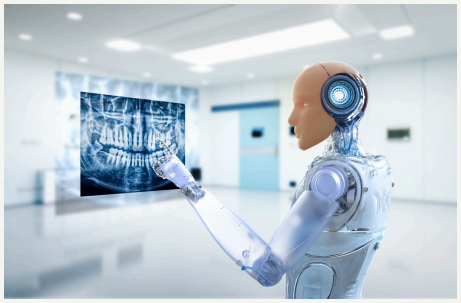
SOUVENIR

3RD INTERNATIONAL CONFERENCE

ON

Application of Artificial Intelligence and Internet of Things in Management, Science and Technology




ORGANIZED BY

INDIAN ACADEMICIANS AND RESEARCHERS ASSOCIATION

About Indian Academicians and Researchers Association (IARA)

Indian Academicians and Researchers Association (IARA) is an educational and scientific research organization of Academicians, Research Scholars and practitioners responsible for sharing information about research activities, projects and conferences to its members. IARA offers an excellent opportunity for networking with other members and exchange knowledge. It also takes immense pride in its services offerings to undergraduate and graduate students. Students are provided with opportunities to develop and clarify their research interests and skills as part of their preparation to become faculty members and researchers. Visit our website www.iaraedu.com for more details.

About The Conference

Artificial Intelligence (AI) is the ability of a machine to display human-like capabilities such as reasoning, learning, planning and creativity. AI enables technical systems to perceive their environment, deal with what they perceive, solve problems and act to achieve a specific goal. It perform human-like cognitive tasks, including the automation of physical processes such as manipulating and moving objects, sensing, perceiving, problem solving, decision making and innovation.

Artificial Intelligence (AI) is typically defined as the ability of machines to perform human-like cognitive tasks, including the automation of physical processes such as manipulating and moving objects, sensing, perceiving, problem solving, decision making and innovation. AI is currently viewed as the most important disruptive new technology. Artificial Intelligence expands the livelihood of every human with ease. It mainly helps the people who are visually impaired, deaf & dumb, and old age people. It is been widely used with the Internet of Things and making all the works much simpler and creating smart environments. The ability to learn the convolutional methods of Artificial Intelligence brought many benefits to the Internet of Things (IoT). A new wave of IoT devices will bridge the gap between the physical and digital world to improve the quality and productivity of human life, society, and industries.

The potential of AI and IoT is impacting all the sectors from making smart homes to launching a rocket. Research in this area is basically focused on the ability to develop intelligent systems capable of interacting with the devices among themselves without human intervention. A recent survey mentions that “IoT smart objects are expected to reach 314 billion entities deployed globally by the end of 2022”.

AI provides businesses with unprecedented opportunities for designing intelligent products, devising novel service offerings, and inventing new business models and organizational forms. Technologies involving AI provide inestimable possibilities for enhancing people’s lives in a variety of areas including their homes, healthcare, education, employment, entertainment, safety and transportation. AI is not confined to one or a few applications, but rather is a pervasive economic, societal and organizational phenomenon. Similarly, AI provides businesses with unprecedented opportunities for designing intelligent products, devising novel service offerings and inventing new business models and organizational forms. But AI is not a technological panacea. Research in this area is basically focused on the ability to develop intelligent systems capable of interacting with the devices among themselves without human intervention.

This International Conference on “**Application of Artificial Intelligence and Internet of Things on Management, Science and Technology**” aims to bring together leading Academicians, Scientists, Researchers and Scholars to exchange and share their experiences, research results on all aspects of Internet of Things and AI. Researchers will present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered in artificial intelligence for IoT. This conference is to encourage and assist the professionals engaged in the above fields to maintain the integrity and competence of the profession, foster a sense of partnership amongst the International professionals.

THEMES OF CONFERENCE

Artificial Intelligence and IoT Technologies

- Computational Intelligence
- Image & Signal Processing
- Integration of AI with other technologies
- Deep learning techniques towards IoT
- Data merging techniques for IoT
- Trustworthy model design for IoT
- Distributed and AI-based data analysis for IoT
- AI-enabled Access Control Mechanism for Secured IoT
- Deep learning techniques for identifying issues in IoT devices
- Predictive, prescriptive, descriptive analytics for IoT device
- Big data management techniques for rectifying IoT devices
- Deep Learning model for IoT security
- IoT communication protocols for sustainable smart cities
- Cognitive resource management in IoT
- Intelligent blockchain for sustainable cities
- AI algorithms in the IoT era
- ML and mobile assisted public safety and emergency IoT
- Intelligent 5G/6G communication for sustainable cities
- Design and evaluation of IoT test beds, prototypes, and platforms
- VLSI System Design
- AI and Evolutionary Algorithms
- Natural Language Processing
- Decision Support Systems
- Deep Learning and Applications
- Soft computing theory and applications
- Genetic Algorithms and Generative Models
- IoT Architecture in 5G networks
- AI Enabled IoT System & Applications
- Intelligent Industrial IoT & Cloud Computing
- IoT and Big Data Analytics
- Challenges and future applicability of IoT and AI for smart sustainable cities
- Environment impact assessment with IoT and AI for sustainable agriculture and natural resources
- Novel policies, strategies and analysis for agricultural waste valorization based on AI and IoT
- Impacts of AI and IoT devices with secure and scalable in empowering urban innovation for forecasting environmental conditions

Application of AI and IoT Technologies

- AI in Human Resource Management
- AI in Marketing
- AI in Finance
- AI in Origination
- AI in Hospitality Management
- AI in Education
- AI in Media
- AI in Office Management
- AI in Sustainable Development
- AI and IOT in Smart Cities
- AI in Medical Applications
- AI in Manufacturing
- AI in Green Energy Management
- AI in Industries
- AI in Power Management
- AI in Cyber Securities
- AI in Transportation
- AI In HealthCare
- AI In Gaming
- AI In Space Exploration
- AI In Chatbots
- AI in Internet of Things
- AI In Artificial Creativity
- IoT and AI techniques for applications in Agriculture for sustainable development
- AI-based and IoT-enabled Architecture development for smart waste management
- IoT and AI in plant-bio electrochemical systems for managing sustainability
- Machine learning and IoT-based environment monitoring systems for accurate risk predictions
- Intelligent applications of deep learning in IoT data analytics for weather, air quality, and pollution control

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On 15th June 2025

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ABSTRACT

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HIGH-MOBILITY ORGANIC TFTS USING TRILAYER DIELECTRIC STACK: A SIMULATION-BASED STUDY

