sharma, S.K.,Kanade,
A.S., Shameem, M.,

JOURNAL NAME:

Results in Engineering

DETAILS:

Published on June 2025



ABSTRACT:

Glaucoma, a progressive eye disease, can cause irreversible vision loss if not detected early. Timely diagnosis is crucial, especially in underserved areas where machine learning and cloud technology can offer a viable solution for remote glaucoma screening. This study presents an automated eHealth system designed to enhance early glaucoma detection and mitigate its impact. The proposed model follows a multi-stage approach, beginning with the application of a stationary wavelet transform (SWT) for image preprocessing and augmentation. The augmented fundus images are subsequently processed through four convolutional neural network (CNN) models—ResNet50, InceptionV3, VGG16, and Xception—to extract deep features, which are then combined into a final feature matrix. To optimize the data for the next stage, principal component analysis (PCA) is applied to reduce the feature dimensions. Finally, an improved gray wolf optimization algorithm integrated with an extreme learning machine (IMGWO-ELM) classifies the images as either healthy or glaucomatous. This optimization enhances generalization and reduces overfitting, making the model a promising tool for advancing glaucoma diagnosis. The model's performance was evaluated in a cloud-based environment using two datasets: ORIGA and G1020. These datasets contain fundus images of individuals with and without glaucoma. We compared a stand-alone system with a cloud-based setup utilizing three virtual machines (4 vCPU–16 GB RAM, 8 vCPU–32 GB RAM, and 16 vCPU–64 GB RAM). A five-fold, ten-run cross-validation was employed across both configurations. The cloud setup with 16 vCPU–64 GB RAM achieved superior classification accuracies of 93.8% on the G1020 dataset and 96.74% on ORIGA. The deep CNN classifiers demonstrated exceptional performance, achieving a recall of 0.99 and an ROC score of 1.00, indicating perfect classification metrics. This study advances glaucoma detection by showcasing the efficacy of the ELM and CNN models, offering a promising direction for future research and improved patient outcomes. © 2025

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TITLE:

A Multimodal Deep Learning Approach for Emotion Recognition in a Diverse Indian Cultural Context(Conference Paper)

AUTHOR :

Karani, R.,
Harkare, V.,Kamath, K.,Gupta, K.,Shukla,
O., Desai, S.

JOURNAL NAME:

Lecture Notes in Electrical Engineering

DETAILS:

Published on 29 December 2023



ABSTRACT:

This paper introduces a robust and efficient multimodal deep learning network for human emotion recognition that integrates audio and visual data, among Indian population. The proposed approach is applied on custom built audio-visual dataset consisting of 122 videos of 61 Indian participants in the age group of 18–21 years, of which 36 were male and 25 were female, capturing a wide spectrum of emotional expressions across Indian population. The core of our study revolves around a hybrid machine learning-deep learning network, systematically evaluated at multiple stages of development. A key achievement is the introduction of a multimodal model that synthesizes audio and visual modalities, providing a holistic understanding of emotional expressions. Machine Learning algorithms such as XGBoost, and DCNN models such as ResNet50, were tested for audio and visual modality simulation respectively. Our results demonstrate the effectiveness of this approach, with the best multimodal model achieving a training accuracy of 0.9143 and a validation accuracy of 0.8489. We also explore architectural variations, revealing potential improvements. This work has the potential to significantly enhance human–computer interaction, affective computing, and sentiment analysis, providing a more comprehensive understanding of culturally diverse human emotions. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105001389668&doi=10.1007%2f978-981-97-9507-9_22&origin=inward&txGid=4b73e1f763b2658bc6339a2d5f536b9e



TITLE:

Enhanced Road Defect Detection with
Deep Learning: Integrating Surface
Texture Analysis and Background
Subtraction(Conference Paper)

AUTHOR :

Chakurkar,
P.,Vora,
D.,Jain, P.,
Jain, S

JOURNAL NAME:

1st International Conference on
Sustainable Energy Technologies and
Computational Intelligence: Towards
Sustainable Energy Transition,
2025

DETAILS:

Published on 23 February 2025



ABSTRACT:

Maintenance of roads is necessary for the enhancement of safety standards and reduction of overall costs incurred from using a vehicle. Fusing computer-aided techniques to high-resolution photography allows for a more accurate assessment of the condition of the road. This research presents a new approach in the classification of imperfections found on a road's surface to optimize the upkeep of the said road. It utilizes texture analysis along with the removal of the backdrop. According to the research, MobileNetV2 and VGG16 net deep learning models are accurate at classifying the condition and type of surface a road has. The comparison provided some fascinating data. Transformation of maintenance procedures with the use of advanced maintenance is now possible because of how these models outperform existing methods. Claiming the use of light weight deep learning models for the preliminary assessment of road surface over standard models improves accuracy by more than five percent has proven changes in the framework and metric associated to the identification and diagnosis of issues concerning the quality of the surface to be more concentrated. This analysis will ultimately yield more effective maintenance programs. This is what will make road, infrastructure safer and more durable. © 2025 IEEE.

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TITLE:

Strategic waste management practices for environmental sustainability – a case of Indian university(Article)

AUTHOR :

Sawalkar, R.S., Undale, S.,Muluk, S.,
Mude, G.,Saxena, V.D.,Pasumarti, S.

JOURNAL NAME:

Management of Environmental Quality

DETAILS:

Published on 15 April 2025



ABSTRACT:

Purpose: Individuals generate plenty of waste that is affecting the life while consumption of air and water at the base. The increasing industrialization, population and waste generation without proper measures of waste management are leading to major challenges to environmental sustainability. Considering these challenges, the present study focuses on the types and sources of waste generation and waste reduction by encouraging the reduction, recycling and reuse of waste products. The study aims to provide a well-functioning sustainable waste management system, that incorporates feedback loops, focuses on processes, embodies adaptability and diverts waste from disposal.

Design/methodology/approach: The university under study is situated at the central location of Pune City in India. The university has diverse units like academic and admin buildings, canteens and mess, hostels, a clinic, workshops and gardens. To fulfil the objective of this study a qualitative case study approach of research was adopted. A total of thirty-three representatives and waste management personnel from various units of the university were interviewed. The interviews were semi-structured and the duration of it was around 25–55 min. The interview transcripts were coded, and qualitative analysis was conducted.

Findings: This study proposes a strategic sustainable waste management model for environmental sustainability that brings circularity by closing the loops and focusing on sustainable development goals.

Practical implications: The findings of this research can guide universities to manage the waste generated through various sources and attain sustainable development goals and environmental sustainability at large by closing the loops. The study provides insights into waste management and environmental sustainability. The universities can make their resources more circular by following the strategies of reducing, reusing and recycling (3R). This study recommends customization according to the needs of specific universities and institutions. Researchers can take this study further by testing and customizing it as per requirement. Also, an effort can be extended to implement the model in other related areas.

Originality/value: This research is a unique attempt to advance knowledge of waste management practices for sustainable development by exploring different techniques opted by for individual entities from the university campus to understand the environmental impact. © 2023, Emerald Publishing Limited.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002494942&doi=10.1108%2fMEQ-07-2022-0201&origin=inward&txGid=61320e31c2e1d33fa673e70927a324cc>



TITLE:

Lifestyle Modifications for the
Management of Migraine Pain

AUTHOR :

Nigade, A., Pathak,
G., Baidya, M., Bhatt, S.

JOURNAL NAME:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

A common neurological condition, migraine pain have a substantial impact on public health worldwide. Although the exact cause of migraine attacks is yet unknown, there may be a connection between dietary practices and the frequency, intensity, and start of migraine attacks. This thorough analysis examines the complex interplay between dietary variables and migraine, illuminating the functions of different food ingredients, dietary patterns, and lifestyle decisions. Certain foods like histamine, phenylethylamine, and tyramine enhance the risk of migraine. Apart from specific dietary elements, the chapter discusses the importance of general dietary patterns such as the Mediterranean diet, low-fat diets, and the ketogenic diet in affecting migraine outcomes. Moreover, drinking habits may have a big impact on the frequency and intensity of migraine attacks. The chapter also highlighted the role of drinking alcohol and consuming caffeine on migraine attack. Additionally, emphasized are the possible advantages of specific dietary interventions and the impact of weight control on the frequency of migraine attacks. In the end, the complex relationship between dietary practices and migraine, laying the groundwork for future research avenues and giving medical professionals insightful information to help them develop comprehensive migraine management plans. Comprehending the intricate relationship between nutrition and migraine not only advances our understanding of the illness but also opens the door to customized dietary treatments that could lead to more successful migraine treatment and preventative tactics. This chapter also discussed about the role of smoking, sleeping, yoga and meditation, physical activity, and stress on migraine. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024..

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TITLE:

Double trouble: How AI efficiency is boosting speed but burdening team leaders and bypassing quality

AUTHOR :

Agrawal, A.,
Ali, S

JOURNAL NAME:

Development and Learning in Organizations

DETAILS:

Published on 2025



ABSTRACT:

Purpose: The article explores the impact of the usage of AI (Artificial Intelligence) in the workplace and the burden it brings to leaders in ensuring quality. It also discusses the growing reliance on AI and its effect on team dynamics, especially how it affects productivity, collaboration, and authenticity. **Design/methodology/approach:** This conceptual article draws insights from both existing literature and professional practice. It discusses human–AI interactions and their implications for leaders in tackling the associated challenges for task fulfillment, quality control, and dealing with AI free-riders. **Findings:** While AI can significantly increase workplace efficiency, it is enhancing the burden on team leaders. The rise of AI free-riders demotivates contributing members and hence creates imbalances in team dynamics. This causes an increased workload for leaders to validate authenticity and ensure quality. The article proposes a 4-step framework to overcome these challenges, including transparency, collaboration, balance, and acceptance. **Originality/value:** The article proposes a nuanced view of the issues posed by AI free-riders in team dynamic settings. It further discusses how team leaders can effectively address such issues by offering a practical framework that can enhance human-AI collaboration. © 2025, Emerald Publishing Limited.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002368889&doi=10.1108%2fDLO-11-2024-0344&origin=inward&txGid=461cbd8a6ed80afeb3d82342c9a2cf14>



TITLE:

A “new deal” for a sustainable future: enhancing circular economy by employing ESG principles and biomimicry for efficiency(Article)

AUTHOR :

Wamane, G.V.

JOURNAL NAME:

Management of Environmental Quality

DETAILS:

Published on 15 April 2025



ABSTRACT:

Purpose: The paper aims to explore the model of circular economy for promotion of principles of social inclusion, empathetic governance, and economic sustainability environmental resilience by examining the research gap on how to employ Environment, Social and Governance (ESG) framework, principles of biomimicry and reimagining an economic model of resourcefulness. **Design/methodology/approach:** The paper is a descriptive study based on review of literature. To analyse the research gaps, paper employs bibliometric research technique, well-accepted meta-analytical research of literature to find overlapping factors of relevance by examining most-cited authors, papers, as well as co-citation patterns (Kim, 2008). The method analyses the published data texts, information like authorship, citations, keywords, and illustrating linkages between and among articles about certain research topic (Fetscherin, 2012). **Findings:** Data were sourced from collection archival database of JSTOR, Web of Science and J-Gate till December 2022, by searching with following string – “Circular Economy,” “ESG (Environment, Social and Governance),” “Biomimicry,” “Circular Economy and ESG,” “Circular Economy and Biomimicry,” “Circular Economy and Resourcefulness.” The selection of said string of words was based on the literature review, overlaps and the research questions formulated. The findings reflect common factors of overlaps and its coherence in domain of policy formulation for the circular economy. **Research limitations/implications:** The research approach needs to be tested for practical application with stakeholders which includes individual-community for necessary behavioural change/acceptance, policy measures, innovations for scalability and the new business models so that the changes become an integral part of DNA of new economic model. **Practical implications:** Emphasis on reimagined alliance between the environment, economy, and society to achieve the triple bottom line for a sustainable future. In doing so mitigate the impact on nature, generate livelihood opportunities and institute a green industry with an emphasis on circularity by incorporating the principles of ESG, biomimicry and resourcefulness. **Originality/value:** The paper addresses the developing frontier of circular economy by identifying and mapping the factors of overlap with principles of ESG and biomimicry with circular economy for a future which is sustainable and resourceful. It attempts to advance the domain of knowledge with suggestion for implementable policy initiative arising from the study. © 2023, Emerald Publishing Limited.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002491315&doi=10.1108%2fMEQ-07-2022-0189&origin=inward&txGid=25d9bcd6e69daf6603e9cfe09c0e09d3>





TITLE:

A Review on Predicting Failure in Industrial Machines: Its Methods, Challenges and Future Direction(Conference Paper)

AUTHOR :

Singh, A.,
Bobde, S.

JOURNAL NAME:

2025 1st International Conference on AIML-
Applications for Engineering and
Technology, ICAET 2025

DETAILS:

Published 17 January 2025



ABSTRACT:

Predicting various system failures and optimizing maintenance strategies are important for improving reliability, safety, and efficiency, as well as reducing downtime of different machines such as metro trains, electric motors, industrial machinery, etc. This paper reviews 15 studies on failure classification and RUL prediction using various machine learning and deep learning algorithms and their combinations. The reviews have multiple limitations like imbalanced classes, large multivariate time series data, Feature selection, reliance on synthetic data, outlier detection, limited labeled data, missing data, etc. This paper primarily tries to recommend how to solve these issues and focuses on the advancements in predictive accuracy through the use of hybrid and ensemble models, as well as the significance of effective data collection and feature extraction. Also, the paper discusses the role of explainable AI methods in improving model interpretability which helps us in feature selection telling us which feature is contributing more to the failure. Future research directions aim to address these gaps by contributing to the development of robust, scalable, and interpretable failure prediction frameworks. However, to resolve various limitations identified, some can be addressed through the integration of hybrid models and explainable AI (XAI) methods, which this paper seeks to explore and recommend. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002450768&doi=10.1109%2fICAET63349.2025.10932305&origin=inward&txGid=b2fd3fc7019f587d52ecec1e02d5efbc>





TITLE:

Implementation of a Safety Device for
Women and Emergency
Situations(Conference Paper)

AUTHOR :

Deshpande, A.D.,Malwade,
S.,Mungade, S.S.,Kakade,
S.M.,Vyas, A.S.

JOURNAL NAME:

2025 1st International Conference on AIML-
Applications for Engineering and
Technology, ICAET 2025

DETAILS:

Published on 17 January 2025



ABSTRACT:

In the contemporary world, individuals often live with uncertainty regarding their safety and security from one moment to the next. Women, particularly those from the working class or those pursuing education away from home, frequently experience insecurity about their safety. They worry about the possibility of someone following them, behaving inappropriately, or acting with malicious intent. The idea of a safety device tailored for women arose in response to the urgent demand for enhanced safety and security measures, particularly in urban settings where personal safety is often a prominent concern. Individuals equipped with the safety device can confidently engage in their daily activities, reassured by the knowledge that they possess a discreet tool for summoning assistance or documenting evidence in the event of a threatening situation. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002438527&doi=10.1109%2fICAET63349.2025.10932282&origin=inward&txGid=778c08fe74c24a5edca312cff484cfc8>



TITLE:

Role of non-performing assets in Indian banking industry - A critical review with special reference to select public sector banks in India

AUTHOR :

Shankar, U., Khisti,
D., Chodisetty, C.M.R.S

JOURNAL NAME:

Digital Transformation and Sustainability of
Business

DETAILS:

Published on 1 January 2025



ABSTRACT:

Purpose: A non-performing asset (NPA) is a loan or advance for which the principal or interest payment remained overdue for a period of 90 days. **Description:** Banks are required to classify NPAs further into substandard, doubtful and loss assets. The well-being of a nation's financial framework might be measured by taking a gander at its degree of non-performing resources. This examination means to analyze the job that some Indian public area banks have had in the country's financial development all through the years 2018-2023. **Design/methodology/approach:** This exploration centers around five explicit Indian public areas banks and uses optional information mined from the Hold Bank of India's site for the years 2018 and 2020. We are using some statistics like correlation, regression & OLS for future prediction. **Originality/value:** This is a fascinating study since it covers the time just after the 2008 financial crisis. No prior research has used this particular tack in examining the banking industry. There are two ways in which this study is helpful. Investors may find this data interesting, given the problem of bad loans is one that directly affects their capacity to make money from banking, and hence their long-term prospects. **Findings:** When opposed to nationalized banks, public sector banks have a slower rate of non-performing asset growth. Bank profitability drives both the gross NPA and net NPA rates. © 2025 selection and editorial matter, Sai Kiran Oruganti, Dimitrios A Karras, Srinesh Singh Thakur, Janapati Krishna Chaithanya, Sukanya Metta and Amit Lathigara; individual chapters, the contributors.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001746433&doi=10.1201%2f9781003606185-166&origin=inward&txGid=ebc845bf827488b5791934f386186830>



TITLE:

Advancements in Non-Noble Metal
Based Plasmonic Materials for
Sustainable Nitrogen
Photofixation(Review)

AUTHOR :

Thapa, D.K.,
Biswas, S.

JOURNAL NAME:

Advanced Sustainable Systems

DETAILS:

Published on April 2025



ABSTRACT:

Ammonia is vital for industries, especially agriculture, where it is used in fertilizers to boost crop yields. Globally, about 176 million tons of ammonia is produced annually. Its synthesis relies on the Haber-Bosch process, which is energy-intensive ((Formula presented.), 150 atm) and environmentally unsustainable. This has sparked considerable interest in developing alternative, more sustainable approaches for nitrogen fixation. One promising area of research is plasmonics. Plasmonics explores light interaction with nanomaterials, traditionally using noble metals like gold and silver, which are costly and scarce for large-scale use. Alternative materials such as bismuth, aluminum, and metal oxides exhibit plasmonics, providing a more sustainable and affordable solution for industrial applications. Recent research have focused on optimizing these non-noble metal plasmonic materials for sustainable nitrogen fixation. This review offers in-depth understanding of plasmonics in both noble and non-noble metals. The review then delves into the mechanisms of photocatalytic processes, particularly hot carrier generation, offering insights into their role in enhancing catalytic efficiency. Furthermore, the review highlights cutting-edge research on photocatalytic nitrogen fixation, emphasizing the use of alternative plasmonic materials as a sustainable approach to ammonia synthesis. Finally, it identifies challenges, suggests solutions, and sets the stage for advancing plasmonic photocatalysis. © 2025 Wiley-VCH GmbH.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002646754&doi=10.1002%2fadsu.202400954&origin=inward&txGid=7720c32a48c7abd9b65e2012a3a000fc>



TITLE:

Exploring the evolution of 5D and 6D printing: Current progress, challenges, technological innovations, and transformative biomedical applications(Review)

AUTHOR :

Dargude, S.,
Shinde, S.,Jagdale, S.,
Polshettiwar, S.,Rajput, A.