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ABSTRACT

Organic electronics have come forth to be a vital field for the last two decades due to their superiority in being commercially available, cheaper and their usage in different areas as flexible electronics. Organic semiconductors (OS) are intermittently deployed in organic material- based electronics. This has surmounted the disadvantages of chemical materials and boosted the field of organic thin film transistor (OTFT). The primary factor for developing high-performance OTFT is its capability to control the interface among the dielectric layer and substrate. Despite of this substantial improvement in the usage of OTFT, there is still a big challenge of the mobility of polymer gate insulators and its tolerance to humidity, chemicals and temperature. Consequently, OTFT based model is developed using three layers of dielectric polymers, namely POM-H (Poly Oxy Methylene Homopolymer), PEI-EP (Poly Ether Imide - Epoxy Polymer) and SiO_2 to assess the electrical behaviour. For this assessment, electrical parameters such as I-V characteristics, transfer characteristics, threshold voltage (V_T), Subthreshold slope (mV/dec), Capacitance (pF), Mobility (μ), and Transconductance (S/um) are evaluated for the proposed model. Furthermore, the linearity performance is assessed using Gm_2, IIP_3, IMD_3, Gm3, VIP_2, and the 1-dB compression point. The attained electrical performance of the proposed model is -2.74 (V_T) threshold voltage, 3.75 (pF) capacitance, 348 ($cm^2/V{\cdot}s$) mobility, and 4.84 (S/um) trans-conductance. Single layer and dual layer OTFT model are employed for the validation of the obtained electrical and linearity parameters of proposed tri-layer dielectric medium OTFT. The model using dual-polymer layers for dielectric medium to enhance the electrical performance performed better than the existing OTFT model.

Keywords: *OTFT; Tri-Layer Dielectric; Pentacene; PEI-EP; POM-H*

AI AND IOT IN HEALTHCARE: TRENDS, CHALLENGES, AND FUTURE DIRECTIONS

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ABSTRACT

In contemporary healthcare, the combination of artificial intelligence (AI) and the Internet of Things (IoT) has become a game-changer, propelling improvements in monitoring, treatment, diagnosis, and operational effectiveness. This collaboration, which is collectively known as the Artificial Intelligence of Things (AIoT), makes it possible to gather data in real time through networked medical devices and make informed decisions using AI algorithms. By enabling the evolution of smart hospital infrastructure, remote patient monitoring systems, and predictive analytics for early disease detection, the combination of these technologies helps helt the gap between clinical demand and available healthcare resources.

Analysis of Recent evolution, important uses, and technological advancements in the era of AIoT in healthcare which is mention in this paper. Through AI-based diagnosis, adaptive therapy suggestions, and ongoing health monitoring, the literature shows that AIoT systems are greatly improving patient outcomes. By using cutting-edge techniques like edge computing, federated learning, and blockchain the speed, privacy, and scalability of AIoT systems are also being improved. Data security issues like IoT device incompatibilities, the restricted explain ability of AI models, and infrastructure barriers, particularly in low-resource environments—are some of the ongoing difficulties.

By fully overview 36 pertinent research, this review indicates the benefits and drawbacks of the present AIoT applications in healthcare. It also emphasizes how urgently ethical AI design, standardized frameworks, and cooperative innovation among healthcare stakeholders, technologists, and legislators are needed. As per the research, AIoT has the ability to turn healthcare from reactive to proactive paradigms, enabling real-time, data-driven, and individualized medical care, provided that it is properly implemented and further researched. Researchers and participation who want to comprehend the state of AI and IoT combination in healthcare systems present and in the future can use this review as a starting point.

Keyword: *Artificial Intelligence (AI), Internet of Things (IoT), Healthcare Technology, Remote Patient Monitoring (RPM), Smart Healthcare Systems*

ATTITUDES TOWARD ARTIFICIAL INTELLIGENCE AMONG B.ED. STUDENT-TEACHERS IN MANIPUR: A COMPARATIVE ANALYSIS ACROSS DEMOGRAPHIC VARIABLES

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ABSTRACT

This study examines attitudes toward artificial intelligence (AI) among 320 B.Ed. student-teachers in Manipur, India, focusing on demographic variations in age, gender, locality, and subject stream. Using a cross-sectional survey design and the Artificial Intelligence Attitude Scale (Aktay et al., 2024), the research revealed significant differences in AI attitudes. Younger student-teachers (<30 years) exhibited more positive attitudes than older peers ($M = 58.69$ vs. 52.50; $d = 1.423$, $p < .001$), while urban participants scored higher than rural counterparts ($M = 59.10$ vs. 53.19; $d = 1.336$, $p < .001$). Science-stream students showed greater AI acceptance than arts students ($M = 59.36$ vs. 53.91; $d = 1.218$, $p < .001$). No significant gender difference emerged ($p = .627$). The findings highlight the influence of generational, geographical, and disciplinary factors on AI perceptions, suggesting the need for targeted teacher training programs, rural digital infrastructure development, and interdisciplinary AI literacy initiatives in Manipur's teacher education curriculum.

Keywords: *Artificial Intelligence, Teacher Education, Demographic Differences, Technology Attitudes, India*

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AUTOMATED PREDICTIVE LEARNING TO ASSESS MULTIPLE SCLEROSIS

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ABSTRACT

This study investigates the application of automated predictive learning models for the diagnosis of Multiple Sclerosis (MS), a chronic disease affecting the central nervous system. An ensemble-based machine learning approach is employed, with the performance of several models, including Random Forest, Extra Trees, Gradient Boost, AdaBoost, CatBoost, and Extreme Gradient Boost, being compared. Different data preprocessing and hyperparameter tuning were performed to optimize model performance. It was demonstrated that, the Extreme Gradient Boost Classifier achieved the highest performance, with an accuracy of 89.09% and an F1-score of 88%. These findings highlight the potential of machine learning in predicting MS progression, enhancing the understanding of disease dynamics, and supporting medical professionals in treatment planning.

Keywords: *Multiple Sclerosis, Prediction, Machine Learning, Ensemble Methods.*

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IMPACT OF CONSUMER BEHAVIOUR ON PURCHASE PROCESS OF FAST MOVING CONSUMER DURABLE (FMCD) PRODUCTS

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ABSTRACT
In this research article, authors made an basic study on consumers to find out the impact of the Consumer behavior on purchase decision-making of consumer long-lasting goods. This research study focused to explore the reviews of various literatures in depth on the effect of buying Strategy, and consumer demographics on purchase decision-making of long-lasting goods based on the consumer behavior. The marketer thus, attempt to meet essential product attributes and possible to serve best than the nearest competitor.