JOURNAL NAME:

Hybrid Advances

DETAILS:

Published on September 2025



ABSTRACT:

The evolution of additive manufacturing (AM) has led to the development of 4D printing, enabling 3D printed structures to dynamically alter shape in response to external stimuli, thereby improving mechanical properties and patient-specific applications. However, limitations persist in achieving complex geometry elements with high mechanical strength. To address these challenges, enhancement in the printing process and the use of multi-responsive smart materials are essential. The emergence of 5D printing, which combines additive and subtractive manufacturing, has advanced medical design by enhancing structural integrity and surface quality. As AM technology continues to evolve, 5D and 6D printing represent breakthroughs in biomedical engineering. By integrating the dynamic adaptability of 4D printing with the precision of 5D printing, 6D printing offers the potential for patient-specific interventions, particularly in biomedical applications. This review article evaluates the progress made in developing AM technologies, particularly 5D and 6D printing, highlighting the significant growth in healthcare due to the development of materials and technologies that respond to specific clinical demands. © 2025 The Authors

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001695430&doi=10.1016%2fj.hybadv.2025.100470&origin=inward&txGid=4e7d86782cf41d2b89402eaa9733f67a>



TITLE:

Enabling Tactile Internet via 6G:
Application Characteristics,
Requirements, and Design
Considerations(Review)

AUTHOR :

Chaudhari, B.S.

JOURNAL NAME:

Future Internet

DETAILS:

Published on March 2025



ABSTRACT:

With the emergence of artificial intelligence and advancements in network technologies, the imminent arrival of 6G is not very far away. The 6G technology will introduce unique and innovative applications of the Tactile Internet in the near future. This paper highlights the evolution towards the Tactile Internet enabled by 6G technology, along with the details of 6G capabilities. It emphasizes the stringent requirements for emerging Tactile Internet applications and the critical role of parameters, such as latency, reliability, data rate, and others. The study identifies the important characteristics of future Tactile Internet applications, interprets them into explicit requirements, and then discusses the associated design considerations. The study focuses on the role of application characteristics of various applications, like virtual reality/augmented reality, remote surgery, gaming, smart cities, autonomous vehicles, industrial automation, brain-machine interface, telepresence/holography, and requirements in the design of 6G and the Tactile Internet. Furthermore, we discuss the exclusive parameters and other requirements of Tactile Internet to realize real-time haptic interactions with the help of 6G and artificial intelligence. The study deliberates and examines the important performance parameters for the given applications. It also discusses various types of sensors that are required for Tactile Internet applications. © 2025 by the author.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001230937&doi=10.3390%2ffi17030122&origin=inward&txGid=f23c5c7edc3393f25f39f911c152aa31>



TITLE:

A Critical and Comparative Study
of Layered Cylindrical Hollow
Roller Bearing Using Numerical
and Experimental Analyses for
the Assessment of Static Load
Carrying Capacity(Article)

AUTHOR :

Solanki, M.T.,
Vakharia, D.P

JOURNAL NAME:

Journal of Tribology

DETAILS:

Published on 1 July 2025



ABSTRACT:

The fatigue life of rolling bearings is a critical factor in their selection and application, driving ongoing research aimed at enhancing their performance. Among the solutions explored, the introduction of hollow rollers has been noted for their lighter weight and reduced stress. However, experimental results have shown that hollow rollers can suffer catastrophic failures under low static loading conditions. Recent studies have demonstrated that layered cylindrical hollow rollers (LCHRs) outperform both conventional solid and hollow cylindrical rollers under similar loading conditions. This warrants further investigation into the potential benefits of LCHR. This study aims to estimate the static load carrying capacity of LCHR bearing in comparison to hollow cylindrical roller bearings having different hollowness percentage. Corrected experimental results from individual roller-on-plate tests showed excellent agreement (within 5%) with numerical analyses, validating the numerical approach. Key parameters such as von Mises stress, contact pressure, bending stress, and contact width were obtained through numerical analysis. Additionally, a static load test rig was designed and developed to estimate the static load carrying capacity of the bearings under examination. The results of full bearing sample tests for various roller types corroborated the individual roller-on-plate test findings. The observed superior static load carrying capacity and promising semi-contact width of LCHR indicate their potential for extended fatigue life compared to solid and hollow rollers. Copyright © 2024 by ASME.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001297873&doi=10.1115%2f1.4067311&origin=inward&txGid=4dadbf7aa49125352d17184d39c99f>



TITLE:

On the Characterization of Eulerian es-Splitting p-Matroids(Conference Paper)

AUTHOR :

Jagadale, U.,
Gunjal, S., Malavadkar, P., Shikare,
M.M., Waphare, B.N.

JOURNAL NAME:

Lecture Notes in Computer Science

DETAILS:

Published on 10 January 2025



ABSTRACT:

The es-splitting operation on binary bridge-less matroids never produces an Eulerian matroid. But for matroids representable over $GF(p)$, ($p > 2$), called p-matroids, the es-splitting operation may yield Eulerian matroids. In this work, we introduce es-splitting operation for p-matroids and characterize a class of p-matroids yielding Eulerian matroids after the es-splitting operation. Characterization of circuits, and bases of the resulting matroid, after the es-splitting operation, in terms of circuits, and bases of the original matroid, respectively, are discussed. We also proved that the es-splitting operation on p-matroids preserves connectivity and 3-connectedness. Sufficient condition to obtain Hamiltonian p-matroid from Hamiltonian p-matroid under es-splitting operation is also provided. © The Author(s), under exclusive license to Springer Nature Switzerland AG 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105003627819&doi=10.1007%2f978-3-031-84543-7_3&origin=inward&txGid=4452517b219091f83b5a0fb28f22da21



TITLE:

Antidepressant- and anxiolytic-like effects of linezolid in streptozotocin-induced diabetic mice via modulation of brain serotonin and plasma corticosterone activity(Article)

AUTHOR :

Marathe, C.K.,
Thorat, V.G.,Kokate, I.P.,Pawar,
A.T.,Bhatt, S

JOURNAL NAME:

Biochemical and Biophysical Research
Communications

DETAILS:

Published on 8 June 2025



ABSTRACT:

Depression and anxiety are comorbid with diabetes. Diabetes and depression have a bidirectional relationship. In this study, Linezolid was evaluated for the treatment of depression and anxiety comorbid with T2DM. Linezolid may exhibit antidepressant and anxiolytic-like effects via modulation of MAO enzyme activity. In the study, male Swiss Albino mice were divided into 9 groups (n = 70). Group 1 (normal control); Group 2 diabetes control (DC); Group 3, 4, and 5 (low, intermediate, high dose of Linezolid; LDL, IDL and HDL); Group 6 [DC + Paroxetine (PAR)], Group 7 [DC + Metformin (MET)]; Group 8 (DC + LDL + PAR); Group 9 (DC + LDL + PAR + MET). Except for the normal control group, all the other groups were induced with T2DM with Streptozotocin (50 mg/kg, i.p.) and Nicotinamide (120 mg/kg, i.p.). Mice showed glucose levels of more than 160 mg/dl were taken in the study. Following a 14-day treatment, behavioral and biochemical assessments were done using the FST, TST, EPM, and OFT, and blood glucose, plasma corticosterone, brain TNF- α and serotonin were measured. Group 3 to 9 showed their activity in behavioral models of depression and anxiety such as FST, TST, OFT, and EPM. The treatment groups (Groups 3 to 9) also have shown a significant ($p < 0.05$) decrease in blood glucose, plasma corticosterone, and brain TNF- α levels with respect to DC, while serotonin levels are increased in Groups 5, 8 & 9. The above findings suggest the beneficial effects of Linezolid in the treatment of depression and anxiety comorbid with T2DM. © 2025 Elsevier Inc.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003150405&doi=10.1016%2fj.bbrc.2025.151843&origin=inward&txGid=96c8f081c044fdcc4b1fc79082fae11f>





TITLE:

Decoding Positive Deviance Approach in the
Lens of Behavioral Genetics and Behavioral
Economics(Editorial)

AUTHOR :

Bhattacharya, S.,Tripathi, S.,
Kumar, U.,Singh, S.,Ramanathan,
V.,Singh, A.

JOURNAL NAME:

Medical Journal of Dr. D.Y. Patil
Vidyapeeth

DETAILS:

Published on 1 January 2025



ABSTRACT:

[No abstract available]

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105001645411&doi=10.4103%2fmjdrdypu.mjdrdypu_782_24&origin=inward&txGid=b8d07438a60bc2b2f2244ca49358df00



TITLE:

Cosmeceuticals from the Sea

AUTHOR :

Polshettiwar,
S., Chapadgaonkar,
S.S., Kannur, D., Musale,
V., Kabra, S.

JOURNAL NAME:

Handbook of Research in Marine
Pharmaceutics: Exploring Oceanic Microbial
Diversity for Human Health and Wellness

DETAILS:

Published on 1 January 2025



ABSTRACT:

Over the past two decades, the cosmetics industry has experienced significant growth and transformation. Beauty products are no longer limited to those used for enhancing and protecting the appearance of the human body. This has led to the creation of new terminologies such as “cosmeceuticals” and “nutricosmetics” to describe the health benefits of beauty products that work from within. Natural-based cosmetics are perceived to be safe and have gained popularity in recent years. The demand for cosmeceuticals made from marine resources has also increased due to their unique chemical and biological features. This chapter discusses the importance of marine-derived compounds, focusing on novel chemical entities with cosmeceutical potential and the mechanisms through which they affect biological functions, providing associated health benefits to humans. Marine settings are considered the most significant source of biologically active chemicals with untapped potential for use in medicines, nutraceuticals, and cosmeceuticals. Marine organisms such as sea algae, seaweed, and corals offer a rich and sustainable source of small molecules and bulk compounds that have important applications in the cosmetics industry. For example, compounds like ectoine, trichodin A, and mytiloxanthin derived from marine organisms have properties that promote skin hydration, prevent microbial contamination, and provide color to cosmetic products. In addition, marine-derived chemicals like kojic acid, sargafuran, chrysophanol, scytonemin, mycosporine-like amino acids, antioxidants, astaxanthin, and PUFAs are key constituents in cosmeceuticals that provide anti-tyrosinase, anti-acne, whitening, UV protection, and anti-wrinkle effects. In recent years, the beauty and skincare industry in India has seen a significant surge in demand for anti-aging products. With an increasing aging population and rising disposable income, more and more Indian consumers are willing to invest in skincare products that can help them maintain a youthful appearance. Moreover, the Indian climate and lifestyle factors, such as pollution and sun exposure, can cause premature aging and skin damage. This has further driven the demand for anti-aging skincare products. © 2025 by Apple Academic Press, Inc.

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TITLE:

Enhancing IoT Cybersecurity Through
Innovative Blockchain Solutions (Conference
Paper)

AUTHOR :

Garg, R., Kanade, A.S.,
Kiran, P., Gochhait, S.

JOURNAL NAME:

Lecture Notes in Networks and Systems

DETAILS:

Published on 9 August 2024



ABSTRACT:

This revolutionary study presents a complete theoretical framework aimed at improving the cybersecurity of the Internet of Things (IoT) through the use of blockchain technology. The theoretical foundation focuses on essential principles such as decentralisation, consensus processes, and cryptographic procedures, drawing inspiration from various research works across disciplines. The fundamental goal of this paradigm is to address and mitigate security and privacy concerns in the field of IoT by calling for a shift from centralised to decentralised systems. Using blockchain's inherent capabilities, the framework presents a breakthrough for proactively combating growing security threats. The cryptographic features of blockchain, in particular, are used to develop novel solutions. This framework investigates unique technologies such as encrypted communication routes and decentralised identity management. These cutting-edge technologies seek to strengthen the security infrastructure of IoT ecosystems by providing strong defences against potential vulnerabilities. Furthermore, the study investigates the theoretical features of several blockchain applications designed expressly to improve Internet of Things security. Exploration of these applications provides useful insights, improving a better understanding of the theoretical foundations supporting the proposed framework. Despite its theoretical nature, the study report emphasises the importance of transforming theoretical capabilities into concrete advances in the rapidly evolving IoT sector. The call to action emphasises the importance of practical implementations that may effectively solve real-world cybersecurity issues. However, the research highlights limits such as scalability and interoperability, which must be considered when implementing the suggested framework in practical contexts. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

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TITLE:

Insect Secretions and Extracts as
Green Material Resources

AUTHOR :

Shaikh, I.V., Shaikh, V.A.E.

JOURNAL NAME:

Encyclopedia of Green Materials

DETAILS:

Published on 1 January 2024



ABSTRACT:

[No abstract available]

Link https://www.scopus.com/record/display.uri?eid=2-s2.0-105003617765&doi=10.1007%2f978-981-97-4618-7_171&origin=inward&txGid=c7199a94cf71c203f87033786a05ef17



TITLE:

Share price volatility in selected IT stocks listed in the NSE during the Russian and Ukraine war - An event analysis

AUTHOR :

Shankar, U., Khisti, D.,
Chodisetty, C.M.R.S.

JOURNAL NAME:

Digital Transformation and Sustainability of
Business

DETAILS:

Published on 1 January 2025



ABSTRACT:

In finance, volatility is the degree of variation of a trading price series over time, usually measured by the standard deviation of logarithmic returns. Historic volatility measures a time series of past market volatility is the rate at which the price of a stock increases or decreases over a particular period. Higher stock price volatility often means higher risk and helps an investor to estimate the fluctuations that may happen in the future. Volatility is the standard deviation of a stock's annualized returns over a given period and shows the range in which its price may increase or decrease. If the price of a stock fluctuates rapidly in a short period, hitting new highs and lows, it is said to have high volatility. If the stock price moves higher or lowers more slowly, or stays relatively stable, it is said to have low volatility. Historic volatility is calculated using a series of past market prices, while implied volatility looks at expected future volatility, using the market price of a market-traded derivative like an option. The study explores share price volatility as an indicator of economic stability in a developing country setting. This study examines the share price volatility of five selected IT companies listed on the National Stock Exchange (NSE). The study period was during the Russian and Ukraine war. The results demonstrate that share price volatility is significantly influenced by the price earnings ratio along with earnings per share. © 2025 selection and editorial matter, Sai Kiran Oruganti, Dimitrios A Karras, Srinesh Singh Thakur, Janapati Krishna Chaithanya, Sukanya Metta and Amit Lathigara; individual chapters, the contributors.

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TITLE:

Harnessing chirality in plasmonics: from synthesis to cutting-edge applications(Review)

AUTHOR :

Thapa, D.K.,
Biswas, S.

JOURNAL NAME:

Nanoscale

DETAILS:

Published on 19 March 2025



ABSTRACT:

Nanomaterials composed of noble metals such as gold and silver, commonly known as plasmonic materials, exhibit localized surface plasmon resonance (LSPR). LSPR significantly enhances the electric field strength, thereby influencing the optical properties, for instance in surface enhanced Raman spectroscopy (SERS). Recently, chiral nanostructures, nanostructures with broken symmetry, have demonstrated significant potential in various applications, including enantiomer detection and separation, chiral catalysis, and the development of metamaterials. Due to LSPR, these nanostructures can amplify signals such as circular dichroism (CD) and optical rotatory dispersion (ORD), making them valuable in chiroptical applications. This review provides an analysis of the synthesis, properties, and applications of chiral plasmonic nanostructures. The primary synthesis methods discussed include chemical approaches, glancing angle deposition, and focused ion beam deposition, each providing precise control over the chiral properties of the nanostructures. Furthermore, the review explores the applications of these nanostructures, particularly in the detection of biomolecules (chiral sensing), asymmetric catalysis, and the development of advanced optical devices. Lastly, the review explores future directions for the field and highlights potential areas for improvement. © 2025 The Royal Society of Chemistry.

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TITLE:

Underlying Opportunities and Challenges of
Digitalization in Gig Economy

AUTHOR :

Mukherjee, S.,
Tomar, R.

JOURNAL NAME:

Synergy of AI and Fintech in the Digital Gig
Economy

DETAILS:

Published on 1 January 2025



ABSTRACT:

There has been enormous growth in the gig sector across the world. The term “gig” refers to the short-term arrangement. For instance, an aspiring musician might celebrate after he obtains a gig contract or a painter may get a gig contract for some particular period of time. Both of them might get paid either a fixed fee or a fee based on the contract given. The gig economy has given rise to freelance workers, part-time workers, project-based workers, independent contractors, and contract workers. The gig economy has occupied a prominent place in the United States. According to the survey conducted by Intuit, nearly 40% of American workers are working as an independent contract worker in the year 2020. By means of the increase in the cost level and large masses seeking for jobs and livelihood, the concept of gig economy has opened doors for earning extra income through the gig work. The concept of digital platforms, greater digitalization, and accessibility to higher technology advancement such as the adoption of Artificial Intelligence is giving a boost to the concept of gig economy. There has been a growth in the acceptance of smartphones and the percentage of digitalization is an aiding factor permitting gig freelancers to offer numerous qualified services over the tech-based platform. Gig employees have the potential of signing any tasks in which they have a specific skill set. For example, a worker specialized in interior beautification on an ad-hoc basis for various customers as an alternative of undertaking a full-time inside designing work at a company. Advanced countries such as the United States were the initial adoption of the gig economy started due to advanced rates of digitalization, economic growth, and increase in the disposable income. All these enabling factors were responsible for foremost growing firms being initiated in the United States. Examples of firms are Uber, Airbnb, and Upwork. Nations such as the United States are presently a frontrunner in the international gig economy. On the contrary, emerging nations like India characterize a countless latent in terms of adoption of the gig economy. The reason behind the boost in gig economy is the growing supply of outworkers and lesser skilled labour force. With further knowledge diffusion and the upgrading in human resources and capital, India will nurture in the worldwide gig economy at a hastening pace. India can follow the United States’ gig economy by studying its trends and encourage the possible gig responsibilities. There are instances such as Ola and OYO operational in the Indian Economy. © 2025 selection and editorial matter Alex Khang, Babasaheb Jadhav, Vugar Abdullayev Hajimahmud and Ipseeta Satpathy.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001299148&doi=10.1201%2f9781003621454-16&origin=inward&txGid=1c6ce12f1267b06ead12f37cb508795f>



TITLE:

Blockchain Technology and its
Implications for Financial Services: A
Techno-Financial
Perspective(Conference Paper)

AUTHOR :

Shankar, U.,
Govindasamy, P.,Radhakrishnan,
G.V.

JOURNAL NAME:

1st International Conference on Advances in
Computer Science, Electrical, Electronics,
and Communication Technologies, CE2CT
2025

DETAILS:

Published on 22 February 2025



ABSTRACT:

A blockchain is an ordered, decentralized, unchangeable ledger that makes it possible to record electronic transactions. Blockchain has become an innovation that may be used in many different fields especially in financial services over the past decade. It has been emphasized as an innovation that will make financial transactions easy, efficient, secure, and affordable. Bitcoin has gained popularity during the past ten years. Millions of people around the world are drawn to bitcoins because of their unknown and unpredictable qualities. The objective of the bitcoin research is to identify the ether and calculate its digital price using the prior increases in the digital price of bitcoin. Since digital pricing is predicted instantly, previous methods of digital price estimation do not have enough information or ways to forecast changes in digital pricing. Based on the difficulties identified in Bitcoin digital pricing estimation, this study proposed a machine learning-based approach to digital pricing estimation for financial services. The proposed framework incorporates a Reinforcement Learning method for digital pricing evaluation and blockchain for protected financial transaction setup. The results show that the given architecture operates better based on digital pricing forecasting precision than alternative cutting-edge techniques. © 2025 IEEE.

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TITLE:

Electromagnetic field and artificial intelligence based fault detection and classification system for the transmission lines in smart grid(Article)

AUTHOR :

Khadse, C.,Patharkar, A.A.,Chaudhari, B.S.

JOURNAL NAME:

Energy Sources, Part A: Recovery, Utilization and Environmental Effects

DETAILS:

Published on 2025



ABSTRACT:

An electromagnetic field and artificial intelligence-based transmission line protection system for smart grid is proposed in this paper. Bayesian regularization neural network is used as an intelligence technique. Instead of conventional current transformers, the use of magnetic field sensors for monitoring the current in transmission lines is proposed. A mathematical model of the magnetic field due to the current in transmission line is developed by considering two positions of the magnetic field sensors. The developed model is simulated for extensive scenarios. Line to ground, line to line, double line to ground and three-phase faults are created. The fault current values are transformed into magnetic field values and given to the dyadic analysis filter bank for feature extraction process. The extracted features are given as an input to the neural network for the training. The Bayesian regularization algorithm is used as a training algorithm. The performance of the proposed system is compared with other algorithms. It shows that the proposed system with Bayesian regularization have 96.11% of accuracy with the combination of different faults. The results obtained show that the proposed system outperforms the existing approaches. © 2021 Taylor & Francis Group, LLC.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002328921&doi=10.1080%2f15567036.2021.1948637&origin=inward&txGid=ca8336a3fa324bc57568be2493870ee8>



TITLE:

Human Commensal Bacteria: Next-generation Pro- and Post-biotics for Anticancer Therapy(Review)

AUTHOR :

Sapkota, H.,Dasgupta,
S.,Roy, B.,Pathan, E.K.

JOURNAL NAME:

Frontiers in Bioscience - Elite

DETAILS:

Published on March 2025



ABSTRACT:

Cancer is a common, deadly disease with an unknown etiology. Meanwhile, current therapeutic options possess significant risks. However, probiotic bacteria and their metabolites have been reported to have antiproliferative and apoptotic effects on cancer cells. Therefore, because of their selective specificity and lack of treatment-associated comorbidities, these bacteria and their metabolites could be potential alternatives to conventional chemical and radiation therapies. Given their superior immunomodulatory and anti-cancer effects and lack of side effects, commensal bacteria derived from healthy humans are currently used as next-generation probiotics. This review summarizes current findings on these probiotic properties and anti-cancer activities of healthy human commensal bacteria. Additionally, the review focuses on small metabolites, proteins, and enzymes secreted by human commensal bacteria for their therapeutic applications against cancer. Further, utilizing a protein engineering strategy to reduce the toxicity of L-asparaginase, an enzyme-based anti-leukemia drug used for the last forty years, is also discussed. A possible workflow outline for isolating, identifying, screening, and characterizing human commensal bacterial strains for their therapeutic applications in cancer treatment is also proposed. This review emphasizes the need to explore various human commensal bacteria, not just mainstream lactic acid bacteria, for novel cancer therapeutics that provide multiple health benefits. © 2025 The Author(s).

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002158367&doi=10.31083%2fFBE26809&origin=inward&XGid=2dbdb58775d9503fd4d83b8086bcf19d>



TITLE:

Nano-biotechnological approach
for the ultrasensitive
electrochemical and fluorescence
detection of Staphylococcal
enterotoxin B(Review)

AUTHOR :

Meenakshi,Pawar, S.,Shivhare,
B.,Sharma, A.,Prabhu, S.,
Awasthi, S.

JOURNAL NAME:

Materials Research Express

DETAILS:

Published on 1 March 2025



ABSTRACT:

Staphylococcus aureus, a bacterium with gram-positive characteristics and a spherical shape, is typically harboured in the human nose and skin. It can survive at a wide range of temperatures (15 °C to 45 °C), has virulence factors, and contains toxins, enzymes, and surface proteins. Staphylococcal enterotoxin B (SEB) is a heat-stable protein toxin 28 kDa in size. Food poisoning causes nausea, vomiting, stomach cramps, and diarrhoea due to the consumption of contaminated food. Staphylococcus aureus and its potent toxin SEB pose significant challenges to public health, food safety, and environmental monitoring. Nanobiotechnology and fluorescence-based approaches offer innovative solutions for their control, detection, and neutralization. Ultrasensitive electrochemical detection (graphene, carbon, and gold nanoparticles) and fluorescence detection (quantum dots, carbon dots, Forster resonance energy transfer, graphene oxide and metal-enhanced fluorescence) can detect Staphylococcal enterotoxin B due to their high sensitivity, specificity, and potential for miniaturization. Nanotechnology improves the detection of Staphylococcal enterotoxin B with increased sensitivity and specificity. The dual-modality detection system combines the quantitative precision of electrochemical sensors with the real-time imaging capabilities of fluorescence techniques. This review addresses the nanobiotechnology approach for the potential detection of Staphylococcal enterotoxin B. This platform can be extended to in vitro diagnostic, food analysis, biosafety, environmental application, and clinical analysis, especially cancer biomarker diagnosis. © 2025 The Author(s). Published by IOP Publishing Ltd.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001370442&doi=10.1088%2f2053-1591%2fad171&origin=inward&txGid=6b893c7208620ebd94238d7a4ad4ab0d>



TITLE:

Failure analysis of a torsion spring: A microstructural and finite element assessment(Article)

AUTHOR :

Shinde, R.,Pradhan,
M.N.,Sahoo, B.,
Jain, R.

JOURNAL NAME:

Engineering Failure Analysis

DETAILS:

Published on 15 June 2025



ABSTRACT:

This study explores the premature failure of a torsion spring manufactured from cold-drawn stainless-steel wire. A comprehensive analysis was conducted which included microstructural examination through Optical microscope, FE-SEM, and XRD. The analysis of the fractured surface through Optical microscope & FE-SEM revealed the inclusions, precipitates and porosity. The high dislocation density and residual stress were revealed by the XRD analysis. The mechanical characterization was evaluated through Vickers hardness testing where the fractured surface came up with higher values compared to that of the as-received one. Finite element assessment carried out to understand the stress distribution in the spring. The FEA simulation results corresponded well with the actual failure zones. In conclusion, the investigation indicated that the failure was due to material flaws and stress concentration folds in design. © 2025 Elsevier Ltd

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001270621&doi=10.1016%2fj.engfailanal.2025.109560&origin=inward&txGid=8e875464a62ca3dde6bc1138f1dec4c3>



TITLE:

**Factors Affecting Psychological
Health in the COVID-19
Pandemic(Review)**

AUTHOR :

Santosha, S., Tiwari, V., Chand,
S., Dikhatwar, M.S., Roy, S.,
Bindu, R.

JOURNAL NAME:

**Current
Psychiatry Research and Reviews**

DETAILS:

Published on 2025



ABSTRACT:

Global mental health has been put at risk by the coronavirus disease 2019 (COVID-19) pandemic, both directly and indirectly through disruptive social shifts and neuropsychiatric repercussions of SARS-CoV-2 infection. Despite a little rise in self-reported mental health issues, there has not been an increase in the population's rates of mental disorders, self-harm, or suicide that could be measured objectively. Demographic factors, such as sex, age, and profession, have emerged as key determinants, with women, younger individuals, and frontline workers facing elevated risks. In this review, we have addressed the key considerations that have impacted the mental well-being of the populace during COVID-19. A comprehensive literature search on the SCOPUS and PubMed databases was used to find the current research studies on the COVID-19 outbreak relevant to mental health. According to preliminary research, self-reported stress (8%) and symptoms of worry and depression (16–28%) have been prevalent psychological responses to the COVID-19 pandemic and they may have been linked to sleep disruption. This risk has been reported to be moderated by several individual and systemic factors. Acute and post-acute neuropsychiatric consequences of COVID-19 have also been identified, with a significant prevalence of fatigue, cognitive decline, and anxiety and depression symptoms, even months after infection. Coping with challenges, such as social distancing, economic instability, and altered routines, has posed significant mental health concerns. Access to mental health resources and robust social support systems has, however, played pivotal roles in addressing these challenges. The review has underscored the urgent need for comprehensive mental health interventions, addressing social determinants, ensuring equitable access to healthcare, and recognizing the enduring effects of the pandemic. © 2025 Bentham Science Publishers.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001479839&doi=10.2174%2f0126660822276875231222012305&origin=inward&txGid=8414a86672f6f2086d8ece47ee798cdb>



TITLE:

Characterization of TiN–HA nanocomposite developed through rapid microwave sintering route at high temperature(Article)

AUTHOR :

Kumar,
C.S.,Gupta, S.,
Sharma, A.K.

JOURNAL NAME:

International Journal of Applied Ceramic
Technology

DETAILS:

Published on May/June 2025



ABSTRACT:

Titanium is one of the most suitable metals used in medical implants. Titanium alloys and titanium-based ceramics are widely used in orthodontics and orthopedic applications. In addition, titanium-based composites are preferred biomaterials for orthopedic applications and bioactive coatings. This work focuses on using relatively stable TiN material for the fabrication of TiN–HA composite through a rapid sintering technique at a process temperature of $\sim 1400\text{--}1450^\circ\text{C}$ in a modified domestic microwave applicator at 800 W power. Microwave sintered nanocomposites were characterized in terms of density, measurement of microhardness, analysis of microstructures, and indentation fracture toughness. Sintered nanocomposites (with 15 wt% and 25 wt% HA) achieved $\sim 95\%$ densification with comparable microhardness with respect to bulk TiN. However, the fracture toughness of the nanocomposites was compromised with the addition of the brittle HA phase when compared with pure TiN. The XRD results revealed an interaction between the constituent phases resulting in the formation of calcium titanate (CaTiO_3) and α -tri calcium phosphate ($\alpha\text{-Ca}_3(\text{PO}_4)_2$) due to high processing temperature. Furthermore, microstructures clearly show good bonding between particles. The developed nanocomposites exhibited reasonable properties with biocompatible phases; consequently, the nanocomposites can be candidates for coating other metals and inert biomaterials. © 2025 The American Ceramic Society.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001721756&doi=10.1111%2fijac.15070&origin=inward&txGid=20d86188aa8923619bb1189bc440e2df>



TITLE:

Exploration on quality of life of caregivers of patients with bipolar affective disorder(Article)

AUTHOR :

Nooha, F.,Nandakumar, U.P.,
Kumar, S.,Chand, S.,
Kolar, R.

JOURNAL NAME:

Journal of Education and Health
Promotion

DETAILS:

Published on 1 March 2025



ABSTRACT:

BACKGROUND: The quality of life of caregivers is a significant concern since their active participation is critical for the effective treatment of patients. The present study was conducted to assess the quality of life of caregivers of patients undergoing treatment for bipolar affective disorder and to identify the factors associated with their quality of life. **MATERIALS AND METHODS:** A prospective cross-sectional study of seven months duration was carried out among 64 subjects, satisfying the inclusion criteria. The socio-demographic details and other relevant information pertaining to the subjects were collected in a well-designed data collection form. The quality of life of the caregivers was assessed by using the WHOQOL-BREF questionnaire. **RESULTS:** Among the 64 subjects enrolled in the present study, the mean scores of the physical, psychological, social, and environmental domains were 55.84 ± 16.60 , 49.89 ± 18.31 , 57.84 ± 18.74 , and 51.97 ± 17.26 , respectively. Various socio-demographic factors were found to have a statistically significant association with all four domains of quality of life. **CONCLUSION:** The current research would offer healthcare professionals valuable insights into the importance of addressing the health-related quality of life for all caregivers of patients with BPAD. © 2025 Journal of Education and Health Promotion.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105001639553&doi=10.4103%2fjehp.jehp_529_24&origin=inward&txGid=ab767ec4812d5fd044a3103980c9e00c



TITLE:

A comparison of machine learning algorithms for predicting gross primary productivity of the Western Ghats region in India using reanalysis and satellite data(Article)

AUTHOR :

Agarwal, G., Deb Burman,
P.K., Kulkarni,
V.Y., Kosamkar, P.K.

JOURNAL NAME:

Journal of Earth System Science

DETAILS:

Published on June 2025



ABSTRACT:

Tropical forests store a substantial amount of carbon in their biomass, making them a crucial sink for atmospheric carbon dioxide (CO₂). Despite a broad geographical coverage, the carbon sequestration potential of Indian forests remains an area that requires further research due to the limited availability of data and observations; this is, however, crucial for planning an efficient climate change mitigation policy development according to the Paris climate deal. The gross primary productivity (GPP) of an ecosystem is a measure of the CO₂ captured by plants through photosynthesis and is considered as a key indicator of carbon sequestration. GPP is used to evaluate the carbon-capturing potential of various ecosystems. Machine learning (ML) algorithms have evolved as efficient tools for data-driven simulation in present times. In this study, we predict the GPP of one of the major forested regions in India, namely the Western Ghats, and seek to evaluate the efficacy of several ML models in this process using meteorological and biophysical variables. Our findings suggest that ML algorithms offer an alternative and efficient means for predicting GPP from meteorological and biophysical parameters. It is observed that satellite-derived leaf area index followed by vapour pressure deficit, air temperature, and soil moisture variables can be considered strong predictors for plant productivity. Our comparative analysis of multiple ML algorithms shows the decision tree regressor to perform best with an R² score of 0.86 and mean absolute error of 3.887 gCm⁻²d⁻¹. GPP plays a vital role in the terrestrial carbon cycle, and improving its prediction accuracy is beneficial for climate scientists, resource managers, and policymakers. © Indian Academy of Sciences 2025.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003185447&doi=10.1007%2fs12040-025-02525-1&origin=inward&txGid=c32e91420ca42d36e832525c8f6967de>





TITLE:

SkillSet Sherpa: Career Counseling
with Large Language
Models(Conference Paper)

AUTHOR :

Arya, K.,Deshmukh, V.,Tamboli, S.,
Bobde, S.,Patankar, R.,
Wani, A.,

JOURNAL NAME:

Lecture Notes in Networks and Systems

DETAILS:

Published on 9 August 2024



ABSTRACT:

In today's day and age, students have a large number of career choices, which leads to a lot of ambiguity regarding their future. Traditional career guidance methods often fall short in providing personalized recommendations tailored to individual students' unique aptitudes, academic performance, and preferences. This paper introduces Skillset Sherpa, an innovative software solution that utilizes artificial intelligence (AI) and natural language processing (NLP) to address these limitations. SkillSet Sherpa integrates three key components: the RIASEC (Holland Codes) aptitude test, an optical character recognition (OCR) technique for extracting academic performance data from marksheets, and a large language model (LLM) to generate personalized career recommendations. This system considers a student's strengths, interests, and academic record to provide data-driven guidance. SkillSet Sherpa has the potential to bridge the gap between traditional career guidance methods and the growing need for individualized support, ultimately empowering students to make informed decisions about their future. The GitHub repository for the same can be found here:

<https://github.com/Parzival7566/SkillSet-Sherpa-Final>. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105002136182&doi=10.1007%2f978-981-97-9523-9_23&origin=inward&txGid=fe1d17c28e9d82c673336a4368c65106





TITLE:

Early Autism Diagnosis in Children through Facial Image Recognition Using Refined Gravitational Search Optimized MobileNetv2 model(Conference Paper)

AUTHOR :

Attar, N.,
Paygude, S.

JOURNAL NAME:

2025 IEEE International Students' Conference on Electrical, Electronics and Computer Science, SCEECS 2025

DETAILS:

Published on 19 January 2025



ABSTRACT:

The complicated neuro developmental illness known as autism spectrum disorder (ASD) frequently appears in early childhood and has an impact on social interactions and communication. Timely intervention improves the long-term results and depends on early detection. This work investigates the use of deep learning models to automatically identify autism in children by analysing facial image data. Following the collection of facial image data, the pre-processing stage uses data normalisation and augmentation to improve the dataset's variability and consistency while reducing over fitting problems. Histogram equalisation is used for feature extraction to enhance the contrast of face images, which makes it easier to depict the facial traits that are essential for a precise diagnosis. The detection procedure makes use of Refined gravitational search optimized MobileNetV2 (RGSO-MobileNetV2) model, which combines RGSO method with MobileNetV2's lightweight design to improve image classification performance. The proposed model is assessed on various types of metrics, including F1-score (97.8%), recall (97.5%), accuracy (98%), and precision (97%). The importance of the suggested methodology is demonstrated by the experimental results, which show excellent accuracy and robustness in identifying autism in children and supporting early intervention efforts. According to the results, incorporating deep learning techniques into clinical settings could assist detect autism earlier and assist early intervention plans that improve the developmental paths of impacted kids. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002712577&doi=10.1109%2fSCEECS64059.2025.10940137&origin=inward&txGid=b62cc14a4eca5e39987a927747b17809>





TITLE:

Face Recognition System for Criminal Identification in CCTV Footage Using Keras and OpenCV(Article)

AUTHOR :

Rani, R.,Napte,
K.,Kumar,
S.,Pippal, S.K.,Dalsaniya, M.

JOURNAL NAME:

Ingenierie des Systemes d'Information

DETAILS:

Published on March 2025



ABSTRACT:

This paper presents an advanced face recognition system for identifying potential criminals using Closed Circuit Television (CCTV) footage. The model is trained using a diverse dataset comprising facial images with variations in age, ethnicity, gender, lighting conditions, and facial expressions (such as smiling, frowning, and wearing glasses). The system leverages deep learning techniques, specifically a Convolutional Neural Network (CNN) with a pre-trained VGG16 architecture integrated with the Keras library for extracting complex facial features. OpenCV is utilized for video preprocessing, frame extraction, and real-time deployment. The model utilizes transfer learning, optimized with the Adam algorithm and a cross-entropy loss function, to enhance its generalization across diverse facial features. The VGG16 model demonstrates strong performance, achieving an accuracy of 97.6%, recall of 96.9%, precision of 97.5%, and an F1-score of 96.9%. This system is designed for real-time surveillance applications, ensuring fast and accurate criminal identification with minimal human intervention. ©2025 The authors.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003054817&doi=10.18280%2fisi.300309&origin=inward&txGid=eceb77819b563f11010416d89fc1c14f>





TITLE:

A Survey on Recognizing Lower Limb Movements from Surface Electromyography(sEMG) Signals(Conference Paper)

AUTHOR :

Pandharikar, A.,
Jahagirdar, A.

JOURNAL NAME:

2025 1st International Conference on AIML- Applications for Engineering and Technology, ICAET 2025

DETAILS:

Published on 17 January 2025



ABSTRACT:

The paper presents a comprehensive framework for recognizing lower limb movements using surface electromyography (sEMG) signals, addressing the growing need for effective human activity recognition (HAR) systems in healthcare and rehabilitation. The study explores various machine learning and deep learning algorithms including Random Forest, Support Vector Machine (SVM), and hybrid models like CNN-LSTM, PC-GNN (Pearson Correlation-based Graph Neural Network) to classify movements based on sEMG sensors data collected from multiple muscles during distinct lower limb activities. The study focuses on important signal processing methods including wavelet denoising and time-domain feature extraction to improve classification accuracy. Challenges such as electrode displacement, muscle fatigue, and inter-subject variability are addressed. The suggested techniques for classifying sEMG signals outperform conventional methods, as shown by performance metrics. The results highlight how important precise sEMG signal analysis is for applications in prosthetic control, rehabilitation, and human-machine interaction. This research aims to advance the understanding of sEMG signal analysis and its practical implications for real-time human activity recognition. Future work will focus on improving model robustness for practical implementation. © 2025 IEEE.