Keywords: *Consumer, buying behavior, consumer decision making.*

A RELATIONSHIP OF MACHINE LEARNING, IMAGE PROCESSING AND AYURVEDA IN ASSESSMENT OF PRAKRITI USING HAIR AS A PHYSIOLOGICAL FEATURE: A COMPREHENSIVE REVIEW

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ABSTRACT

Managing healthcare in a personalized way depends on understanding Prakriti, a key idea in Ayurveda. Using traditional methods for Prakriti assessment involves subjective judgment which could result in differences. The aim is to bring more precision and no-bias to Prakriti classification with the help of machine learning that works on hair data as a physiological sign. Hair texture, colour, thickness and patterns of growth were inspected with image processing and feature extraction techniques. Next, these features were used to teach a range of supervised machine learning models, for example, Support Vector Machine (SVM), Random Forest and K-Nearest Neighbours (KNN). The models were checked to see how well they could classify people into Vata, Pitta and Kapha Prakriti categories. Algorithms were tested and Random Forest achieved the greatest accuracy rate. The results conclude that Ayurvedic Prakriti classification can be improved by taking into account the hair.

Keywords: *Ayurvedic diagnostics, Hair analysis, Image processing, Machine learning, Prakriti classification*

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OCCUPATIONAL CHANGES AMONG BHALAVALIKAR GAUDA SARASWATH BRAHMIN COMMUNITY A SOCIOLOGICAL STUDY IN DAKSHINA KANNADA DISTRICT

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ABSTRACT

Occupation is one of the most important factors that determine the social change in any society. It not only indicates the economic position of a person but also represents the social status of an individual. The impact of occupation is observed on all the communities. Bhalavalikar Gauda Saraswath Brahmin community is one of the communities of Dakshina Kannada District. Occupation of the Bhalavalikar community is generally classified into traditional occupations and non-traditional or modem occupations. Occupational change from traditionally adopted occupations to new modern occupations is an increasing trend in the new generation of all the communities. The present paper aims at elaborating the occupational changes found among the Bhalavalikar Gauda Saraswath Brahmin community. The paper includes the study of the traditional occupations of Bhalavalikars, their present occupations, reasons for continuing traditional occupation, and reasons for adopting modern occupations. The present study is based on field survey carried out in four Taluks of Dakshina Kannada district, namely Sullia, Puttur, Bantwala and Belthangady. The study is both qualitative as well as quantitative in nature. By adopting non-probability purposive sampling method 200 respondents were chosen for the present study.

Keywords: *Occupation, Occupational change, Social change, Bhalavalikar community.*

SWARM INTELLIGENCE FOR VANET ROUTING TO ADDRESS CHALLENGES AND ENHANCING ROUTING PERFORMANCE

Gagan Deep Singh

ABSTRACT

Vehicular Ad Hoc Networks (VANETs) represent a dynamic and transformative domain in wireless communication, offering unparalleled opportunities to enhance road safety and traffic efficiency. However, their unique characteristics—such as high node mobility, fluctuating topologies, and constrained resources—pose significant routing challenges. This paper elucidates the critical distinctions between VANETs and Mobile Ad Hoc Networks (MANETs), highlighting the limitations of traditional routing protocols in addressing VANET-specific issues like bandwidth scarcity, security vulnerabilities, and network scalability. To bridge these gaps, we propose an innovative approach that integrates swarm intelligence and metaheuristic algorithms with conventional protocols. Through detailed analysis, we demonstrate how swarm-based techniques can optimize routing efficiency across diverse traffic scenarios, ensuring robust and adaptive VANET performance. This study underscores the potential of bio-inspired algorithms to revolutionize vehicular communication, paving the way for safer and smarter transportation systems.

***Keywords**: VANET, routing protocols, swarm intelligence, metaheuristics, intelligent transport systems.*

A COMPUTATIONAL PERSPECTIVE ON BREAST CANCER DETECTION IN ULTRASOUND: FUSION OF MULTI-IMAGE MODALITIES

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ABSTRACT

Breast cancer is one of the most prevalent and deadly diseases affecting women worldwide, necessitating early detection for improved survival rates. Modern diagnostic advancements in medical imaging and artificial intelligence have significantly contributed to identifying and classifying breast tumors. However, multiple challenges remain, such as poor image resolution, overlapping tissue structures, and tumor heterogeneity. This paper presents a computational perspective integrating multi-image modalities, especially ultrasound, and histopathology, to improve breast cancer diagnosis. Using machine learning (ML) and deep learning (DL) frameworks, we explore a hybrid model focused on segmentation, classification, and feature extraction. The study evaluates publicly available datasets, including CBIS-DDSM, BreakHis, and INbreast. Various imaging techniques like ABUS, mammography, and MRI are discussed, with attention paid to their complementary nature in multi-modal fusion systems. A proposed fusion-based model architecture incorporating CNNS and ensemble classifiers such as XGBoost and Random Forest to boost performance across multiple evaluation metrics. Through simulation-based experimentation using MATLAB and Python, the proposed framework demonstrates a significant improvement in recall and precision compared to traditional models. Integrating Bug Diversity Indices, Severity Index, and Coefficient of Variation offers a comprehensive composite risk scoring mechanism for reliable classification. The model is validated by performance metrics such as AUC-ROC, F1 score, and accuracy. The future scope involves expanding the approach to rare subtypes and real-time detection in low-resource settings. This work contributes toward building intelligent, scalable diagnostic systems that can assist radiologists in achieving early and accurate detection, ultimately leading to better treatment outcomes and reduced mortality.

Keywords: *Breast Cancer Detection, Machine Learning (ML), Deep Learning (DL), Medical Imaging, Tumour Segmentation, Classification Models.*

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SOFTWARE USER INTERFACE PERSONALIZATION THROUGH USER FEEDBACK AND USER BEHAVIOR

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ABSTRACT

With the rapid expansion of digital content consumption, there is an increasing need for intelligent, personalized user interfaces that adapt to individual preferences, behaviors, and accessibility needs. This research presents ReactiveWeb, a comprehensive Chrome extension developed for Medium.com that integrates three core personalization components which are Content-based UI personalization, behavior-driven UI adaptation, and accessibility-focused UI theming for visually impaired users. The content-based module provides AI-generated multi-format summarization, an intelligent chatbot for context-aware question answering, and automatic mind map generation using natural language processing. The behavior-driven module dynamically adapts the user interface based on real-time user interactions such as scrolling, zooming, and engagement patterns. The accessibility module employs a machine learning pipeline to recommend visual themes based on user-specific vision-related data, enabling an inclusive reading experience. The system is implemented using modular microservice architecture with FastAPI and Flask backends deployed on Microsoft Azure, and a React-based frontend integrated into a Chrome extension. Evaluation through user testing and performance metrics demonstrates the effectiveness of the system in enhancing comprehension, engagement, and accessibility in real-time article reading environments.

Keywords: *Personalized UI, Chrome Extension, Summarization, Chatbot, Mind Map Generation, Behavioral Adaptation, Accessibility, NLP, Human-Centered Design, FAISS, OpenAI, React, FastAPI, XGBoost.*

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PREDICTIVE INTELLIGENCE FOR SAFER THERAPIES: A NEW ERA IN DRUG MONITORING WITH AI

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ABSTRACT
Therapeutic Drug Monitoring (TDM) plays a critical role in optimizing drug efficacy and safety by maintaining plasma drug concentrations within a targeted therapeutic range. However, traditional TDM approaches are often limited by delayed feedback, interindividual variability, and the complexity of pharmacokinetic and pharmacodynamic interactions. This review explores the emerging integration of Artificial Intelligence (AI) in TDM, highlighting how machine learning, deep learning, and data-driven modelling techniques are transforming drug monitoring into a more precise, adaptive, and personalized practice. AI models offer the potential to predict drug concentration-time profiles, automate dose adjustments, and incorporate multifactorial patient data, including genetic, demographic, and clinical variables. The review also examines current advancements, clinical applications, and the challenges surrounding data quality, model interpretability, and regulatory acceptance. Finally, it outlines future perspectives, advocating for AI-enhanced TDM systems that support individualized therapy and real-time clinical decision-making in diverse healthcare settings.

Keyword: *Therapeutic drug monitoring, Artificial intelligence, Drug dosing, Dose adjustment*

ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY AND DEVELOPMENT – A REVIEW

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ABSTRACT

The integration of Artificial Intelligence (AI) into drug discovery and development is revolutionizing the pharmaceutical industry by significantly enhancing the efficiency and effectiveness of the drug development process. A review on drug discovery and development using AI was prepared. This review discusses the benefits of AI in drug discovery, such as accelerated development, improved precision and reduced costs. It explores specific AI techniques and algorithms like machine learning (ML), deep learning (DL) and natural language processing (NLP) etc. These techniques analyze vast amount of data, predict outcomes and streamline drug development. The AI techniques are applied in various stages of drug discovery, including target identification, lead optimization, ADMET prediction, clinical trial optimization, and personalized medicine. This review highlights AI programs and platforms currently employed in the field that facilitate drug design, polypharmacology, chemical synthesis, and drug repurposing. The impact of AI extends beyond drug discovery, influencing chemistry and material science. The review concludes by emphasizing the significant impact of AI on the future of medicine and acknowledges the challenges that remain in fully implementing this technology.

Keywords: *Artificial Intelligence, Drug discovery, AI techniques, AI algorithms.*

ABSTRACT

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ARTIFICIAL INTELLIGENCE IN BUSINESS MANAGEMENT: AN ANALYTICAL STUDY

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INTRODUCTION

Artificial Intelligence has turned into a game-changing power in the way businesses are run, offering chances for improving how well things work, how choices get made, and how customers are involved. This paper explores some integration of AI including the technologies such as machine learning, NLP: Natural Language Processing, as well as predictive analytics, into particular business operations. It examines the ways that AI-driven tools are being used in optimizing processes and in automating routine tasks. The examination includes its use in supporting data-directed decision-making across multiple business functions like supply chain management, human resources, finance, and marketing. AI presents large advantages, like particular cost savings, better decision-making, together with tailored customer experiences; even so, its adoption poses difficulties including certain ethical worries, data privacy matters, coupled with the requirement for workforce re-skilling. The study definitively points out the importance of quite detailed calculated planning and a greatly strong technical infrastructure for successful AI integration, further stressing the need for businesses to carefully balance innovation with critical ethical considerations. The paper draws to a close with recommendation for organizations in order to promote an innovation-driven culture and to address the challenges within AI implementation, for the sake of fully leveraging its potential for business growth and competitiveness.

AI, in company administration, robotic process automation, in decision-making, with the use of predictive analytics, during consumer interaction, AI implementation, with moral factors, in employee changes

Keywords: *Machine learning, Artificial Intelligence, natural language processing (NLP), human resources, predictive analytics, supply chain management, finance, marketing*

AI-BASED DETECTION AND CLASSIFICATION OF SOLID WASTE IN WATER-BODIES: A REVIEW

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ABSTRACT

Solid waste in water bodies is a serious environmental problem that impacts aquatic life, human health, and water quality. In recent years, researchers have shown how machine learning and deep learning (DL)-based computer vision (CV) algorithms may be used to detect macroplastic trash in aquatic bodies automatically.

Object detection techniques are the foundation for the artificial intelligence field. Much research is going on to detect the objects in an image, in a video, underwater, in the air, in the medical system, and many more. Traditional object detection methods relied on manual feature extraction and classification like HOG, SIFT, SURF, Viola-Jones Detector, etc. Technologies using deep learning methods such as Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), YOLO, SSD, etc. have added new features, and improved accuracy, and efficiency. Several research publications were examined in this survey study based on popular classical object recognition techniques and the most recent deep learning-based techniques.

Index Terms*: object detection, machine learning, deep learning, CNN, YOLO*

AN OVERVIEW OF THYROID CANCER DIAGNOSIS TECHNIQUES AND UPCOMING DEVELOPMENTS

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ABSTRACT

In the area of medical diagnostics, artificial intelligence (AI) has become a game-changing tool, especially when it comes to the identification and categorization of thyroid cancer. AI greatly improves the precision, speed, and consistency of diagnostic processes with its strong computing capabilities. With a significance on supervised, unsupervised and ensemble learning approaches this paper provides thorough analysis of contemporary AI techniques used in thyroid cancer diagnosis. The study looks out a variety of supervised learning approaches, including deep learning structure, synthetic neural networks, probabilistic structure, and conventional classification algorithms all of which have represent great promise in clinical decision making.

The potential of unsupervised learning approaches like as dimensionality reduction and clustering techniques to reveal unseen patterns in complicated. The parts of unsupervised learning approaches such as dimensionality reduction and clustering methods in revealing unseen patterns in complicated datasets lacking labelled data is investigated.

The ability of assemble learning methods such as bagging and boosting to combine several structures to increase diagnostic performance and lower variance is also covered. Since feature selection and extraction are essential for guaranteeing the quality and relevance of input data obtained from thyroid cancer datasets (TCDs), they are highlighted as a crucial part of AI-based diagnostic systems. This study also emphasizes the importance of selecting relevant datasets and the common evaluation metrics used in the area including those get from statistical analysis, computer vision, regression, classification, and ranking techniques.

A useful case study that indicates the use of AI in a real-world clinical environment is also included in the paper offering insight into performance evaluation and practical implementation. The study evaluates the state of AI in thyroid cancer diagnosis today and highlights important obstacles, present constraints, and unanswered research problems. The study indicates that AI has great potential to transform the diagnosis of thyroid cancer and suggests future paths to improve its usefulness and efficacy in clinical practice.