Link- <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002438428&doi=10.1109%2fICAET63349.2025.10932188&origin=inward&txGid=b55dada802d22950031a6f50e9ad9925>



TITLE:

Role of Synbiotics in Neurodegenerative Diseases

AUTHOR :

Bhatt, S., Pujari, R., Patil, Y., Shilpi, S., Anitha, K.

JOURNAL NAME:

Synbiotics in Human Health: Biology to Drug Delivery

DETAILS:

Published 1 January 2024



ABSTRACT:

Age-related neurodegenerative diseases affect larger group of people across the countries. The implication of the gut microbiome (GM) in neurodegenerative disorders has been under investigation over the past few years. Recent studies suggested the importance of gut microbiota in diseases like Parkinson's disease (PD) and Alzheimer's disease (AD). Gut microbiota dysbiosis may be considered as a crucial factor for the progression of above mentioned diseases. The microbiota-gut-brain (MBG) axis is now studied in detail for their role in the pathogenesis of PD and AD. MGB axis is bidirectional pathway that involves neuroimmune, neuroendocrine, and direct neural systems such as the vagus nerve. Synbiotics are the combination of pre- and probiotics that have significant contribution in the growth of useful GM. In addition, the role of various types of diet in the treatment of neurodegenerative diseases have been studies well. GM have various roles including modulation of hypothalamic pituitary adrenal (HPA) axis and synthesis of various neurotransmitters. Various preclinical and clinical studies revealed the exciting potential of pre- and probiotics. In addition to neurodegeneration, synbiotics are being studies for their anti-aging potential and health benefits. However, further various preclinical and clinical data needs to be generated to come for some conclusion on the efficacy of synbiotics in neurodegenerative disorders. In this chapter we will focus and limit to two main neurodegenerative diseases, namely, PD and AD. We will evaluate the impact of GM on PD and AD. In addition, the influence of diet and lifestyle on the gut microbiome will also be discussed. © Springer Nature Singapore Pte Ltd. 2024.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105003347983&doi=10.1007%2f978-981-99-5575-6_4&origin=inward&txGid=c746720dcfbd94bd133871770a49e2d5



TITLE:

Trajectory Tracking and Obstacle Avoidance for Mobile Robot using Laguerre based Model Predictive Control (Conference Paper)

AUTHOR :

Raj, S.

JOURNAL NAME:

ICCECE 2025 - International Conference on Computer, Electrical and Communication Engineering

DETAILS:

Published on 8 February 2025



ABSTRACT:

Trajectory tracking for a differential drive robot is accomplished using Laguerre-based model predictive control. This paper emphasizes obstacle avoidance for the same robot using model predictive control. Simulation results highlight the success of the Laguerre-based approach in both obstacle avoidance and trajectory tracking. Constraints are incorporated within the model predictive control to define the region for obstacle avoidance. The proposed controller's performance for the differential drive robot is validated through MATLAB simulations. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002871959&doi=10.1109%2fICCECE61355.2025.10940247&origin=inward&txGid=f750c14a515b102eb15843ffe36e068d>



TITLE:

Burden of non-communicable diseases in South Asia: a decomposition analysis(Article)

AUTHOR :

Pradhan, J.,Pai, M.,Dwivedi, R.,
Mishra, B.,Behera, S.,Bera, T.,
Kim, R.,

JOURNAL NAME:

Journal of Health, Population and Nutrition

DETAILS:

Published on December 2025



ABSTRACT:

Background: This study examines the incidence, prevalence, deaths, and disability-adjusted life years (DALYs) related to non-communicable diseases (NCDs) in South Asia, exploring the environmental, metabolic, and behavioural risk factors, and exploring changes in deaths and DALYs driven by population growth, aging, and mortality rates. Methods: Using data from the Global Burden of Disease (GBD) study 2021, we estimated age-standardized incidence, prevalence, deaths, and DALYs for four major NCDs: cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases from 2010 to 2021. Gender and age-specific estimations were conducted across all NCDs, with 95% uncertainty intervals and a decomposition analysis was employed to estimate change in death and DALYs attributable to NCDs. Findings: The burden of NCDs in South Asia increased by 3.00% in incidence from 2010 to 2021, while overall prevalence decreased by 1.00%, yet the age-standardized prevalence rate remains above the global rate (91,570 per 100,000 population). Incidences of cardiovascular and respiratory diseases declined by 3.00% and 13.00%, respectively, whereas diabetes and cancer rose by 21.00% and 13.00% in South Asia. Nepal faced the highest environmental impact (23.4% of DALYs), Bangladesh the greatest metabolic impact (25.62%), and India the highest from behavioural factors (23.95%). Population growth and aging were primary drivers of changes in deaths and DALYs across the region. Conclusion: This finding emphasizes the need for targeted public health interventions addressing environmental, metabolic, and behavioral risks for NCDs in South Asia, alongside strategies to support healthy aging and effective disease management across diverse demographic groups. © The Author(s) 2025.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003106213&doi=10.1186%2fs41043-025-00827-0&origin=inward&txGid=c6485f0c16d36507e90da350a210cd47>



TITLE:

Exploring Cancer Metastasis: From
Mechanisms to Treatments and
Beyond(Editorial)

AUTHOR :

Godbole, M.S.,
Naik, A.

JOURNAL NAME:

Cancer Reports

DETAILS:

Published on April 2025



ABSTRACT:

[No abstract available]

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003582889&doi=10.1002%2fcnr2.70201&origin=inward&txGid=cb579df94dc713b96e75dbe93426b31d>



TITLE:

Prediction of ethanol-gasoline blend
fuelled spark ignition engine
performance using dimensional
analysis(Article)

AUTHOR :

Hatte, P.,
Bhalerao, Y.

JOURNAL NAME:

Energy Sources, Part A: Recovery,
Utilization and Environmental Effects

DETAILS:

Published on 2025



ABSTRACT:

Ethanol is blended with pure gasoline for use as a fuel in a gasoline engine. It is required to conduct physical tests on engines to observe the engine performance for these fuel blends. However, mathematical equations provide a quick, effective, and accurate alternate for physical tests. It may not be possible to develop the mathematical relations for the specific operating conditions of engine and fuel. It is possible to use dimensional analysis approach to develop mathematical model. Dimensional analysis approach is used in this research work for deriving the mathematical correlations of Indicated Mean Effective Pressure, Brake Power, Indicated Power, and Brake Specific Fuel Consumption as engine performance parameters. Their relations are established with engine speed, load on engine, calorific value of fuel fractions, and clearance volume of engine as independent parameters. Buckingham π theorem is used for formulating the relations having proportionality sign showing the possible relations of each dependent parameter with all four independent parameters. Regression analysis is used for eliminating proportionality signs from the equations developed. Mathematical relations developed by the dimensional analysis are accurate. Root Mean Square errors have noted a minimum of 4.19 for Brake Specific Fuel Consumption and a maximum 8.56 for Brake Power. The average percentage errors are less than 1%. © 2021 Taylor & Francis Group, LLC.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002901163&doi=10.1080%2f15567036.2021.1955044&origin=inward&txGid=cdd1eebcd6826a51d444d1269c281c2a>





TITLE:

Smart Garden Watering and
Lighting System Integrated with
Machine Learning Model to
Maintain Urban
Gardens(Conference Paper)

AUTHOR :

Shahapure, A.,Siddha, R.,
Tewary, T.,Shahapure, A.,
Mantri, S., Kamble, A.

JOURNAL NAME:

IEEE International Conference on
"Computational, Communication and
Information Technology", ICCIT 2025

DETAILS:

Published on 8 February 2025



ABSTRACT:

Garden maintenance may be a difficult task, particularly in urban settings. Many people are not skilled enough to determine their plants' precise requirements for lighting and watering. Conventional gardening techniques frequently result in underwatering or overwatering, wasting resources, and producing unhealthy plants. Our completely automated smart garden watering and lighting system offers a fully automated solution to these problems. With its sophisticated sensors, this system keeps an eye on the quantity of moisture in the soil and the amount of sunshine it receives, making sure plants get the correct amount of both for healthy growth. Traditional gardening involves guesswork and physical effort, which our solution avoids by automating the irrigation and lighting operations. You may have the advantages of a flourishing garden without the trouble of ongoing upkeep with our intelligent gardening system. Our method offers a dependable and effective solution to care for your plants and improve your urban green space, regardless of experience level. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002254203&doi=10.1109%2fICCCIT62592.2025.10927752&origin=inward&txGid=a24fb40b3f1bd8562b86e6720ae8c671>





TITLE:

Leveraging Educational Clouds for
Empowering Rural Education

AUTHOR :

Kulkarni, S.,
Firmin, S.

JOURNAL NAME:

Cloud Computing for Smart Education
and Collaborative Learning

DETAILS:

Published on 1 January 2025



ABSTRACT:

The integration of educational clouds into rural education systems presents a transformative opportunity to address longstanding challenges and empower rural communities. This chapter explores the multifaceted benefits, challenges, and policy implications associated with leveraging educational clouds for empowering rural education. Educational clouds offer centralized repositories of educational resources, providing students and educators in rural areas with equitable access to high-quality learning materials. Additionally, these platforms facilitate collaborative learning environments, transcending geographical barriers, and fostering shared educational experiences among rural learners. Despite their potential, the implementation of educational clouds in rural areas is not without challenges. Limited internet connectivity, technological constraints, and data security concerns pose significant hurdles that must be addressed through innovative solutions and supportive policy frameworks. Policymakers must allocate resources for digital infrastructure development, provide financial support and incentives, and establish regulations to ensure data security and privacy. Educational institutions should prioritize teacher training and curriculum integration, while technology stakeholders must collaborate with local communities to design inclusive and accessible cloud-based solutions. By embracing these strategies and working collaboratively, stakeholders can harness the transformative potential of educational clouds to empower rural education and bridge the digital divide. © 2025 selection and editorial matter, Urmila Shrawankar and Prerna Mishra; individual chapters, the contributors.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001466371&doi=10.1201%2f9781003472537-28&origin=inward&txGid=b5c4343a83b69a7b264ed49978779bf8>





TITLE:

An Enhanced and High-Performance
Algorithm for Accurate Named
Entity Recognition in Legal
Text(Conference Paper)

AUTHOR :

Naik, V.,
Rahalkar, A.

JOURNAL NAME:

1st International Conference on
Sustainable Energy Technologies and
Computational Intelligence: Towards
Sustainable Energy Transition, SETCOM
2025

DETAILS:

Published on 23 February 2025



ABSTRACT:

The rise of digital technologies results in the generation of large volumes of legal data. Although natural language legal texts are easily understood by humans, they pose significant challenges for machine processing. Converting this information into a machine-readable format is essential for efficient legal data analysis. In this paper, we propose resource-efficient method for extracting and classifying named entities within legal documents. We use rule-based learning and regular expressions to identify legal entities like parties, courts, and case references. Once extracted, these entities are classified into categories such as individuals, legal organizations, and jurisdictions. To improve both accuracy and processing speed, we implement a modified K-Means algorithm clustering the extracted entities. This clustering step refines the classification by grouping entities based on their shared attributes. The proposed method significantly enhances the speed and precision of Named Entity Recognition (NER) for legal texts, enabling faster and more efficient legal data processing. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002281569&doi=10.1109%2fSETCOM64758.2025.10932533&origin=inward&txGid=f1a0808ba4e0fd20478dda883279d17c>



TITLE:

Artificial Intelligence and Big
Data Analytics in Digital Gig
Finance

AUTHOR :

Jadhav, B., Kulkarni, A.,
Kulkarni, P., Kulkarni, S.

JOURNAL NAME:

Synergy of AI and Fintech in the Digital
Gig Economy

DETAILS:

Published on 1 January 2025



ABSTRACT:

The digital age has created new opportunities for people to work in their chosen fields. This has led to the rise of startups and freelancers, who are often more innovative and cost-effective than established companies. Multinational corporations are also outsourcing more work to these newcomers, which is driving the growth of the digital gig economy. Artificial intelligence (AI) and Big Data Analytics are making the gig economy more efficient, accessible, and affordable. AI and Big Data Analytics are also helping to make financial services more inclusive. For example, AI can be used to develop new credit scoring models. AI can also be used to provide personalized financial advice and to detect and prevent fraud. AI and Big Data Analytics are having a positive impact on the gig economy and financial inclusion. They are making it easier for people to work in the gig economy and to access financial services. In this chapter, the authors will explore AI and Big Data Analytics in the gig economy to enhance the technological improvement and importance of AI and Big Data in financial inclusion, creditworthiness assessment, fraud detection, and risk management. Purpose: To provide an overview of the use of AI and Big Data in the digital gig economy. The study also proposes models where AI and Big Data can enhance the gig economy by providing auto features for financial inclusion, creditworthiness assessment, fraud detection, and risk management. Methodology: A case study-based and data-driven approach with AI and BIG Data Analytics is covered to enhance the gig economy. Outcomes: A systematic flow will be formed or designed to tackle the use of AI and Big Data to enhance the gig economy along with issues like financial inclusion, creditworthiness assessment, fraud detection, and risk management. © 2025 selection and editorial matter Alex Khang, Babasaheb Jadhav, Vugar Abdullayev Hajimahmud and Ipseeta Satpathy.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001345802&doi=10.1201%2f9781003621454-6&origin=inward&txGid=afb148e8befa25fa8b6637392d50a97>



TITLE:

**SPEECH EMOTION RECOGNITION
USING COMBINED TRIPLET AND
SINGLE-HEADED ATTENTION-
ENABLED INTEGRATED RECURRENT
NETWORK(Article)**

AUTHOR :

Rajput, V., Musale, V.,
Mohite, S., Amune, A., Jadhav, S.

JOURNAL NAME:

Biomedical Engineering - Applications,
Basis and Communications

DETAILS:

Published on 1 April 2025



ABSTRACT:

Speech Emotion Recognition (SER) stands as a crucial field within Human-Computer Interaction (HCI), drawing significant attention from researchers because of its broad applications. The ability to recognize emotions conveyed through speech is essential for effective two-way communication, making it a pivotal aspect in various domains. Several existing researches have addressed certain drawbacks such as dataset issues, lack of computational efficiency, interpretability, and so on. To overcome the issues and to perform the efficient SER, a combined Triplet and Single-headed Attention-enabled Recurrent Long Gated Network (TriSiH-RLG2) model is proposed in the research, which is designed through the integration of triplet attention, single-headed attention, and recurrent networks that includes Recurrent Neural Network (RNN), Long Short-term Memory (LSTM), and Gated Recurrent Unit (GRU), which eliminates the drawbacks of each model and enhances the overall efficacy of the research. Further to elevate the accuracy of the research, the Gradient Boosting Machine (GBM) is utilized as the classifier that performs the efficient SER through the ensemble learning approach. The contributed TriSiH attention is the incorporation of the two standard attention mechanisms, which act as the spotlight to highlight the relevant features from the input, thus making the research model highly proficient. The experimentation is done using RAVDESS emotional speech dataset and the performance of the provided model is revealed through metrics such as Precision, Recall, Accuracy, and F 1-score that achieve 94.338%, 98.344%, 96.875%, and 96.299%, respectively. © 2025 National Taiwan University.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002168183&doi=10.4015%2fS1016237224500492&origin=inward&txGid=2a83a205191dcd6deb3cdb1aa65d6012>



TITLE:

The future of remote learning
and experimentation

AUTHOR :

Bhagat, D., Apune, S., Nagare,
A.S., Rewatkar, R.M., Kamble,
V., Meshram, P., Raut, S.

JOURNAL NAME:

Revolutionizing Education With Remote
Experimentation and Learning Analytics

DETAILS:

Published on 28 March 2025



ABSTRACT:

This chapter examines the profound impact of the COVID- 19 pandemic on the landscape of remote learning. By exploring the accelerated technological advancements that have made virtual education more accessible and effective, the authors delve into how these innovations are shaping the future of learning across all educational levels. This chapter not only investigates the transformative changes but also envisions how these technologies will reshape global education systems, paving the way for a new era of learning. © 2025, IGI Global Scientific Publishing.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002675331&doi=10.4018%2f979-8-3693-8593-7.ch030&origin=inward&txGid=af6912f676d1dcab738415e1e5c7ea81>





TITLE:

Image Captioning System Using ResNet-50 and LSTM(Conference Paper)

AUTHOR :

Chinchakar, H.,Ratnaparkhi, G.,
Tanawade, A.,Singh, S.R.,Modi, D.,Shaikh,
A., Patil, V.

JOURNAL NAME:

Lecture Notes in Networks and Systems

DETAILS:

Published on 9 August 2024



ABSTRACT:

Generating informative descriptions for photographs automatically has become an interesting but challenging endeavor. This paper introduces AI image captioning using ResNet-50 and LSTM (AICRL), a unified model that uses LSTM with ResNet-50 for automatic image captioning. AICRL combines an encoder that uses ResNet-50 to build a full image representation with a decoder that uses LSTM and a soft attention mechanism to predict the next phrase while highlighting particular features of the image. AICRL is evaluated using metrics like BLEU. It was trained on the Flickr8k and COCO 2017 dataset individually and optimizes the likelihood of the target description sentence given training photos. The results highlight the effectiveness of AICRL in creating image descriptions. Additionally, the PERSONALITY-CAPTIONS challenge is presented, to generate engaging captions through the integration of configurable characteristics of personality and style. A large dataset is applied to the models created by combining state-of-the-art methods in sentence and image representations. The proposed models demonstrate both robust performance on the unique PERSONALITY-CAPTIONS task and state-of-the-art performance on well-known datasets such as Flickr8k and COCO 2017. Online assessments confirm the best performance of the proposed model close to already existing models. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105002150597&doi=10.1007%2f978-981-97-9529-1_35&origin=inward&txGid=0af5f681907f3473c0fa0e5384c68e3a



TITLE:

Experimental Investigation of
Solar based Liquid Desiccant
Indirect Evaporative Cooling
system(Article)

AUTHOR :

Nene,A.A.,
Ramachandran, S.

JOURNAL NAME:

Energy Sources, Part A: Recovery,
Utilization and Environmental
Effects

DETAILS:

Published on 2025



ABSTRACT:

Air conditioning by using vapor compression cycle is the most commonly used system although its operating energy cost is significantly high. Liquid desiccant dehumidifier with Indirect Evaporative Cooling (IEC) is another alternative suitable for hot and humid climatic conditions. The system works in two parts. In liquid desiccant dehumidifier section, moisture from humid air is removed and such air is passed through Indirect Evaporative Cooling system where air is cooled. An attempt was made to set up an experimental module with Scheffler solar concentrator to provide thermal energy for evaporation of liquid desiccant while a new type of polymer plate exchanger was used in evaporative cooling section instead of commonly used metal heat exchanger. The experimentation was carried using CaCl_2 desiccant with varying flow rates between 2 and 4 l/min in dehumidifier section and reduction of relative humidity by 4 to 9% was achieved. As desiccant flow rate was increased, it resulted into higher carry over losses. Experimentally, it was found that for a flow rate of 3 l/min, the carry over losses are minimum. For this flow rate of desiccant, secondary-to-primary-air ratio of 0.8, water flow rate of 11 l/min, and air cooling by 4.7°C were achieved. Maximum wet bulb and dew point effectiveness were found to be 0.61 and 0.42, respectively, for secondary-to-primary-air ratio of 0.8. It could be concluded that a polymer plate heat exchanger-based system could be considered as efficient system than metal plate heat exchanger systems, because longer life, lighter weight, and low operating cost are the characteristics of polymers. © 2021 Taylor & Francis Group, LLC.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002302455&doi=10.1080%2f15567036.2021.1948636&origin=inward&txGid=c782627abbec5a125121392c778b9f62>





TITLE:

The Legal and Ethical
Crossroads of Artificial
Intelligence in Cybersecurity
and Digital Forensics

AUTHOR :

Tiwari, G., Pandey, K., Desai,
M., Musale, V., Wategaonkar,
D., Bedekar, M.