Keywords: *Artificial Intelligence, Thyroid Cancer Diagnosis, Ensemble Learning Methods , Machine Learning Techniques, Feature Selection and Extraction.*

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING WITH IMAGE PROCESSING IN CANCER DISEASE

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ABSTRACT

Artificial intelligence (AI) and machine learning (ML) are being used to produce a growing number of imaging technologies in cancer. Multidisciplinary involvement is necessary for the creation of an ideal tool in order to guarantee that the right use case is satisfied and to conduct thorough development and testing before implementing it in healthcare systems. Important advancements in the discipline are highlighted in this multidisciplinary overview. We go over the prospects and problems of AI and ML in cancer imaging, how to transform algorithms into publicly accessible tools, and how to build the ecosystem required to support the expansion of AI and ML in cancer imaging.

Machine learning (ML) and artificial intelligence (AI) are quickly changing many areas of science, including health. While ML is a subset of AI where machines or tools learn from data to generate classifications or predictions, either with or without human supervision, AI refers to the development of robots or programs that can mimic human thought and behaviour. The development of high-performance computers in recent years has sped up progress in these areas.

Digital fields like imaging in medicine are well-suited to be early users of AI and ML. Such data can be efficiently gathered for AI and ML thanks to the imaging pipeline, which functions in the digital realm and includes picture collecting, reconstruction, interpretation, reporting, and sharing of results.

***Keywords**: Artificial Intelligence, Machine Learning, Image Processing, Challenges*

ABSTRACT

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ARTIFICIAL INTELLIGENCE-BASED SOLUTIONS FOR COUNTERACTING CSRF, XSS, AND SESSION HIJACKING ATTACKS

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ABSTRACT
The rapid development of web applications has therefore led to a rise in the employment of sophisticated cyber-attacks, notably Cross-Site Request Forgery (CSRF), Cross-Site Scripting (XSS), and Session Hijacking attacks (Chughtai et al., 2024). Traditional security strategies are typically ineffective against such dynamic attacks by virtue of their dependency on static detection systems (Kaur et al., 2023). This research paper critically examines the use of Artificial Intelligence (AI) methods to amplify the detection and prevention of such vulnerabilities. Through a critical review of current trends, empirical case studies, and innovative AI-based security solutions, we establish the superior efficacy of machine learning and deep learning models in securing web application security frameworks against such ubiquitous threats (Younas et al., 2024).

Keywords: Web Security, CSRF, XSS, Session Hijacking, Artificial Intelligence.

ABSTRACT

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IMPROVED DCP WITH COLOR CORRECTION AND MULTI-SCALE FILTERING FOR UNDERWATER IMAGE RESTORATION

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ABSTRACT
Underwater images often suffer from significant quality degradation due to light absorption and scattering, resulting in reduced contrast, color distortion, and haze. These challenges complicate visual analysis and limit the effectiveness of computer vision applications in marine environments. This paper presents an enhanced underwater image restoration framework that integrates the Dark Channel Prior (DCP) with color correction and multi-scale filtering techniques. The proposed method begins by estimating the transmission map using an improved DCP, tailored to underwater light propagation characteristics. A multi-scale filtering approach is then employed to refine the transmission map, preserving edge details while suppressing artifacts. To address the prominent issue of color cast, a dedicated color correction module based on the image formation model is applied, restoring natural color balance. Experimental results on benchmark underwater datasets demonstrate that the proposed method significantly outperforms existing state-of-the-art techniques in terms of visual quality and quantitative metrics such as PSNR, SSIM, and UIQM. The framework offers a robust and efficient solution for underwater image enhancement, with potential applications in marine biology, underwater robotics, and environmental monitoring.

Keyword: *Underwater Image, Dark Channel Prior, Filtering, Visual Quality, Metrics*

ABSTRACT

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CHATBOTS FOR HEALTHCARE: TRANSFORMING PATIENT CARE THROUGH CONVERSATIONAL AI

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ABSTRACT

Healthcare systems worldwide face mounting pressure from aging populations, rising healthcare costs, and increasing demand for accessible medical services[1]. Chatbots, powered by artificial intelligence and natural language processing, have emerged as a promising solution to address these challenges[2]. This paper examines the current landscape of healthcare chatbots, their applications across various medical domains, benefits and limitations, implementation challenges, and future prospects. Through analysis of existing literature and case studies, we demonstrate that healthcare chatbots can significantly improve patient engagement, reduce healthcare costs, and enhance accessibility to medical information and services[3]. However, concerns regarding accuracy, privacy, regulatory compliance, and the need for human oversight remain critical considerations for successful implementation[4].

Keywords: *Healthcare chatbots, conversational AI, telemedicine, patient engagement, digital health, artificial intelligence*

ABSTRACT

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CLOUD COMPUTING & HUMAN COMPUTER INTERFACE (HCI): A SURVEY FOR HCI EFFICIENCY

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ABSTRACT
Cloud computing has transformed the way data is stored, accessed, processed, scaled, enabled and cost efficient. Altogether, Human computer interface (HCI) have reshaped interactions between user and digital system via cloud computing making it even more efficient and effective technology. Full aptitude of cloud computing is appreciated only when users interact with the systems efficiently and instinctively. This paper proposes integrations of HCI principles into the cloud computing systems to improve system performance and efficiency. This makes improvement in user experiences.

This research paper examines the intersection of cloud computing with HCI amalgamation. Also how user friendly cloud interface can be used for development across various fields.

***Keywords**: Cloud computing, HCI, Digital, AI, Interface, UX.*

ABSTRACT

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AI, TOOL OR WEAPON: A STUDY ON ETHICS IN ARTIFICIAL INTELLIGENCE

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ABSTRACT

Artificial intelligence is a vast subject for research purposes with new features as time progresses. AI is an excellent tool to improve livelihoods while also being a destructive weapon, deeming to be hurtful towards individuals and various groups of people. We question the ethical challenges that accompany the rapid advancements in AI. This paper provides a comprehensive overview of AI's applications across various domains, including automation, healthcare, education and agriculture, demonstrating its capacity to transform and optimize human endeavours. At the same time, it highlights the negative aspects of AI, detailing how AI is misused in cybercrime, disinformation, data exploitation, and bias perpetuation which poses significant ethical risks. The study analyses key literature and expert perspectives on AI ethics, underlining necessity of ethical principles such as transparency, accountability and fairness in AI development and governance. A conceptual framework is proposed to promote vigilance and responsible use, integrating technical safeguards, policy oversight, and public awareness. Lastly, the paper concludes by emphasizing the urgent need for continuous ethical vigilance to ensure that the utilization of AI is beneficial to mankind and do not come at the expense of human values and societal fairness.

Keywords: *AI, Cybercrime, Disinformation, Data exploitation, Bias perpetuation, Responsible AI deployment*

WHEAT RUST DETECTION AND CONTROL THROUGH PRECISION FRAMING USING RCNN MODEL

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ABSTRACT

Wheat (Triticum spp.) stands as one of the most critical staple crops in the global agricultural landscape. Wheat cultivation is consistently threatened by various biotic and abiotic factors. Among these, rust diseases, caused by the fungal pathogen, poses a significant threat to wheat yields globally. In recent years, advances in artificial intelligence (AI) and machine learning (ML), particularly through the application of convolutional neural networks (CNNs), have begun to revolutionize the detection and management of disease in crop plants.Recent progress in in-depth remote sensing and learning technologies have considerably improved the capacity of convolutional neural networks (RCNN) based on the region in the detection and control of wheat rust, a critical threat to global food security. Machine learning based detection techniques, emphasizing the importance of integrating advanced methodologies such as RCNN have shown promise to improve precision in the identification of wheat rust diseases. Studies have demonstrated the effectiveness of hybrid models that combine the extraction of regions with automatic learning algorithms to classify rust diseases, resulting in better diagnostic precision.. In addition, the merger of multiple techniques has shown an improvement in the performance of the classification of diseases. This convergence of technologies, including the analysis of ground imaging contributes to the development of more robust agricultural practices, ultimately supporting sustainable agriculture initiatives and furthering wheat improvement.

Keywords: *Wheat, Rust detection, Machine learning, Precision framing, RCNN model.*

ABSTRACT

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A PARADIGM OF PARADOXICAL AGROCHEMICALS IN LONG-TERM SOIL MANAGEMENT FOR SUSTAINABLE PRODUCTIVITY IN MANIPUR

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ABSTRACT

Natural resources, soil and human-supportive soil health, the indispensable assets of mankind on the earth, emphasise the urgent need for sustainable use and plan projection for generations yet to come. Agrochemicals were vitally important in the judicious use of need-based applications for feeding the ever-increasing population, which enforced in-depth examination on the right utilisation of the invaluable resource, soil. Soil fertility and production ought to be managed sustainably to ensure global food security and indispensable ecological stability. Agrochemicals, such as fertilisers, an essential in contemporary agriculture since they enhance crop yields and productivity. However, its widespread and long-term use has generated anxious about environmental damage and long-term sustainability. The Present investigation authenticates the need for 17.08 tonnes, 14.27 tonnes, 17.60 tonnes, 19.92 tonnes, 21.34 tonnes, 19.92 tonnes, 22.32 tonnes, and 25.10 tonnes of $CaCO_3$ with the adoption of judicious use of need base application to neutralize the acidity formed by the urea applied for the following years: 2015–16, 2016–17, 2017–18, 2018–19, 2019–20, 2020–21, 2021–22, and 2022–23. The DAP applied for the following years: 2015–16, 2016–17, 2017–18, 2018–19, 2019–20, 2020–21, 2021–22, and 2022–23 require 2.682 tonnes, 2.384 tonnes, 5.378 tonnes, 6.706 tonnes, 7.652 tonnes, 6.706 tonnes, 9.059 tonnes, and 2.404 tonnes respectively of $CaCO_3$ to neutralize the acidity created by the DAP. This research investigates the role of agrochemicals in maintaining soil fertility and productivity within the context of sustainability. It also explored the advantages of careful use of fertilizers, especially urea and DAP application in soil for food production. The study highlights the necessity of integrated strategies that support long-term agricultural productivity and good soil health to ensure a resilient and sustainable food production system for future generations.

Keywords: *Agrochemicals, Sustainability, Acidity, DAP, $CaCO_3$*

HOW ARTIFICIAL INTELLIGENCE IS CHANGING INDIAN MEDIA TRIALS

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ABSTRACT

It studies the problems that deepfakes, algorithmic content selection by AI and social-media bots introduce into the growing trend of media trials in India. It outlines that machine-created videos, altered stories on social media and automatic disinformation can influence how the public perceives situations during ongoing trials. It examines the current legal and constitutional rights for Indian journalists, together with recent decisions by Indian judges on the subject of media trials. The field also examines cases from international legal arguments (such as Sheppard v. Maxwell's[1] essay is about the Rideau case. Rules from both Louisiana and the UK as well as global suggestions for AI ethics. According to our analysis, India lacks a strong response to the problem of false news spread by AI. Among the proposed changes are new rules for sharing information about algorithms, watermarking everything created by AI, updating how media is held responsible and boosting digital literacy. Our goal is to protect everyone's right to be judged fairly without limiting free speech.

***Keywords**: Media Trial, Artificial Intelligence, Free Trial, Judiciary and Media*

ABSTRACT

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AI AND THE GREEN INFRASTRUCTURE IN SHRINKING CITY: YESAN COUNTY, KOREA

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ABSTRACT

The convergence of Artificial Intelligence (AI) and Green Infrastructure (GI) in urban settings represents a significant evolution in how cities are designed, managed, and experienced. This integration seeks to maximize the benefits of green spaces within urban development, offering innovative responses to critical environmental and social challenges. Green Infrastructure serves as a valuable framework for guiding urban planning and directing development away from ecologically sensitive areas that provide essential ecosystem services. This paper presents a GI Plan for Yesan County (the Yesan GI Plan), a small, shrinking city in the Republic of Korea, known for its rich yet underexplored natural and cultural resources. The Yesan GI Plan adopts a multifunctional approach, tailored to the region's unique ecological and socio-cultural characteristics. The goal is to connect key elements of the vernacular landscape and optimize the ecosystem services they offer. The planning process consisted of two main stages: first, assigning weights to various ecological and socio-cultural features; and second, organizing them through GIS-based spatial analysis using a patch-corridor-matrix model. The resulting plan outlines a streamlined network of ecological hubs linked to socio-cultural assets via a system of water bodies, forested areas, and wildlife corridors. This network is designed to enhance connectivity, mobility, and energy flow across the region. To ensure that AI applications in this context are ecologically grounded, the approach moves beyond technological solutionism. Instead, it emphasizes a holistic integration of AI with traditional ecological knowledge, economic interests, social justice, and nature-based solutions.

Keywords: *Green Infrastructure, Artificial Intelligence, GIS, Ecosystem Services, Cultural indicator*

ABSTRACT

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SPEED ESTIMATION IN LOW-VISIBILITY CONDITIONS USING DEEP SENSOR FUSION OF VISION AND RADAR DATA

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ABSTRACT
Accurate speed estimation of moving objects in low-visibility conditions—such as fog, rain, or nighttime environments—remains a critical challenge for intelligent transportation systems and autonomous vehicles. Traditional vision-based methods often fail under such adverse conditions due to reduced image quality and occlusions. This paper proposes a robust deep learning framework for speed estimation using sensor fusion of vision and radar data. The system integrates a convolutional neural network (CNN) for visual feature extraction with a radar-based module designed to provide reliable motion cues, even in poor visibility. A fusion network then combines these complementary modalities through an attention-based mechanism, allowing the model to dynamically weigh features based on environmental context. The proposed method is trained and evaluated on a custom dataset comprising synchronized video and radar data captured in varying weather and lighting conditions. Experimental results demonstrate that the fusion-based approach outperforms vision-only and radar-only baselines in terms of accuracy and robustness, particularly under low-visibility scenarios. This framework offers a significant advancement in reliable speed estimation for safety-critical applications such as autonomous navigation, traffic monitoring, and advanced driver-assistance systems (ADAS).