JOURNAL NAME:

Digital Defence: Harnessing the
Power of Artificial Intelligence for
Cybersecurity and Digital
Forensics

DETAILS:

Published on 1 January 2025



ABSTRACT:

Artificial intelligence (AI) is an umbrella term for the various domains that underline the basic task of trying to generate human cognition in machines. The use of AI techniques like deep learning and machine learning are offshoots of this immensely vast field and have also proven to be pivotal in securing cyberspace. It is woven in every aspect of life ranging from gaming to healthcare, audio video reality to Internet of Things, and so on. This chapter explores the legalities behind the impact of AI in Cybersecurity and Digital Forensics. The initial part of the chapter focuses on the scarcity of cybersecurity solutions on the spectrum of digital infrastructure. To keep up with advances in AI more sophisticated solutions and practices that consider legal and ethical aspects are to be considered. The study comprises a comprehensive overview toward pre-existing legal regulations and frameworks to determine the accountability of decisions taken by AI while acknowledging ethical responsibilities. The latter half of the chapter describes the discrepancies and challenges in the legal infrastructure of AI, the challenges faced in the automation techniques that are used in digital forensics, and the need for harmonizing a standard and global approach that safeguards human rights. © 2025 selection and editorial matter, Ahlad Kumar, Naveen Kumar Chaudhary, Apoorva S. Shastri, Mangal Singh, Anand J. Kulkarni; individual chapters, the contributors.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001307529&doi=10.1201%2f9781032714813-6&origin=inward&txGid=a3cbbdca21a7d916b6d60c37d8cdb2de>



TITLE:

Parkinson's Disease
Assessment Using Dominant
Voice Features (Conference
Paper)

AUTHOR :

Ghate, P.D.,
Phadke, A.C.

JOURNAL NAME:

Lecture Notes in Networks and
Systems

DETAILS:

Published on 31 August 2024



ABSTRACT:

Parkinson's disease (PD) primarily affects the motor abilities as well as the neurological system of a person in the long term as it is a degenerative disease. Some of the initial symptoms are stiffness of muscles and an unsteady gait. At this stage, difficulties in walking do not manifest obviously. Moreover, a preliminary diagnosis based on scans or blood tests is generally inconclusive. Hence, identification of the onset of PD is a challenge for medical practitioners. Slurring of speech, however, does act as a red flag in the early prediction of PD. This study uses samples of speech taken from patients of PD as well as normal people for predicting PD. This dataset was generated by Max Little from the University of Oxford in collaboration with the National Centre for Voice and Speech in Denver, Colorado, through the recording of gathered speech signals. Even though clinical exams factor in a large volume of data with various features, doctors still find it difficult to decide whether a person is suffering from PD or not, on the basis of what type of data they have. The system proposed in this paper makes use of different classifiers used, including Gaussian Naive Bayes, K-nearest neighbors, logistic regression, decision trees and support vector machines. Among all the classifiers used, decision trees achieved the greatest accuracy rate, at 89.74% and also dominant voice features analysed. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105002388763&doi=10.1007%2f978-981-96-1267-3_6&origin=inward&txGid=c22d971d219609032f4f93eef113ef47



TITLE:

Heavy metals and
cardiovascular health:
Uncovering links and health
challenges(Article)

AUTHOR :

Ozarde, Y., Purandare,
D., Deshmukh,
S., Gadhave, R.

JOURNAL NAME:

Journal of Trace Elements in
Medicine and Biology

DETAILS:

Published on June 2025



ABSTRACT:

Background: Heavy metals, including lead, mercury, cadmium, and arsenic, along with emerging contaminants, pose significant threats to cardiovascular health. These metals are linked to oxidative stress, endothelial dysfunction, inflammation, and epigenetic alterations, contributing to various cardiovascular diseases. Aim: This review synthesizes current research on the pathways by which heavy metal exposure affects cardiovascular health, highlighting epidemiological trends, vulnerable populations, and potential preventive strategies. Methods: A comprehensive review of molecular mechanisms, epidemiological studies, and public health data was conducted to elucidate the links between heavy metal exposure and cardiovascular health. Results: Mechanisms of Toxicity: Heavy metals induce oxidative stress and inflammation, impair endothelial function, and disrupt calcium signaling. These effects culminate in hypertension, atherosclerosis, myocardial dysfunction, and other cardiovascular pathologies. Epidemiological Trends: Evidence links even low-level exposures to increased Cardio Vascular Disease risk. Regional trends show elevated risks in areas with significant industrial activity or contaminated water supplies. Vulnerable Populations: Children, the elderly, and individuals in low-income or industrially polluted regions exhibit heightened susceptibility. Preventive Strategies: Regulatory actions, improved water safety, dietary interventions, and community awareness are critical in mitigating exposure and its health impacts. Conclusions: Environmental exposure to heavy metals significantly elevates cardiovascular disease risk, particularly among vulnerable groups. Urgent public health measures and further research are needed to address the cumulative and synergistic effects of these toxicants. © 2025 Elsevier GmbH.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002311992&doi=10.1016%2fj.jtemb.2025.127648&origin=inward&txGid=98443731875866151ff40a4844076536>



TITLE:

Enhanced oil recovery by spontaneous imbibition of nanofluid assisted low saline alkali polymer in sandstone reservoir(Article)

AUTHOR :

Seetharaman, G.R.,Devakumar, N.P., Deshmukh, M., Sangwai, J.S.

JOURNAL NAME:

Journal of Molecular Liquids

DETAILS:

Published on 15 June 2025



ABSTRACT:

Spontaneous imbibition plays a crucial role in enhanced oil recovery (EOR). In this work, the synergistic effect of low salinity water, alkali, polymer, and nanoparticles was explored as a potential oil recovery agent for low acid number crude oil in a sandstone reservoir. Silica nanoparticles (15 nm) at various concentrations (100–1000 ppm) were dispersed in low salinity water (lowsal) containing sodium carbonate (alkali) and polyacrylamide (PAM, polymer), referred to as low saline-alkali-polymer-nanofluid (LSAP-NFs). Interfacial tension (IFT) and contact angle measurements were performed at 50 °C to understand the impact of LSAP-NFs on EOR through spontaneous imbibition. The results showed that the larger molecular size of the polymer hindered the effect of alkali in reducing the IFT and altering the wettability. The imbibition efficiency of the LSAP-NFs was evaluated using an Amott cell at 50 °C with Berea sandstone core samples. The spontaneous imbibition results showed that the imbibition effectiveness of the LSAP-NFs was higher than that of simple alkali, LSAP, and LSAP flooding agents. The prominent mechanism of imbibition was studied by analyzing the solid-liquid interfacial force using F-D mode from Atomic Force Microscope (AFM) investigations. The interfacial mechanisms, including IFT, wettability, surface roughness, and solid-liquid interfacial forces, confirmed that the imbibition process is equally controlled by gravity and capillary forces. Further, the solid-liquid interfacial force exposed a fully hydrophilic surface with silica nanofluid, confirming that capillary force dominates imbibition. This work identifies the fundamental mechanism by which spontaneous imbibition impacts enhanced oil recovery. © 2025 Elsevier B.V.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002226844&doi=10.1016%2fj.molliq.2025.127533&origin=inward&txGid=bcf5cde087017ae5e4fc2078a1335674>



TITLE:

HP- β -CD: An alternative solution to address bisoprolol stability challenge(Article)

AUTHOR :

Ithape, A.,Chellampillai, B., Polshettiwar, S., Khanna, P.K., Dhapte-Pawar, V.

JOURNAL NAME:

Analytical Chemistry Letters

DETAILS:

Published on 2025



ABSTRACT:

Problem statement: Bisoprolol fumarate (BF), a BCS class I drug, suffers from stability issues due to oxidative degradation. Aim: This study aims to use hydroxypropyl-beta-cyclodextrin (HP- β -CD) for enhancing BF stability using solid dispersion (SD) strategy. Novelty: HP- β -CD was explored to formulate BF solid dispersion so as to shield BF from oxidative degradation and impart stability. Molecular docking and dynamics studies assisted in forecasting the stabilizing effect of HP- β -CD. Study results: Spectroscopic studies revealed significant interactions. X-ray diffraction (XRD) patterns illustrated an amorphous SD indicating drug encapsulation within HP- β -CD. Scanning electron microscopic (SEM) images confirmed crystalline to a homogeneous amorphous transition of BF. Kinetic studies showed a six-fold increase in BF's shelf life. According to the molecular docking studies, root mean square deviation (RMSD) and root mean square fluctuation (RMSF) metrics indicated lesser fluctuation and more BF stability in the presence of HP- β -CD, thereby supporting its role in reducing oxidative-stress-induced degradation. Formulating solid dispersion maintained the solubility and dissolution characteristics of BF, which would otherwise modulate its in-vivo therapeutic behaviour. Thus, solid dispersion using HP- β -CD would be useful approach in resolving stability issues of crucial drug moieties, known to undergo oxidative degradation. © 2025 Har Krishan Bhalla & Sons.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002303176&doi=10.1080%2f22297928.2025.2466039&origin=inward&txGid=372e2ae009280af05df29982b85f765e>



TITLE:

Enhancement of natural convection heat flow from the heated source through vertical tube with internal rings (Conference Paper)

AUTHOR :

Pervez, M.S., Nayak, R.C., Vijaybhaskar, S.B., Roul, M.K., Khan, N.H., Kulkarni, M.V.

JOURNAL NAME:

Materials Research Proceedings

DETAILS:

Published on 13 July 2024



ABSTRACT:

Heat transfer with density difference of fluid without any external source is called natural convection heat flow. The density difference occurs due to temperature variation. When fluid temperature rises due to surrounding condition, then fluid starts to rise up and nearer fluid movement occurs to fill that gap. Natural convection method is commonly used in electronic equipment, where maximum numbers of equipment are placed on a single small board, if proper heat transfer will not happen from that board, then failure of the total system will occur, forced convection method is not practically possible for such small board, so natural convection method is suitable for these cases. In this work heat transfer properties inside a vertical tube and the method to enhance heat transfer by natural convection through the tube has been presented, the vertical tube is 50mm diameter and its length is 550 mm. Ratio of length to diameter of the test section is 11. Uniform heat flux is retained inside the tube. The rings provided inside the test section having dimension 6 mm thick and square cross section. Rings are placed with equal spacing inside the tube. The basic aim of this work is to represent the heat transfer properties from the heated object through the vertical tube by natural convection heat transfer with and without internal rings inside. Fluid flow properties along the vertical tube and exit from tube have been presented in this work. © 2025, Association of American Publishers. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002860475&doi=10.21741%2f9781644903438-3&origin=inward&txGid=900127071e96f16a68b0aa2f232ab63d>



TITLE:

Medicinal plant biotechnology

AUTHOR :

Pawar, A.T., Tagalpallewar,
A.A., Mishra, M., Swami,
A.G., Baheti, A.M.

JOURNAL NAME:

Pharmacognosy and
Phytochemistry: Principles,
Techniques, and Clinical
Applications

DETAILS:

Published on 10 April 2025



ABSTRACT:

Presently, biotechnology is widely used to produce value-added products from a wide variety of plant species and has emerged as a crucial tool in every aspect of plant research. In addition to improving the synthesis of secondary metabolites, medicinal plant biotechnology is a developing field that has helped to preserve superior varieties. Biotechnological interventions have aided in the molecular analysis, improvement, multiplication, and selection of elite therapeutic plant varieties. Since the development of plant cell technology, important metabolites have been produced in-vitro utilizing plant cell, tissue, and organ cultures. This technique is becoming more and more popular in industrial settings. The focus of efforts has been on utilizing the biosynthetic activities of cultured plant cells to obtain high yields of products suitable for commercial exploitation. This has been accomplished by optimizing the culture conditions, choosing high-producing varieties, using precursor feeding, transformation methods, and immobilization techniques. This chapter mainly discusses the techniques and applications of plant tissue culture and recombinant DNA technology. © 2025 John Wiley & Sons, Inc. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002107633&doi=10.1002%2f9781394203680.ch18&origin=inward&txGid=81945e1cf48bf491b406117a8bd6deba>



TITLE:

Developing a Primitive
Humanoid Legged Locomotion
to Gain an Understanding of
Human Mobility(Article)

AUTHOR :

Bansal, T., Patel,
V., Solanki, M., Bumb,
M., Deshmukh, K.

JOURNAL NAME:

Evergreen

DETAILS:

Published on March 2025



ABSTRACT:

This research paper delves into the design and development of a humanoid-legged locomotion model aimed at understanding human locomotion. This interdisciplinary study integrates principles from robotics, biomechanics, and control systems to create a model that emulates the intricate movement of human legs. The investigation encompasses the utilization of a robotic manipulator with a specific focus on Degrees of Freedom (DoF), incorporating calculations to simulate biological dimensions. Utilizing DoF in planar and spatial contexts, the manipulator's design integrates advanced materials, modular components, sensors, wireless connectivity, and machine learning algorithms. The study also makes use of Arduino Mega 2560, in developing the model. The designed system is then observed to analyze its performance and reliability. The contribution of the paper lies in offering insights and a better understanding of this complex area to facilitate improved and newer applications. The study will be value adding for both researchers and practitioners in paving the way for future advancements in humanoid robotics. © 2025 Joint Journal of Novel Carbon Resource Sciences and Green Asia Strategy. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001711327&doi=10.5109%2f7342470&origin=inward&txGid=30db9130f798570f6f4b4533e5334858>



TITLE:

High-Frequency Stock Market
Price Prediction Using
Blockchain and Deep
Learning(Conference Paper)

AUTHOR :

Govindasamy,
P., Radhakrishnan,
G.V., Shankar, U.

JOURNAL NAME:

1st International Conference on
Advances in Computer Science,
Electrical, Electronics, and
Communication Technologies,
CE2CT 2025

DETAILS:

Published on 22 February 2025



ABSTRACT:

Researchers and financiers utilize statistics on stock market operation, including past returns, share values, accessible, large, poor, near, and transaction size, to identify trends in stock activity. Technological evaluation can provide financiers with contradictory indications. They focused on predicting the return and risk levels of stock market prices. As a result, the stock market requires an automatic technology that can anticipate the return rate of bitcoin. Deep learning (DL) technology can estimate share market trends employing technological evaluation. This research creates a deep learning-based smart return rate estimation method for blockchain-based stock market prices (RRE-DLBSP). The proposed RRE-DLBSP framework develops an LSTM (long short-term memory) paradigm for RRE assessment. Additionally, the LSTM algorithm's hyperparameters are effectively adjusted using the Adam optimization algorithm, improving prediction efficiency. The Ethereum return rate is selected as the goal and the model outcomes are examined in various ways to ensure the highest functioning of the RRE-DLBSP paradigm. The research results demonstrated the RRE-DLBSP method's superiority over the cutting-edge approaches based on a variety of performance metrics. The suggested RRE-DLBSP has an MSE of 0.0436 and 0.0656, while the mean for the evaluated techniques in training and evaluation is 0.725 and 0.6124, respectively. © 2025 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002703672&doi=10.1109%2fCE2CT64011.2025.10941286&origin=inward&txGid=ed572d016d82fc7d4e508e5754b0585e>



TITLE:

Complementary and alternative
medicinal systems

AUTHOR :

Baheti, A.M., Swami, A.G., Nimbalkar, M.R., Nimbalkar, R., Pawar, A.T.

JOURNAL NAME:

Pharmacognosy and
Phytochemistry: Principles,
Techniques, and Clinical
Applications

DETAILS:

Published on 10 April 2025



ABSTRACT:

It is estimated that two-thirds of the world's population receive their medical care from non-conventional medical systems, including homeopathy, Siddha, Ayurveda, Unani, Kampo, Latin American folk systems, traditional Hawaiian medicine, traditional Chinese medicine, Native American medicine, etc. These medical systems have aspects in common even if they come from different cultures, languages, countries, worldviews, and health beliefs. These include the utilization of complex interventions, a holistic approach, an emphasis on illness prevention rather than disease therapy, and the diagnosis and treatment of each patient on an individual basis. The primary causes of the increased interest in complementary and alternative medicine (CAM) are the limitations of the allopathic medical system currently in use. This chapter mainly discusses the history, principle, diagnosing process, and formulations of medicinal systems of Ayurveda, Siddha, Unani, and Homeopathy. © 2025 John Wiley & Sons, Inc. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002103430&doi=10.1002%2f9781394203680.ch04&origin=inward&txGid=91a755bf07901674ccac7a0d7220cd98>



TITLE:

Ontology Based Legal
Knowledge System for Cheque
Bounce Cases in
India(Conference Paper)

AUTHOR :

Naik, V., Rajeswari, K.

JOURNAL NAME:

Lecture Notes in Networks and
Systems

DETAILS:

Published on 26 July 2024



ABSTRACT:

Legal systems are often confusing and require expertise to answer questions related to it. One such tricky section is Cheque Bounce Case i.e., Section 138. This section deals with the causes and consequences of issuing a cheque and not honoring to pay that amount. This study focuses on simplifying the complexities of Section 138 of the Negotiable Instrument Act, a challenging legal provision often poorly understood by the general public. The aim is to make the information accessible to individuals with limited legal knowledge, as well as aid law stakeholders in comprehending the nuances of this section. The system employs a unique approach, transitioning from unsupervised machine learning models to a custom-built ontology based on Section 138, significantly improving the accuracy of answers to user queries. The originality lies in the creation of a comprehensive ontology, encompassing multiple classes and their attributes. The research implications are noteworthy, as the system proves instrumental in addressing intricate questions related to Section 138, empowering individuals with limited knowledge to make informed decisions and better understand their legal situations. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025.

Link - https://www.scopus.com/record/display.uri?eid=2-s2.0-105001277906&doi=10.1007%2f978-981-97-8695-4_22&origin=inward&txGid=7fc0b1b889dd157b99d06bf82c4f8632



TITLE:

Investigating an Efficient Filter to Implement Automated Nadi Pariksha by Analysing Time and Frequency Domain Features with Machine Learning

AUTHOR :

Fatangare, M.,
Bhingarkar, S.

JOURNAL NAME:

International Research Journal of
Multidisciplinary Technovation

DETAILS:

Published on 30 May 2025



ABSTRACT:

In the realm of traditional Ayurveda practices, Nadi Pariksha (Pulse Diagnosis) stands out as a highly convenient and non-invasive method for examining the health of the human body. Rooted in ancient literature, Nadi Pariksha utilizes the radial artery pulse to assess the physiological condition. Recognizing the variability of pulses among individuals, influenced by factors such as age and time of day, mastering Nadi Pariksha has traditionally required personalized instruction from experts. Unfortunately, this specialized knowledge is at risk of fading away. To address this challenge, a sensor-based apparatus leveraging photoplethysmography is introduced which is designed to capture human pulse signals, facilitating the standardization and analysis of human Nadi. This innovative equipment comprises three pulse sensors, each dedicated to Vata, Pitta, and Kapha, alongside a microcontroller with an Analog-to-Digital converter connected to a laptop/PC via a COM port. In this study, pulse data from 250 volunteers, spanning ages 18 to 75 and representing a diverse mix of healthy and non-healthy individuals of both genders, underwent comprehensive analysis. A total of six pre-processing techniques, two types of features extraction methods to extract 60 features, and 3 classifiers were employed to distinguish healthy and non-healthy subjects. The comparison revealed that moving average and Butterworth filters exhibit higher accuracy in analyzing Nadi signals. The DT and KNN classifiers outshone others, achieving an impressive accuracy rate of 92%. This pioneering work holds significance for the analysis of Nadi signals and may pave the way for a new era of digitalization in Nadi Pariksha. © The Author(s) 2025.

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TITLE:

Spinel Nano-Ferrites for
Theranostic and Diagnostic
Biomedical Applications

AUTHOR :

Podutwar, A.A., Chandorkar,
P.U., Chabukswar, A.R., Jagdale,
S.C

JOURNAL NAME:

Applications of Spinel Nano-
Ferrites in Health, Environmental
Sustainability, and Safety

DETAILS:

Published on 1 January 2025



ABSTRACT:

Spinel nano ferrites (SNFs) have a plethora of applications in the diverse areas of biomedicine. When ferrite materials exhibit superparamagnetic character, their utility for biological applications like site-specific or targeted drug delivery, hyperthermia treatment, magnetic resonance imaging (MRI), and magnetic separation is significantly enhanced. Consequently, superparamagnetism is a highly desirable property in spinel ferrite particles. As this property is reliant on the size of the particles, their methods of synthesis have become a critical step in procuring the necessary attributes. Also, the structure of SNFs showcases unique multifunctional features such as exceptional magnetic properties, a larger surface area, active sites on the surface, robust chemically stable, controllable shape as well as size, and possibilities for surface modification. The difficulty lies in maintaining high magnetism, which tends to decrease when the size is reduced to the nanoscale. Hence, the engineering of these nano ferrites becomes essential, and choosing an appropriate synthesis method becomes crucial. Consequently, elements such as shape, physical and chemical properties, and biocompatibility significantly impact the effectiveness of nano ferrites in biomedical applications. This book chapter will review some fundamental concepts to understand the applications of SNFs in magnetic hyperthermia, imaging techniques, targeted drug delivery, and other extensive biomedical applications using SNFs. © 2025 selection and editorial matter, Atul Thakur and Preeti Thakur; individual chapters, the contributors.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002836488&doi=10.1201%2f9781003568940-14&origin=inward&txGid=7b471144d4287ca7d21b394b9bad6fb1>



TITLE:

Emerging Environmental
Contaminants: Sources,
Consequences and Future
Challenges

AUTHOR :

Talreja,
N., Hegde, C., Kumar,
E.M., Chavali, M.

JOURNAL NAME:

Green Technologies for Industrial
Contaminants

DETAILS:

Published on 1 January 2025



ABSTRACT:

Emerging environmental contaminants (ECs) are present in many different forms through air, water and land and their detection is becoming a humongous task for several researchers. The chemistry of natural water has been a topic of interest for centuries, which many researchers have discovered in their long period of investigation and have forgotten as well. The emerging contaminants are the natural or synthetic molecules or compounds which enter into the environment that are not monitored generally but harm the environment and can influence the ecology and health of the public. The various contaminants include antibiotics, hormones, pesticides and various pharmaceutical products, and due to this the drinking water is also getting contaminated as there are traces of the molecules left over during the treatment of these contaminated waters. These ECs have the potential to contaminate by entering into the environment depending on their release into the environment and degradation of the compounds and their pattern of use. In the current scenario, there are various detection techniques available but due to continuous development in the detection and analysis of trace pollutants, a technique needs to be identified which can detect even the minute-to-minute quantity of the element and should be able to detect the biosensors which are being used to detect these micropollutants. In this chapter, we try to identify the various techniques available to detect the various micropollutants across a wide variety of sources. © 2025 Scrivener Publishing LLC.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001266286&doi=10.1002%2f9781394159390.ch5&origin=inward&txGid=77e93bd44e4a38fb62e4905b2a0bb8bb>



TITLE:

Transforming MSME assembly operations: smart manual assembly table for improved productivity(Article)

AUTHOR :

Shinde,P.S., Poredi,C.S., Shelke,S.
Patil,S.S., Subhedar,J.J., Dhanvijay, M.R., Patil, S.M.

JOURNAL NAME:

International Journal of Basic and Applied Sciences

DETAILS:

Published on 7 February 2025



ABSTRACT:

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in the manufacturing sector but often face challenges in maintaining efficiency and quality due to high worker attrition and skill variability. Traditional manual assembly tables (TMATs) require experienced operators, making it difficult for MSMEs to sustain productivity with novice workers. To address this, authors developed and implemented a Smart Manual Assembly Table (SMAT) that integrates smart assistance technologies (SAT) to enhance industrial efficiency. The system incorporates real-time monitoring, automated guidance, and error detection mechanisms to improve worker accuracy and productivity. Experimental evaluation compared the performance of traditional and smart assembly setups, focusing on cycle time, error rate, and overall workflow efficiency. The results demonstrated a significant reduction in assembly time and errors, enabling higher production rates and improved product quality. Additionally, the SMAT reduced the cognitive load on operators by providing automated alerts and digital work instructions, thereby enhancing adaptability for novice workers. The study also highlights the potential of integrating Industry 4.0 principles into MSME assembly operations, thereby enhancing a collaborative human-machine environment. The findings emphasize the practical benefits of smart-assisted manual assembly cells, including cost-effectiveness, scalability, and ease of implementation. Future research should focus on long-term reliability, adaptability across diverse assembly tasks, and optimized scheduling techniques to further improve efficiency. The SMAT presents a promising approach for modernizing MSME assembly processes, ensuring sustainable productivity and a competitive advantage in the evolving industrial landscape. © Prathamesh Shailesh Shinde et al.

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TITLE:

Leveraging Computer Vision to
create an Intelligent Threat
Detection System for Visually
Impaired (Conference Paper)

AUTHOR :

Ghorpade-Aher, J., Dholwani,
D., Randive, S., Shetty, S., Bande,
Y.

JOURNAL NAME:

Proceedings of the 3rd
International Conference on
Intelligent and Innovative
Technologies in Computing,
Electrical and Electronics, IITCEE

DETAILS:

Published on 2025



ABSTRACT:

Visual impairment affects over 2.2 billion people worldwide, making it difficult to perceive environmental hazards and navigate safely. While traditional assistive technologies like canes and guide dogs are helpful, they struggle to detect distant or complex threats. To address this, we aim to develop an Intelligent Threat Detection System through Computer Vision. This research project employs a wearable camera to record the user's environment in real-time. The captured video is then processed by a sophisticated Convolutional Neural Network (CNN) trained to identify potential threats from a large dataset. The model extracts relevant features and classifies threats, generating an auditory alert and verbal guidance. The system achieved an average precision of 92% in threat detection, and user studies with 20 blind participants showed a significant reduction in collision incidents with improved user confidence compared to traditional assistive aids. Participants who navigated through controlled environments equipped with our threat detection system showed a significant reduction in collision incidents and improved user confidence compared to traditional assistive aids alone. Qualitative feedback highlighted the system's ease of use and sense of enhanced safety. © 2025 IEEE.

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TITLE:

Techno-economic analysis and sustainable advancements in food waste conversion to biogas and hydrogen fuel

AUTHOR :

Meena, P.K., Shelare, S., Kumar, S., Kumar, D., Patane, P.M., Wagle, C.S., Awale, S.D.

JOURNAL NAME:

Environmental Progress and Sustainable Energy

DETAILS:

Published on 2025



ABSTRACT:

The escalating global waste generation, driven by population growth, includes billions of tons of food waste annually, posing significant risks to human health and the environment. This study addresses these challenges by exploring sustainable waste-to-energy solutions, focusing on biogas and hydrogen production from food waste. Anaerobic digestion emerges as a promising technology for converting food waste into valuable resources such as biofuel, bioenergy, and fertilizers, providing an eco-friendly alternative to landfill disposal. Additionally, hydrogen production from food waste offers a pathway to cleaner and renewable energy, though it requires cost-effective and sustainable approaches for widespread adoption. This review presents a comprehensive analysis of state-of-the-art biogas and hydrogen production technologies, supported by a detailed techno-economic evaluation of their potential applications. Key findings include strategies to optimize conversion processes and enhance efficiency. The study concludes by proposing advancements to current technologies, underscoring their role in establishing a sustainable renewable energy framework and contributing to global waste management solutions. © 2025 American Institute of Chemical Engineers.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003462773&doi=10.1002%2fep.14606&origin=inward&txGid=d251b76e9f2c0dd04215db24da60f864>



TITLE:

DEVELOPMENT AND
VALIDATION OF A MODIFIED H-
FLUME FOR ACCURATE FLOW
MEASUREMENT IN
RECTANGULAR

AUTHOR :

Achour, B., Amara, L.,
Kulkarni, K.H

JOURNAL NAME:

Larhyss Journal

DETAILS:

Published on 2025



ABSTRACT:

The study aimed to examine, from theoretical and experimental perspectives, the modified H-Flume as a flow measurement device for rectangular open channels. By introducing a vertical V-notch at the terminal section, the modified H-Flume allows for the derivation of theoretical relationship governing the discharge coefficient (C_d) and the stage-discharge relationship, overcoming the limitations of the original design. These relationships depend on the dimensionless parameter $M_1 = mh_1/B$, which encapsulates the key geometric and flow characteristics of the device. Solely depending on M_1 , the study introduces the relative upstream flow depth h_{1*} , which is a dimensionless parameter defined as the ratio of the upstream flow depth (h_1) to the critical flow depth ($h_{2,c}$) at the V-notch, capturing the hydraulic state of the upstream flow relative to critical conditions. This dimensionless parameter plays a pivotal role in determining the discharge coefficient (C_d). Indeed, the discharge coefficient (C_d) is fundamentally governed by h_{1*} , as it encapsulates the energy transformation and flow behavior from the upstream subcritical state to the downstream critical state. This relationship ensures that C_d is a precise function of the hydraulic conditions at the approach channel and the geometry of the V-notch. The relationship between h_{1*} and C_d is mathematically linked through energy principles and dimensionless parameters, emphasizing their interdependence. In addition, since C_d is directly influenced by h_{1*} , the flow rate (Q) can be uniquely determined by measuring the upstream depth h_1 . This dependency eliminates ambiguity in the stage-discharge relationship and enables accurate flow rate predictions. As practical implications, the explicit dependence of C_d on $h_{1*}(M_1)$ simplifies flow measurements, as a single depth reading at the upstream section suffices to determine the discharge. This relationship enhances the practicality of the modified H-Flume, ensuring reliability across a broad range of flow conditions. An increase in h_{1*} corresponds to changes in flow dynamics and directly affects C_d , enabling the accurate estimation of the discharge rate (Q). Explicit approximate equations for $h_{1*}(M_1)$ were developed, simplifying the calculation of C_d while maintaining remarkable accuracy. These equations revealed that h_{1*} is a critical intermediary variable, as it reflects the flow's evolution through the flume and its approach to the critical state at the V-notch. This link establishes the modified H-Flume as a semi-modular device where C_d depends not only on the geometric characteristics of the flume but also on the upstream flow conditions represented by h_{1*} . The strong theoretical and experimental foundation of this study confirms the reliability and practicality of the modified H-Flume. The established relationships between h_{1*} , C_d , and Q offer a robust framework for precise flow measurement, providing significant advancements in open-channel hydraulics. This makes the modified H-Flume an invaluable tool for applications requiring high accuracy and versatility across a wide range of flow conditions. Indeed, four modified H-Flumes, with varying geometries, were subjected to experimental testing across 1480 flow conditions. Results show excellent agreement between theoretical and experimental discharge coefficients, with maximum deviations of only 0.185%. This validates the modified H-Flume's accuracy and reliability, making it a practical and theoretically sound tool for open-channel flow measurement. © 2025 All rights reserved, Legal Deposit 1266-2002.

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TITLE:

Effectiveness of Coconut Shell Ash for Corrosion Control in Concrete – An Experimental Approach(Article)

AUTHOR :

Patil, S., Patil, V., Modi, A., Yadav, R., Nema, A.A., Borage, M., Pradipsinh Rajput, V.

JOURNAL NAME:

Journal of Mines, Metals and Fuels

DETAILS:

Published on February 2025



ABSTRACT:

This study evaluates the performance of coconut shell ash as a corrosion-controlling agent in concrete. Reinforced concrete specimens with different dosages of coconut shell ash were cast and further exposed to an accelerated corrosion process. The corrosion activity was monitored with the help of the most commonly adopted electrochemical techniques viz - half-cell potential and Tafel extrapolation technique. The test results indicated that adding 5% coconut shell ash by the weight of cement in concrete hindered the corrosion activity and resulted in a decreased corrosion rate. The compressive strength of concrete with coconut shell ash was also enhanced compared to concrete without coconut shell ash. Thus, using coconut shell ash as an additive in concrete can be considered an eco-friendly solution as it helps resolve the issue of disposal of agricultural waste material and controls the corrosion activity in concrete. Major findings: The experimental results indicate that incorporating 5% Coconut Shell Ash (CSA) by weight of cement into concrete effectively reduces corrosion and enhances compressive strength. As a waste agricultural byproduct, CSA offers an environmentally friendly solution for agricultural waste disposal while mitigating corrosion in concrete. Major findings: The experimental results indicate that incorporating 5% Coconut Shell Ash (CSA) by weight of cement into concrete effectively reduces corrosion and enhances compressive strength. As a waste agricultural byproduct, CSA offers an environmentally friendly solution for agricultural waste disposal while mitigating corrosion in concrete. © 2025, Informatics Publishing Limited. All rights reserved.

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TITLE:

Correction to: Novel ensemble
bagging-logistic regression
algorithm for NoSQL database
security (Applied Intelligence,
(2025), 55, 7, (492),

AUTHOR :

Kanade, A., Vibhute,
A.D., Kanade, S.

JOURNAL NAME:

Applied Intelligence

DETAILS:

Published on May 2025



ABSTRACT:

In this article the affiliation details for Author Shantanu Kanade was incorrectly given as "Symbiosis Institute of Computer Studies and Research (SICSR), Symbiosis International (Deemed University), Pune 411016, MH, India" but should have been "Symbiosis School for Online and Digital Learning, Symbiosis International (Deemed University), Pune, MH, India." and the email details for Author Anuradha Kanade was incorrectly given as "anuradha3279@gmail.com" but should have been "anuradha.kanade@mitwpu.edu.in". The original article has been corrected. © The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2025.

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TITLE:

A case study of tribal communities in Northeast India: Gastronomic tourism and tribal community development

AUTHOR :

Sharma, E., Sharma, M.

JOURNAL NAME:

Emerging Trends and Practices in Gastronomy and Culinary Tourism

DETAILS:

Published on 13 March 2025



ABSTRACT:

The Northeast India comprises of eight states dominated by various tribal communities. However, unfortunately it remains as a lesser-explored tourism destinations of India in spite of being blessed with unnatural scenic beauty, wildlife, rare flora and fauna, and rich heritage and culture. Since there is a need to preserve the cultural heritage of these communities, it is pertinent to look at the promotion of more sustainable and responsible tourism concepts such as gastronomic tourism. The chapter aims to focus on how gastronomic tourism contributes towards the sustainable development of tribal communities in North East India based on SWOT analysis and qualitative analysis of primary and secondary data. The themes which emerged included Cultural Heritage, Eco-Friendly Practices, Community Involvement and Economic Opportunity, Cultural Exchange and Authentic Experiences. Solutions are provided to address weaknesses, tackle the threats and leverage the opportunities. Various models and policy implications for promoting gastronomic tourism in the northeast have also been discussed. © 2025 by IGI Global Scientific Publishing. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002190796&doi=10.4018%2f979-8-3693-7530-3.ch005&origin=inward&txGid=34b1979e9b2d12e855572abe1060886c>



TITLE:

Investigation on combined use
of biochar and ground
granulated blast furnace slag as
a supplementary admixture in
concrete(Article)

AUTHOR :

Kallimani, R., Minde, P.

JOURNAL NAME:

Environmental Science and
Pollution Research

DETAILS:

Published on March 2025



ABSTRACT:

Concrete is the most used material globally, with cement production causing 8% of emissions. Waste-based supplementary cementitious materials (SCMs) offer a partial cement replacement to address climate goals. The present study explores using Ground Granulated Blast Furnace Slag (GGBS) and biochar as SCMs to elevate concrete's sustainability while maintaining structural performance. GGBS, sourced from steel production, was used at 20% and 40%, while biochar, derived from wood waste through pyrolysis, was incorporated at 3%, 4%, and 5% by weight of cement. The effects of these replacements were evaluated through compressive strength tests at 7 and 28 days, as well as microstructural analyses employing scanning electron microscopy (SEM) and energy-dispersive X-ray analysis. Findings revealed that GGBS enhanced workability due to its finer particles and pozzolanic activity while aiding long-term strength development. However, including biochar, particularly at higher percentages, led to a reduction in compressive strength, attributed to its porous structure and high carbon content, which weakened the interfacial transition zones (ITZ) and increased voids in the matrix. SEM analysis confirmed the highly porous nature of biochar, which interfered with the formation of calcium silicate hydrate (C-S-H), while EDAX showed a significant presence of carbon in biochar and GGBS, further explaining the dilution of strength. At 7 days, the compressive strength of concrete decreased by 29.4% (22.84 MPa) for 20% GGBS with 3% biochar, and up to 52.1% (15.49 MPa) for 40% GGBS with 5% biochar, compared to the control mix (32.34 MPa). At 28 days, the reduction ranged from 26.7% (25.02 MPa) for 20% GGBS with 4% biochar to 54.6% (15.49 MPa) for 40% GGBS with 5% biochar, relative to the control mix (34.14 MPa). Despite the reduction in early strength, the GGBS and biochar blends offer promise for applications focused on long-term durability and sustainability. This research highlights the need for careful optimization of mix proportions to find a middle ground between environmental benefits and mechanical performance. © The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2025.

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TITLE:

Use of electrocoagulation for
treatment of
wastewater(Conference Paper)

AUTHOR :

Patil, B., Patil, S.,
Ravande, K.