Keyword: *Speed Estimation, Convolutional Neural Network, Deep Learning, Vision, Traffic.*

ABSTRACT

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REVOLUTIONIZING AGRICULTURE: AI AND IOT IN HYDROPONIC FARMING

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ABSTRACT

Hydroponics, a soilless farming method, represents a paradigm shift in agriculture by delivering essential nutrients directly to plant roots through water solutions, circumventing the need for traditional soil. This innovative approach significantly enhances nutrient uptake efficiency, thereby accelerating plant growth and ultimately leading to increased yields. Controlled lighting systems are employed to mimic sunlight, providing plants with optimal conditions for photosynthesis, which can be tailored to suit various crops. Moreover, meticulous temperature regulation within aqua-farming systems not only fosters optimal growth but also minimizes the risk of stress-induced damage to the plants. Techniques such as Deep-Water Culture (DWC) ensure that plant roots are surrounded by sufficient oxygen, promoting healthy growth. Similarly, the Supplement Film Strategy (NFT) facilitates the efficient delivery of nutrients to the plants, further optimizing their growth potential. Additionally, continuous monitoring and adjustment of pH levels within the desired range, typically slightly acidic to neutral, are vital for maximizing nutrient absorption and overall plant health. Despite facing challenges such as initial setup costs and the need for technical expertise, the compelling benefits of aqua-farming coupled with ongoing technological advancements and a growing demand for fresh produce are driving its global adoption. As a sustainable agricultural practice, hydroponics has the potential to revolutionize food production, fostering resilience, resource efficiency, and environmental sustainability on a global scale.

Keywords: *Hydroponics, Supplement Film Strategy (NFT), Profound Water Culture (DWC).*

MULTIMODAL DEEP LEARNING FOR EMOTION RECOGNITION: A FUSION OF EEG, FACIAL EXPRESSIONS AND VOICE IN HUMAN-COMPUTER INTERACTION

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ABSTRACT

Emotion recognition systems have become increasingly critical for developing emotionally intelligent human-computer interfaces, yet existing single-modal approaches suffer from significant limitations in real-world deployment scenarios. This research presents a comprehensive multimodal deep learning framework that synergistically integrates electroencephalography (EEG), facial expressions, and voice signals to achieve robust emotion recognition across diverse conditions. We introduce the Multimodal Emotion Recognition Dataset (MERD-2025), a novel synchronized dataset comprising recordings from 150 demographically diverse participants across ten distinct emotion categories, providing unprecedented data quality and cultural representation for emotion recognition research.

Our proposed Attention-based Multimodal Fusion Network (AMF-Net) employs specialized encoders for each modality, coupled with a novel cross-modal attention mechanism that dynamically weights modality contributions based on emotional context and signal reliability. The architecture processes 64-channel EEG signals, high-resolution facial videos, and audio recordings through modality-specific neural networks before fusing representations through learned attention weights. Extensive experimental validation demonstrates that AMF-Net achieves state-of-the-art performance with 87.3% classification accuracy, representing substantial improvements of 8-15% over single-modal approaches and 4-6% over traditional fusion methods.

Comprehensive analysis reveals consistent performance across demographic groups, robust handling of missing modalities, and interpretable attention patterns that provide insights into emotion-specific modality contributions. The system maintains practical computational requirements while demonstrating resilience to noise and incomplete data conditions. These findings establish significant potential for real-world applications in adaptive user interfaces, mental health monitoring, educational technology, and automotive safety systems. The research advances the field by providing both technological innovations and comprehensive datasets for future multimodal emotion recognition development.

Keywords: *Emotion recognition, Multimodal fusion, Deep learning, EEG, Facial expressions*

BIOPSYCHOSOCIAL CHANGES IN PATIENTS DURING DIAGNOSTIC PROCESSES IN WBANS

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ABSTRACT
The confluence of Wireless Body Area Networks (WBANs) and healthcare has ushered in an era of unprecedented patient surveillance, facilitating the continuous tracking of vital signs and physiological parameters. Nevertheless, the intricate dynamics governing the impact of real-time monitoring on patients' biological and psychological states remain shrouded in mystery. This investigation endeavors to elucidate the perceptual and experiential nuances of real-time monitoring among patients and healthcare practitioners. The repercussions of our research are multifaceted, bearing significant implications for healthcare policymakers, technology innovators, and practitioners alike. By deciphering the real-time monitoring's impact on human well-being, we can harness WBANs to optimize health outcomes, refine patient care, and curtail healthcare expenditures. This inquiry contributes meaningfully to the burgeoning knowledge base on human-centric factors influencing the efficacy and adoption of wearable healthcare technologies.

Keywords: *Devices, Healthcare, Medical, Monitoring, Sensors, WBAN, Wearable Technology.*

ABSTRACT

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PERSONALIZATION VS PRIVACY: BALANCING AI-DRIVEN MARKETING WITH CONSUMER TRUST

R. Asraf Sithika

M com

ABSTRACT

Artificial Intelligence (AI) has transformed modern marketing by enabling hyper-personalized customer experiences through data-driven insights. From recommendation engines to predictive targeting, AI enhances engagement and conversion rates across digital platforms. However, this increasing reliance on personal data raises significant concerns about consumer privacy and ethical boundaries. This paper explores the complex trade-off between the benefits of AI-driven personalization and the growing demand for privacy and transparency. By analysing current AI personalization models and reviewing recent consumer sentiment studies, the research highlights how intrusive targeting can erode trust, especially in the absence of clear data governance. A case study of leading e-commerce platforms is used to illustrate both effective and problematic uses of AI in marketing. The study concludes with a set of actionable recommendations for marketers, including the adoption of explainable AI, privacy-by-design principles, and ethical data usage policies. Striking the right balance between personalization and privacy is not only a regulatory necessity but also a strategic imperative for building long-term consumer trust.