JOURNAL NAME:

Materials Research Proceedings

DETAILS:

Published on 2025



ABSTRACT:

Effective wastewater treatment is essential for safeguarding environmental integrity and public health. The demand for innovative, cost-effective, and highly efficient technologies to purify wastewater before its release into natural ecosystems has never been more critical. Conventional coagulation techniques used in wastewater treatment exhibit significant limitations, including incomplete pollutant removal, excessive chemical consumption, substantial sludge generation, sensitivity to pH fluctuations, inefficacy against emerging contaminants, high energy requirements, variability in feed water quality, and the necessity for supplementary processes to achieve regulatory standards. This research focuses on electrocoagulation as a promising alternative for wastewater treatment. Electrocoagulation utilizes electric currents to facilitate the coagulation of suspended and dissolved contaminants, leading to their subsequent removal. The study investigates how modifications in key design parameters can optimize this process for various industrial applications, depending on the specific contaminants present. By fine-tuning these parameters, electrocoagulation can be adapted to meet a wide range of treatment requirements, thereby broadening its applicability across different sectors. © 2025, Association of American Publishers. All rights reserved.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105003156658&doi=10.21741%2f9781644903414-83&origin=inward&txGid=a7403387de8bd60b23ae4c8d0ee6ff5c>



TITLE:

Single photon generation from quantum dots: recent advances, challenges and future directions(Review)

AUTHOR :

Thapa, D.K., Biswas, S.

JOURNAL NAME:

Nanoscale

DETAILS:

Published on 19 February 2025



ABSTRACT:

A single photon source (SPS) is a device designed to emit photons, one at a time, enabling precise control over quantum states, unlike classical light sources that produce interfering streams. This capability is crucial for secure communication protocols such as quantum key distribution and for quantum networks, where single photons act as carriers of quantum information. Recent advancements have led to various SPS technologies, including quantum dots (QDs), atom-like emitters, and color centers in diamonds. Among these, QDs, semiconductor nanocrystals, have gained significant attention due to their unique optical and electronic properties derived from quantum confinement effects. They offer size-dependent tuning of emission wavelengths, high photoluminescence efficiency, and discrete energy levels, making them ideal for single photon applications while exhibiting scalability and low background noise. This review provides a comprehensive overview of recent advancements in quantum dot-based SPSs operating at room temperature, highlighting their optical properties, essential performance metrics, and the latest developments in single photon generation. It also discusses strategies to mitigate blinking and improve photon statistics through techniques such as plasmonic nanocavity and ligand exchange. The review concludes by outlining the challenges faced in the field and discussing potential solutions. © 2025 The Royal Society of Chemistry.

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TITLE:

Clinical Trial with Synbiotics in
Various Disease State

AUTHOR :

Shilpi,S., Chimaniya,P., Saini,K., ,
H., Chouhan,S., Dudhekula,J.B.,
Bhatt, S., Dubey, A.K.,

JOURNAL NAME:

Synbiotics in Human Health:
Biology to Drug Delivery

DETAILS:

Published on 1 January 2024



ABSTRACT:

Simultaneous use of prebiotics and probiotics for human health benefit is generally called synbiotic. Prebiotics is nonviable nutritional food substance used to support the growth of live beneficial microorganism while nonpathogenic live microorganisms that can be taken orally for well-being assistance for human are defined as probiotics. It is evident that the gut microflora composition can be altered through diet. Probiotic bacteria are associated with the manufacturing of healthy nutritional food and can directly be used to manage different disease conditions. Some health-beneficial bacteria such as genera Bifidobacterium and Lactobacillus, Escherichia, Enterococcus, Streptococcus, and Saccharomyces are the most common and available as marketed products. Combinatorial use of pre- and probiotic provides synergistic health beneficial effects, and it supports the growth of beneficial microorganisms that results in improved human health. It was clinically proven that synbiotics can provide a health gain and also provide symptomatic relief in different pathogenic conditions. Synbiotics can synergize the action of a particular drug which are used for a specific disease. Dietary intrusion for gut microbiota is possible, and it has been clinically confirmed in many studies. It is clinically proven it improves the health of patients who suffered from gut or Inflammatory bowel disease (IBD) syndrome. It can provide a beneficial role and manage different types of diseases like irritable bowel syndrome, colorectal cancer, enterocolitis, and ulcerative colitis, breast cancer, liver cirrhosis, liver, and lung cancer. It also plays an important role in improving health in case of lactose intolerance, diarrhea, helps in prevention of immunological reactions, stress, constipation, minimization of cholesterol level in plasma, and has antimicrobial benefits. In this chapter, the detailed clinical trial exploration of synbiotic for the management of different diseases has been included. © Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Optimization and Mechanistic
Insights of Zinc Ascorbate
Catalyst for Ring-Opening
Polymerization of Caprolactone
Using RSM Methodology and
DFT Calculations(Article)

AUTHOR :

Naik, S.S., Vedpathak, S.,
Nair, K.S.

JOURNAL NAME:

Polymers for Advanced
Technologies

DETAILS:

Published on April 2025



ABSTRACT:

Polycaprolactone (PCL) is an aliphatic polyester recognized for its exceptional versatility and biodegradability, which has garnered significant attention for a wide range of applications. This study presents an innovative methodology for the synthesis of PCL through the ring-opening polymerization (ROP) of ϵ -caprolactone (CL). The approach employs a biocompatible and environmentally benign organometallic zinc ascorbate complex as a catalyst. Derived from ascorbic acid, a well-established reducing agent, zinc ascorbate serves as a sustainable alternative to conventional tin-based catalysts, thereby mitigating environmental impact and enhancing safety measures. The catalyst operates effectively under solvent-free conditions and does not require initiators, achieving a high polymer conversion rate of approximately 79%. The optimization of the reaction parameters was conducted using response surface methodology (RSM) employing a central composite design (CCD). The structural and chemical characterization of the catalyst as well as the resulting polymers was performed using proton nuclear magnetic resonance (^1H NMR), Fourier-transform infrared spectroscopy (FTIR), and x-ray diffraction (XRD) analyses. Additionally, density functional theory (DFT) calculations elucidated a four-step coordination-insertion mechanism for the polymerization of cyclic lactones, with findings supported by Gibbs free energy, electrostatic potential, and non-covalent interactions. This study underscores the potential of zinc ascorbate as a reliable, nontoxic, and cost-effective catalyst, fulfilling the increasing demand for sustainable and efficient polymerization processes in commercial and biomedical applications. © 2025 John Wiley & Sons Ltd.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105002578015&doi=10.1002%2fpat.70182&origin=inward&txGid=508555d421ba9cdeeb28c312bcd5eeb5>



TITLE:

Introduction to Lung Cancer

AUTHOR :

Pujari, R., Sah, S.K.,
Bhatt, S.

JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Lung cancer is the second most common malignancy in both men and women. In total, 90% of lung cancer-related fatalities are caused by smoking, which is a key risk factor for the disease. Small-cell carcinomas and non-small-cell carcinomas are the two types of lung cancer that may be generically categorised. Up to 75% of lung cancer cases are non-small-cell lung cancer (NSCLC), which is more prevalent. Chest radiography, sputum cytology, bronchoscopy, needle biopsy, and other procedures are used to diagnose lung cancer. Stage I and stage II, NSCLC are all managed largely by surgery; however, stage III illness may also be treated this way. Surgery may be an option for patients with stage IIIa disease, although the likelihood of survival is decreased if mediastinal lymph nodes are involved. Adjuvant irradiation does not prolong survival time, but it may lower the incidence of local recurrence. When combined with cisplatin, adjuvant treatment may offer a little survival-time benefit. Radiation treatment alone may not be as effective in improving survival as chemotherapy coupled with it. Advanced NSCLC patients should get treatment in combination. Over the finest supportive care, a number of regimens have demonstrated a survival benefit. Along with surgery and radiation therapy, chemotherapy is becoming a more significant component in the treatment of this illness. A newer form of treatment called immunotherapy employs monoclonal antibodies to target several pathways involved in the growth of cancer. Both individually and in combination, paclitaxel, docetaxel, gemcitabine, vinorelbine, irinotecan, and topotecan are active. Surgery is only sometimes used to treat small-cell lung cancer (SCLC). Patients with mild illness should get radiation treatment in addition to a platinum-based chemotherapy regimen. Patients with advanced illness should be provided combination chemotherapy. The categorisation, aetiology, pathophysiology, clinical characteristics, diagnostic techniques, and therapy options for lung cancer are all briefly discussed in this chapter. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

AI JURIST: EMPOWERING LEGAL
KNOWLEDGE AND PRACTICES
IN INDIA(Conference Paper)

AUTHOR :

Kadhare, R., Shaharao,
R., Thomas, A., Sakarkar, G.

JOURNAL NAME:

IET Conference Proceedings

DETAILS:

Published on 13 December 2024



ABSTRACT:

In the field of legal studies and other related fields, identifying and to study accurate legal information, such as laws and case precedents, is a difficult challenge. The primary focus of this research is to utilise Natural Language Processing (NLP) and AI techniques for Legal Information Retrieval System to solve this challenge. This system will help lawyers and legal practitioners in building strong arguments, developing effective strategies, and making well-informed decisions critical for successful judicial proceedings. Additionally, it empowers individuals, even without prior legal expertise, to enhance their legal knowledge and better understand the law. Our study used a dataset of 70 thousand records where each record comprises case titles, proceedings, authors, citations, and legal related information. The input options for the system are either legal documents like FIRs or Query containing legal questions in the format of PDFs or Images. Afterwards, utilising the capabilities of LLMs the output is a detailed structured Legal Research Report that consists of prior cases, judgements, laws, courts etc. The system will exponentially boost efficiency by providing precise, time-saving, and easily accessible information with enhanced retrieval accuracy. The evaluation metrics yielded an 80% accuracy in quantitative evaluations, complemented by positive feedback from legal professionals highlighting the system's efficacy in delivering accurate, comprehensive, and relevant legal research reports. These results showcase the potential of proposed solution for practical implementation and further evaluations for its use in the legal domain. The proposed system has the capability to be a companion to humans in information gathering and understanding, thereby contributing towards the improvement of legal knowledge, legal research and the decision-making process. © The Institution of Engineering & Technology 2024.

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TITLE:

A Case Study on BIM-Enabled
Clash Detection in a G+13
Residential Building (Conference
Paper)

AUTHOR :

Paidi, P., Sharma, K.V.

JOURNAL NAME:

2024 IEEE Conference on
Engineering Informatics, ICEI
2024

DETAILS:

Published on 28 November 2024



ABSTRACT:

This study presents a cost-benefit analysis (CBA) of Building Information Modeling (BIM) for clash detection in a G+13 residential project in Mumbai, India. The Architecture, Engineering, and Construction (AEC) industry faces significant challenges, including low productivity and high costs caused by unforeseen conflicts during construction. BIM addresses these issues by creating a digital building model, enabling the early identification and resolution of design conflicts among structural, architectural, and MEP (Mechanical, Electrical, and Plumbing) systems. This research compares the long-term benefits of reduced rework, increased productivity, and enhanced project management with the initial costs of BIM implementation, such as software, infrastructure, and training expenses. A detailed case study demonstrates the substantial financial advantages of early conflict resolution, revealing that using BIM for clash detection resulted in significant cost savings of 365,000 on a single major conflict. Additionally, BIM clash detection minimizes material waste and CO₂ emissions, promoting sustainable construction practices. The findings support the broader adoption of BIM technologies in construction, highlighting their potential to improve efficiency, reduce project delays, and deliver high-quality outcomes. This study offers valuable insights for stakeholders considering BIM implementation and contributes to the ongoing discourse regarding its role in modern construction. © 2024 IEEE.

Link - <https://www.scopus.com/record/display.uri?eid=2-s2.0-105001504596&doi=10.1109%2fICEI64305.2024.10912408&origin=inward&txGid=b03136953f632fd0e391f273031137f8>





TITLE:

Smart Traffic Management: A Deep Learning Approach for Congestion Reduction using YOLOV8 & RandomForest(Conference

AUTHOR :

Ware, P., Pednekar, V., Kulkarni, P., Huddar, C., Bhamare, M.

JOURNAL NAME:

2024 IEEE Conference on Engineering Informatics, ICEI 2024

DETAILS:

Published on 28 November 2024



ABSTRACT:

Traffic management has become a tedious task for policemen to carry out manually. According to the publication produced by Bureau of Police Research & Department in 2017, India has just about 72,000 traffic cops to manage almost 20,000,000 vehicles. As the ratio is insanely high and unmanageable, traffic congestion has increased ever since. Hence, we proposed a smart traffic management system which will particularly tackle this problem using cutting edgetechnology. By analyzing the oncoming traffic, our model predicts the required time for particular vehicles to pass and adjusts the signal timings accordingly. By combining models from deep learning and machine learning we, propose a cheap, efficient system that addresses these problems by a combination of YOLOv8 & Random Forest Regression to generate results. These results consist of annotated images and timings for signals which are calculated from the vehicle count. © 2024 IEEE.

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TITLE:

Secure Electoral Voting System
Using Homomorphic
Encryption(Conference Paper)

AUTHOR :

Musale, V., Bhongale, A., Amune,
A., Saxena, A., Mahobia,
C., Panse, S.

JOURNAL NAME:

3rd International Conference on
Communication, Control, and
Intelligent Systems, CCIS 2024

DETAILS:

Published on 7 December 2024



ABSTRACT:

The integrity of electoral systems is paramount in ensuring democratic processes. This paper explores the use of homomorphic encryption (HE) in electoral voting systems, providing a robust solution for maintaining voter privacy while enabling transparent and verifiable vote tallying. The study delves into cryptographic protocols such as Paillier and ElGamal encryption schemes, emphasizing their mathematical foundations and applicability to voting systems. The proposed system architecture integrates HE to achieve secure and efficient vote tallying. This paper also discusses the challenges and potential solutions associated with implementing HE in large-scale elections, followed by a detailed analysis of results and conclusions. © 2024 IEEE.

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TITLE:

Revolutionizing Lung Cancer
Treatment: Recent
Breakthroughs in
Immunotherapy

AUTHOR :

Anitha, K., Chenchula, S., Ravula,
P., Radhika, C., Bhatt, S.

JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Lung cancer currently holds the leading cause of cancer-related deaths and ranks as the third most prevalent cancer across the world. Non-small-cell lung cancer (NSCLC), comprising squamous cell carcinoma (SCC), adenocarcinoma (ADC), and large-cell carcinoma (LCC), accounts for 80–85% of all cases, while small-cell lung cancer (SCLC), the most aggressive form, represents the remaining 15–20%. While targeted therapies have revolutionized the treatment landscape for lung cancer patients, they prove ineffective for individuals whose tumours do not possess the specific genetic alterations targeted by these therapies. In such cases, the integration of immunotherapy has emerged as a viable treatment approach, resulting in enhancements in both survival rates and overall quality of life. Recent advancements in immunotherapies have targeted T-cell inhibitory receptors, such as programmed cell death-1 (PD-1) and cytotoxic T-lymphocyte-associated antigen-4 (CTLA-4), resulting in improved treatment outcomes for lung cancer. This review will provide an overview of the current state of immuno-oncology, focusing on factors influencing the effectiveness of immunotherapies. Despite the notable success achieved in certain cancer types, these targeted approaches still face limitations in most cases. Therefore, this review will also explore the challenges associated with resistance to current therapies, along with recent developments in basic tumour immunology. Moreover, it will discuss the triumphs and present difficulties in cancer immunotherapy. One of the significant hurdles in lung cancer lies in the development of cancer vaccines utilizing neoantigens supplied by the transporter associated with antigen processing (TAP) for tumours lacking mutant deficiency and displaying low levels of MHC-I/peptide complexes. To address these challenges, combining immune checkpoint inhibitors targeting PD-1 and CTLA-4 has proven beneficial, providing a controllable tolerance profile and therapeutic advantages against tumours. Additionally, the future of cancer immunotherapy could benefit from combining therapeutic vaccination targeting both mutant and non-mutant neoepitopes with immune checkpoint blockade (ICB) for improved specificity. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

CTLA-4 Inhibitors for the
Treatment of Lung Cancer

AUTHOR :

Bhatt, S., Sharma, S., Patil,
S., Pujari, R.

JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

One of the most prevalent malignancies and the main reason for cancer-related deaths globally is lung cancer. The majority of these non-small-cell lung cancer (NSCLC) patients are diagnosed at an advanced stage of the illness, lowering the 5-year survival rate to around 5%. Immune checkpoint inhibitors (ICIs) can restore and sustain anti-tumour immunity by inhibiting the cancer immune response's inhibitory pathway. Programmed cell death 1 (PD-1), programmed cell death ligand 1 (PD-L1), and cytotoxic T lymphocyte antigen 4 (CTLA-4) pathway are just a few of the routes that have already been the target of ICIs. A receptor protein with high expression on the surface of T cells, B lymphocytes, and fibroblasts is the CTLA-4, also known as CD152. The CTLA-4 protein suppresses the immune system and disrupts the Cancer-Immunity Cycle (CIC) by preventing T cells from removing tumour cells, which advances lung cancer. The US FDA has approved ipilimumab and tremelimumab, immune checkpoint inhibitors that target CTLA4, as therapeutic options for people with metastatic melanoma. Additionally, several randomised clinical studies utilising CTLA4-related checkpoint inhibitors, either alone or in combination with other NSCLC therapy modalities, are now being conducted and are anticipated to improve survival results with manageable toxicity levels. This chapter gives a general review of CTLA-4's function in the pathogenesis of lung tumours and how CTLA-4 inhibitors are used to treat patients with lung cancer, including NSCLC and SCLC. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Diagnostic Tests for Migraine

AUTHOR :

Pujari, R., Bhatt, S.,
Soni, U.

JOURNAL NAME:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Migraine derives from the Greek word hemicrania, which means “half of the head” and was previously known as “hypoglycaemic headache” in the early twentieth century. It is the most prevalent interdisciplinary and complex neurologic condition marked by recurrent headache attacks. With 12% of the population affected, migraines can strike up to 17% of women and 6% of men annually. It typically affects girls more often than boys when they are young. North America has the highest adjusted prevalence of migraine, followed by Europe, Asia, Africa, South and Central America, and South America. It is the second most common cause of disability globally. A family history of migraines is common. If one or both of the parents have a history of migraines, the reported risk rises to 40% and 75%, respectively. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Preface

AUTHOR :

Bhatt, S., Eri Eri, R., Goh, B.-
H., Paudel, K.R., de Jesus
Andreoli Pinto, T., Dua, K.

JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

[No abstract available]

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TITLE:

Bragg Fibers: From Optical Properties to Applications

AUTHOR :

Chourasia, R.K., Katti, A.

JOURNAL NAME:

Bragg Fibers: From Optical Properties to Applications

DETAILS:

Published on 1 January 2024



ABSTRACT:

This book highlights the guiding mechanisms as well as the most current and important results in the field of innovative, bio-inspired Bragg fibers. While conventional optical fibers (COF) have several advantages over traditional waveguides, they also suffer from a number of disadvantages which are not present in Bragg fibers due to their minimal nonlinearities, lack of polarization or birefringence effect, lack of Fresnel reflections at the open fiber end, and absence of material or cladding losses. A natural platform for biological and chemical sensing, and with potential to boost communication systems' speed and bandwidth, the primary goal of this book is to apprise readers in academia and industry of properties of EM wave propagation in Bragg fibers with a defect layer. Their major applications in bio/chemical sensing, fuel adulteration sensing, high-temperature sensing, optical dual-channel inline filtering, optical de-multiplexers, optical couplers, and nonlinear soliton generation are presented in detail, along with comparisons of Bragg fibers with alternative structures and their relative pros and cons. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2024.

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TITLE:

Real-Time Detection of AI-Generated Deepfake Audio: A Novel Approach (Conference Paper)

AUTHOR :

Chiddarwar, P.

JOURNAL NAME:

2024 IEEE 4th International Conference on ICT in Business Industry and Government, ICTBIG 2024

DETAILS:

Published on 14 December 2024



ABSTRACT:

The rise of AI-generated deepfake audio presents a significant challenge in audio forensics, as traditional detection methods are inadequate against sophisticated manipulations. This study proposes a novel approach combining deep learning algorithms with signal processing techniques to detect deepfake audio in real-time. By leveraging voice pattern recognition and anomaly detection, the method achieves high accuracy and low latency. Experimental results show a significant improvement in detection performance, with the integrated system outperforming traditional methods. The proposed solution demonstrates potential for enhancing security and digital forensics by enabling the swift identification of deepfake audio. © 2024 IEEE.

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TITLE:

Lung Cancer Therapy:
Synergistic Potential of PD-
1/PD-L1 and CTLA-4 Inhibitors

AUTHOR :

Sharma, K., Saini, K., Chimaniya,
P., Sahu, S., Gantayat,
D., Sharma, R., Bhatt, S., Shilpi, S

JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Lung cancer is a big challenge for current research because it increases in numbers, day by day with advancement (MDR type of cancer) due to the increase in environmental pollutants and daily life habitual practices of the people like smoking. Lung cancer classifies into non-small-cell lung cancer and small cell lung cancer. It is further subclassified into squamous-cell-carcinoma, large-cell-carcinoma, and lung adenocarcinoma. Day-by-day researchers try to develop new treatment strategy to manage the drug resistance, intracellular accumulation, metastasis, invasion, side effects, and toxicity and develop a more effective personalized novel treatment for the treatment of lung cancer. The current treatment regime depends upon the stage of progression of cancer, the health of the patients, and the affordability during the time of diagnosis. Different pathways can be utilized to treat the lung cancer. T-Cell activation is one of the pathways which can retard the growth of the cancer cells. PD-1 and CTLA-4 inhibitors can modify the signaling pathway and growth of the cancer cell by T-cell activation. PD-1 inhibitors can inhibit immune response and promote self-tolerance by T-cell activation, antigen-specific T-cell-apoptosis, and regulatory T-cell-apoptosis-inhibition. Similarly, CTLA-4 inhibitors can also function as inhibitory signals by inducing the production of IL-2 and progression of the-cell cycle. CTLA-4 inhibitors stimulate the proliferation of T-cells, mainly in lymph nodes, whereas PD-1 inhibits the-proliferation-of T-cell afterward, primarily in peripheral tissues. The role and application of PD-1 and CTLA-4 inhibitors are explored in this chapter to inhibit the PD-1 and CTLA-4 signaling pathway to manage and treat the lung cancer. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Travel Tinder: A Comprehensive Literature Review on Innovations in Solo Travel Companion Matching (Conference Paper)

AUTHOR :

Jain, P., Korulkar, T., Gandhi, V., Raut, U.

JOURNAL NAME:

2024 IEEE 4th International Conference on ICT in Business Industry and Government, ICTBIG 2024

DETAILS:

Published on 14 December 2024



ABSTRACT:

Travel Tinder is an innovative web platform designed to connect solo travelers based on shared interests, budget, and travel time, aiming to enhance the solo travel experience by providing personalized companion matching. This paper explores the development of Travel Tinder through a combination of intelligent matchmaking algorithms and user-friendly interfaces, leveraging findings from existing research on recommender systems, social matching platforms, and user safety. The platform fosters a global community of like-minded travelers, prioritizing safety, trust, and personalization. Key technologies, such as hybrid recommender systems and AI-driven features for secure interaction, are analyzed, alongside a detailed literature survey on existing travel matchmaking applications. By integrating these advanced technologies, Travel Tinder aspires to make solo travel not only safer and more enjoyable but also socially enriching, contributing significantly to the growing market of solo travel. © 2024 IEEE.

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TITLE:

Introduction, Epidemiology,
Etiology, and Pathophysiology of
Migraine Pain

AUTHOR :

Patil, K.S., Aher, G.S., Patil,
O.C., Bhatt, S.

JOURNAL NAME:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Migraine is a type of headache. It may present with nausea, vomiting, or sensitivity towards light and sound. It is a complex neurological disorder characterized by recurrent headaches, which poses a significant burden on individuals and healthcare systems worldwide. While pharmacological interventions remain a cornerstone in migraine management, emerging evidence suggests that diet and nutritional factors play a crucial role in both prevention and alleviation of migraine pain. It generally affects one side of the head and demonstrated as throbbing pain. It has various phases that are covered in other chapters. Inflammatory markers, autacoids (such as prostaglandins, bradykinin, histamine and serotonin) adrenergic system, calcitonin gene-related peptides, and dopamine are having important role in migraine pathophysiology. Proper dietary habits are also important to avoid the migraine attack. Recently, importance of brain-gut-microbiota axis is also established in the pathophysiology of migraine. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Artificial Intelligence and Data
Science Approaches to
Analyzing Human Resource
Management in Hybrid and
Remote Work

AUTHOR :

Patil, S., Upadhye, P., Khandekar,
S.R., Darekar, P., Ghewari,
A., Bhattacharya, U.

JOURNAL NAME:

Proceedings of the 2024
International Conference on
Innovative Computing, Intelligent
Communication and Smart
Electrical Systems, ICSES 2024

DETAILS:

Published on 13 December 2024



ABSTRACT:

Fresh challenges and opportunities are emerging in the field of Human Resource Management (HRM) as a result of the implementation of hybrid and remote work modes. This investigation investigates the use of artificial intelligence and data science tools to evaluate HRM practices in dynamic work environments. The study employs AI, machine learning, and advanced analytics to investigate critical HRM characteristics, including engagement, productivity, and performance, in hybrid and remote environments. The study underscores the importance of data-driven methodologies for optimising HRM policies, incorporating sentiment analysis into workforce planning, and utilising predictive analytics in workforce planning. The research aims to provide practical insights to human resources professionals and corporate executives in order to improve management strategies and cultivate a remote workforce that is both efficient and inclusive. © 2024 IEEE.

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TITLE:

Preface

AUTHOR :

Bhatt, S., Patil,
C.R., Mahindroo, N.

JOURNAL NAME:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

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TITLE:

Artificial Intelligence and its
Role in Personalized Financial
Advisory Services (Conference
Paper)

AUTHOR :

Radhakrishnan, G.V., Shankar,
U., Govindasamy, P.

JOURNAL NAME:

Proceedings of the 2024
International Conference on
Innovative Computing, Intelligent
Communication and Smart
Electrical Systems, ICSES 2024

DETAILS:

Published on 13 December 2024



ABSTRACT:

Artificial Intelligence (AI) is causing a revolution in the field of substantiated financial advisory services. This is accomplished by applying sophisticated algorithms that assess massive amounts of data and provide customized recommendations to individual clients. The purpose of this research is to investigate how artificial intelligence might revolutionize the quality, efficacy, and accessibility of financial advice. Artificial intelligence systems possess the ability to repurpose various types of financial data, such as investment portfolios, customer preferences, and request trends. This enables them to provide well-founded strategies that correspond with pre-established risk thresholds. Machine literacy models and language processing techniques are used to accomplish this. Financial advisors can evaluate their services more efficiently and with greater personalization thanks to artificial intelligence, which will ultimately result in happier and more satisfied clients. Nevertheless, some barriers still need to be carefully considered to guarantee the ethical and transparent use of AI in financial advisory settings. Data sequestration companies, algorithmic bias, and nonsupervisory compliance are some of these challenges. The focus of this study is on how artificial intelligence could improve decision-making processes in the financial services industry. Moreover, it tackles unexplored areas for research and implementation to maximize AI's benefits while lowering its risks. © 2024 IEEE.

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TITLE:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

AUTHOR :

Bhatt, S., Patil,
C.R., Mahindroo, N.

JOURNAL NAME:

Management of Migraine Pain:
Emerging Opportunities and
Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

The book delves into the multifaceted world of migraine pain, offering a profound understanding of its underlying pathophysiology and presenting established treatment strategies for its effective management. It discusses the intricate world of migraine pain, offering valuable insights into its diverse aspects. Starting with an exploration of migraine's epidemiology and etiology and the complex factors contributing to this debilitating headache disorder. This book explores the significance of lifestyle changes and offers practical strategies for incorporation. Furthermore, the impact of diet and nutrients on migraine management is extensively covered, shedding light on their role in alleviating symptoms. This book serves as a comprehensive guide, blending scientific insights with practical approaches, making it an indispensable resource for healthcare professionals, researchers, and individuals seeking a deeper understanding of migraine pain. By addressing both established practices and cutting-edge advancements, it bridges the gap between knowledge and effective management, offering a holistic perspective on this challenging condition. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Immunotherapy Against Lung Cancer: Emerging Opportunities and Challenges

AUTHOR :

Bhatt, S., Eri Eri, R., Goh, B.-H., Paudel, K.R., de Jesus Andreoli Pinto, T., Dua, K.

JOURNAL NAME:

Immunotherapy Against Lung Cancer: Emerging Opportunities and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

This book provides insight into the various immunotherapeutic approaches for the treatment of lung cancers. The chapters of the book discuss the detailed mechanisms of checkpoint inhibitors, co-stimulatory molecules, drugs working in the immunosuppressive environment, and various vaccines for lung cancer. A chapter of the book explores the recent applications of the oncolytic virus in lung cancer treatment and discusses the potential and direction of oncolytic virus-based therapeutic vaccines. The chapter also elucidates the current understanding of the role of Toll-Like Receptors (TLRs) in tumor progression, and the recent progress in utilizing TLR agonists as potential therapeutic agents in lung cancer treatment. Towards the end, the book reviews the applications of stereotactic body radiation therapy (SBRT) and immunotherapy for the treatment of lung cancer. This book provides useful information to a range of audiences including clinical researchers working in the field of lung cancer, and undergraduate and postgraduate students from various disciplines such as pharmacy, microbiology, immunology, pharmacology, biotechnology, and health sciences. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Comparative Assessment and
Enhancement of Transformer
Models for Effective Text
Generation(Conference Paper)

AUTHOR :

Musale, V., Gajjar, A., Amune,
A., Singh, P., Singh,
T., Khandelwal, H.

JOURNAL NAME:

3rd International Conference on
Communication, Control, and
Intelligent Systems, CCIS 2024

DETAILS:

Published on 7 December 2024



ABSTRACT:

This paper emphasizes onto development and enhancement of text generation models using transformer architectures, specifically GPT-2. The designed system focuses on three key models: (1) a baseline GPT-2 model, (2) an optimized GPT-2 model incorporating various enhancements, and (3) an updated optimized model fine-tuned on new datasets compared with a custom GPT implementation- AuThorGPT. Techniques such as perplexity evaluation and temperature scaling will be integrated to refine the model's performance. The ultimate goal is to generate text in the style of specific training data, such as Shakespeare's works, while continuously fine-tuning the model with additional data to track and analyze improvements in output quality.
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TITLE:

Improving Software Engineering Practices: AI-Driven Adoption of Design Patterns (Conference Paper)

AUTHOR :

Supekar, V.,
Khande, R.

JOURNAL NAME:

Proceedings - 2024 2nd International Conference on Advanced Computing and Communication Technologies, ICACCTech 2024

DETAILS:

Published on 17 November 2024



ABSTRACT:

Design patterns are essential in software engineering, offering time-tested solutions to common software development problems. They enhance code maintainability, scalability, and efficiency. However, adopting design patterns presents significant challenges. Developers often face a steep learning curve, misconceptions about the applicability of design patterns, and resistance to change. When design patterns are not used, it can lead to increased technical debt, poor maintainability, and scalability issues. This paper comprehensively analyzes current trends in the usage of design patterns, the challenges faced in their adoption, and the problems resulting from their non-usage. It also explores how Artificial Intelligence (AI) can help mitigate these challenges. AI technologies, including machine learning and natural language processing, offer innovative solutions to promote the adoption of design patterns. These solutions include AI-driven code analysis, pattern recognition, automated refactoring, and intelligent code suggestions. Statistical analysis, case studies, and real-world examples are used to demonstrate AI's potential to transform software development practices. The findings suggest that AI not only facilitates the adoption of design patterns but also significantly enhances the overall software development process. AI-driven tools can analyze code to identify existing design patterns and recommend appropriate ones, thereby helping developers implement them more effectively. Automated refactoring tools can incorporate design patterns into code, improving maintainability and scalability while reducing manual effort. Additionally, AI systems can provide real-time code suggestions, assisting developers in making informed design decisions. By addressing the learning curve and misconceptions associated with design patterns, AI-powered educational tools can further promote their adoption. These tools offer interactive tutorials, code examples, and real-time feedback to help developers understand and apply design patterns correctly. This study contributes to the field by providing actionable insights and practical recommendations for leveraging AI in the adoption and implementation of design patterns. The findings pave the way for more robust and maintainable software systems, highlighting the significant role of AI in overcoming the challenges associated with design patterns. In conclusion, while the adoption of design patterns is fraught with challenges, AI technologies offer promising solutions to facilitate their use. By enhancing the overall software development process, AI can help create more maintainable, scalable, and efficient software systems, ultimately benefiting the entire software engineering field. © 2024 IEEE.

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TITLE:

PD-1/PD-L1 Inhibitors for the
Treatment of Lung Cancer

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JOURNAL NAME:

Immunotherapy Against Lung
Cancer: Emerging Opportunities
and Challenges

DETAILS:

Published on 1 January 2024



ABSTRACT:

Immune checkpoint inhibitors (ICIs) have gained significant attention and traction in the last few years in the treatment of lung cancer and cancers in general. The primary driver of this clinical path is a more reliable route of immune system priming and reduced reliance on toxic anticancer drugs. ICIs, largely made up of PD-1/PD-L1 and CTLA4 protein antibodies, inhibit the immune handshake that falsely allows cancerous cells to be recognized as normal healthy cells. As a result, ICI monotherapy helps the clinician to trigger a potent anticancer effect without relying on drugs that are responsible for a drastic lowering of the cancer patient's standard of life. The implications of ICI for lung cancer, which currently leads the cancer mortality trend, are important, namely in improving treatment options, reducing the burden of drug side effects, and most certainly improving the survival probability of treated patients. Major considerations for use of ICI include the limited response to ICI in treated patients; the treatment shows remarkable promise in certain patients with susceptibility to immunotherapy, but fails in the majority of treated subjects. This chapter details the immunobiology pertaining to ICI and the pharmacology of currently approved ICI. While ICI therapy is indeed viewed as a breakthrough, its consideration ideally requires the personalized medicine approach. Finally, the question of whether ICI can be a real-world solution for the average patient population including low-to-median income groups is debated. © The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

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TITLE:

Digital Transformation in Higher Education Institutes in India: Evaluating the Role of Student Relationship Management (Conference

AUTHOR :

Talreja, B., Agashe, A., Salunkhe, H.A., Kankariya, R.

JOURNAL NAME:

2024 IEEE 4th International Conference on ICT in Business Industry and Government, ICTBIG 2024

DETAILS:

Published on 14 December 2024



ABSTRACT:

The new challenges for Higher Education Institutions (HEIs) in a competitive market are interacting and aligning with digital transformation agents. The study examines the impact of Student Relationship Management (SRM) through digital transformation on student and parent satisfaction, loyalty, and recommendation willingness in Higher Education Institutions (HEIs). Multiple hypotheses were tested using AMOS. The research, which was conducted at Engineering and Management Institutes, using a descriptive research design, determined that effective SRM practices substantially increase student and parent satisfaction, resulting in improved retention, advocacy, and institutional success. student engagement and satisfaction were discovered to be positively influenced by digital interventions and management support. Parent loyalty and student retention were also influenced by branding and promotion strategies, even though their maximum potential is still unrealized in numerous institutions. The research suggests that higher education institutions should improve their student learning management (SRM) strategies to cultivate more robust relationships with students and parents. This includes boosting student life cycle management, incorporating knowledge management throughout online and offline platforms, and enhancing branding and promotion initiatives. Building loyalties that last and advocacy necessitates the implementation of digital tools and consistent feedback mechanisms. The significance of SRM in fostering student satisfaction, loyalty, and institutional success is emphasized by the research. © 2024 IEEE.

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TITLE:

Comprehensive Approaches to
Agricultural Intelligence: U-Net,
YOLO, and Random Forest in
Practice(Conference Paper)

AUTHOR :

Gavas, S., Kosamkar, P.

JOURNAL NAME:

3rd International Conference on
Communication, Control, and
Intelligent Systems, CCIS 2024

DETAILS:

Published on 7 December 2024



ABSTRACT:

This paper seeks to implement and test advanced precision agricultural monitoring and detection systems derived from machine learning, remote sensing, and sensor technologies to improve pest detection, crop yields assessment, and animal husbandry management practices. The approach involves an automated and hierarchical framework integrating cutting edge machine learning technologies with fine spatial resolution remote sensing images and sensors. For instance, the authors apply CNN (convolutional neural networks) for pest identification; the deep learning models trained on Sentinel-2 images serve as yield predictors; UWB location coordinates and accelerometric measures combined form livestock behavior monitoring. This methodology encompasses the stages of implementation, testing and finally verification of the model. A variety of machine learning systems such as Faster-PestNet or deep semantic segmentation algorithms process data while remote sensing and the sensors' data were used in predictions and classifications. This allows using different performance measures such as accuracy, precision recall rates and RMSE (root mean square error) to test the systems. © 2024 IEEE.

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TITLE:

Green synthesis of copper oxide nanoparticles using Euphorbia heterophylla leaf extract for deactivation of pathogenic bacteria and photocatalytic

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JOURNAL NAME:

Results in Engineering

DETAILS:

Published on June 2025



ABSTRACT:

Copper oxide nanoparticles (CuO NPs) were green synthesized using leaf extract of Euphorbia heterophylla (E. heterophylla). The synthesized CuO NPs were characterized by X-ray diffractometer (XRD), field emission scanning electron microscopy (FESEM), energy-dispersive X-ray spectroscopy (EDX), Fourier transform infrared spectroscopy (FT-IR) and ultraviolet-visible (UV-Vis) spectrophotometer to determine their crystallinity, morphology, elemental composition, functional groups and optical properties, respectively. The obtained CuO NPs exhibited monoclinic crystal structure and their particles size ranged from 50 nm to 200 nm with an average particle diameter of 108 ± 0.2 nm. The observed band gap energy of the CuO NPs was 1.49 eV. Antibacterial studies demonstrated significant inhibition zones of 34 mm, particularly against Bacillus cereus and Escherichia coli bacterial strains, which were 1.4-fold higher than the zone of inhibition (24 mm) exhibited by the standard antibiotic (tetracycline). During the photocatalytic studies, exposure to natural sunlight significantly enhanced degradation efficiency of the CuO NPs, resulting in the rapid degradation of Congo red (99%) and Coomassie blue (93%) dyes within just 40 min. The photocatalytic degradation rate constant for Congo red and Coomassie blue dyes was $13.92 \times 10^{-4} \text{ s}^{-1}$ and $10.82 \times 10^{-4} \text{ s}^{-1}$, respectively. These findings highlight that the E. heterophylla leaf extract can provide a novel and eco-friendly route to synthesis CuO NPs that contributes to advancements in green nanotechnology. The effective antibacterial and photocatalytic activities of green synthesized CuO NPs emphasizes their potential for sustainable environmental remediation applications. © 2025 The Author(s)

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