POINT-OF-CARE COLORIMETRIC TESTING FOR VITAMIN B12 DEFICIENCY

Priyabrata Das and Dr. Subodh Daronde

ABSTRACT

With perhaps permanent neurological effects if untreated, vitamin B12 insufficiency affects over 6% of persons under 60 and 20% of those over 60 years worldwide. Expensive, laboratory-dependent, and inaccessible for resource-limited environments current diagnostic techniques are. This work suggests the creation and validation of a new paper-based colorimetric point-of-care test for fast detection of vitamin B12 insufficiency. The main biomarketer of the assay is methylmalonic acid (MMA), a particular metabolite accumulated in B12 shortage. Visible color changes commensurate with MMA concentrations arise from a customized paper substrate embedded with chromogens. The test shows against reference laboratory techniques a detection limit of 0.2 µmol/L, sensitivity of 94.2%, and specificity of 91.8%. The gadget is stable for 12 months at ambient temperature, requires no specialized equipment, and yields semiquantitative findings within 10 minutes from a single drop of blood or urine. Excellent user acceptance and clinical correlate with laboratory reference criteria (r=0.89) were shown by field testing over three resource-limited areas (n=450). Particularly in underprivileged areas, this reasonably priced, easily available diagnostic instrument could greatly help to detect and treat vitamin B12 deficiency worldwide.

Keywords: *Point-of-care testing, Vitamin B12 deficiency, Colorimetric detection, Paper-based diagnostics, Methylmalonic acid, Resource-limited settings*

ABSTRACT

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THE ROLE OF AI IN THE INDIAN POWER SECTOR: IMPACTS AND BENEFITS OF POWER PORTFOLIO MANAGEMENT

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ABSTRACT

The Indian power sector is undergoing a sea-change as it is moving towards a more distributed end-user centric ecosystem. The sudden thrust of renewable energy penetration into the grid and also at the consumer level paves the way for bi-directional power flows and thus enhanced intelligence are likely to become the norms of this new energy in future. The key performance indicators that are changing the power sector landscape are as follows:

ABSTRACT

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN ADVANCING MENTAL HEALTH CARE

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ABSTRACT

Millions across the world face mental health problems that create substantial difficulties for healthcare organizations. Depression together with anxiety and schizophrenia has both personal and financial costs for patients. This paper explores how Artificial Intelligence technologies particularly Machine Learning and Natural Language Processing implement their applications to diagnose and treat patients while performing monitoring tasks. The implementation of advanced algorithms by Artificial Intelligence enhances accurate diagnosis and leads to personalized treatment plans and enables real-time communication with patients. AI healthcare applications lead to cost reduction in healthcare alongside better therapeutic outcomes with previous mental health diagnosis opportunities. However, ethical issues of data privacy, as well as algorithmic bias still matter. Additional research should focus on making AI mental health technologies work optimally in practice and on employing these technologies uniformly across all groups.

Keywords: *mental health, artificial intelligence, machine learning, natural language processing, diagnosis, ethical issues*

ABSTRACT

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN MODERN HEALTHCARE: OPPORTUNITIES AND CHALLENGES

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ABSTRACT

Artificial Intelligence (AI) is increasingly shaping the evolution of global healthcare systems. Its capability to replicate human reasoning and process vast datasets rapidly has unlocked new pathways in areas such as early disease detection, diagnostic imaging, pharmacological research, remote care, and individualized treatment strategies. AI-powered technologies are now integral to minimizing diagnostic inaccuracies, streamlining clinical decisions, and expanding medical services to remote regions through telemedicine and wearable sensors. These applications signify a transformative leap, offering solutions to the pressing challenges of healthcare accessibility and quality.

Nevertheless, this technological integration is accompanied by notable concerns. Ethical dilemmas, threats to data confidentiality, regulatory ambiguity, and the opaque nature of certain machine learning models represent significant obstacles. Moreover, the implementation of AI tools requires systemic changes in clinical operations and necessitates upskilling among health professionals. This article delves into the practical uses, advancements, and critical drawbacks associated with AI in medicine. It also revisits foundational systems and historical efforts that paved the way for contemporary AI applications. A measured and human-centered strategy is recommended to ensure the responsible deployment of AI in modern healthcare.

Keywords: *Artificial Intelligence, Medical Diagnostics, Personalized Medicine, Predictive Healthcare, Medical Imaging*

ABSTRACT

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ENHANCING TRANSPARENCY AND SECURITY IN IP MANAGEMENT USING BLOCKCHAIN

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ABSTRACT

This paper investigates the transformative potential of blockchain technology in intellectual property (IP) management systems. Through comprehensive research and analysis, we explore innovative approaches to IP protection, digital rights management, and automated licensing systems using distributed ledger technology. Our findings demon- strate significant improvements in transparency, security, and effi- ciency compared to traditional centralized IP management systems. We present novel architectures for patent protection, copyright man- agement, and smart contract-based licensing mechanisms. The re- search reveals blockchain's capability to address critical challenges in IP enforcement, cross-border protection, and digital asset manage- ment. This study contributes to the growing body of knowledge in blockchain applications for intellectual property protection and pro- vides practical insights for implementation in various industries.

Keywords: *Blockchain Technology, Intellectual Property Protection, Smart Contracts, Digital Rights Management, Patent Systems, Decentralized Ap- plications*

ABSTRACT

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INTEGRATED BIOMETRIC AUTHENTICATION SYSTEM FOR IOT ENVIRONMENTS

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ABSTRACT
The rapid expansion of Internet of Things (IoT) devices has significantly increased the demand for secure and reliable authentication methods. Traditional security measures are often inadequate for IoT due to limited device resources and the need for seamless user experiences. This paper proposes an integrated biometric authentication system designed specifically for IoT environments, aiming to enhance security while maintaining efficiency and usability. The system leverages biometric traits such as fingerprints, facial recognition, or voice patterns to ensure user identity verification, offering a robust alternative to conventional authentication methods like passwords or PINs. By integrating biometric authentication into the IoT framework, the proposed model addresses key challenges including data privacy, device compatibility, and real-time processing. The study also explores the system's architecture, implementation challenges, and potential applications across various domains such as smart homes, healthcare, and industrial IoT. Experimental results and analysis demonstrate the effectiveness, scalability, and security benefits of the integrated approach, making it a promising solution for the future of secure IoT systems.

Keywords: *Biometric Authentication, Internet of Things (IoT), Security, Privacy, Smart Devices, Identity Verification, Lightweight Protocols, Scalability, Smart Homes, Healthcare IoT*

ABSTRACT

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THE SUBSCRIPTION ECONOMY: A COMPARATIVE STUDY OF CONSUMER PREFERENCES AND TRENDS

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ABSTRACT

The subscription economy has witnessed a significant transformation with consumers widely looking for digital services across various sectors including entertainment, education and e-commerce. This study explores consumer preferences, factors influencing subscription decisions and retention patterns across Mumbai Metropolitan Region. A structured survey was conducted to gather data on trends in key variables such as exclusive content, personalisation, pricing, service quality and cancellation. The collected data was analysed using advanced statistical techniques including regression models to identify critical factors to answer the questions related to subscription preferences. The findings provide actionable insights for subscription-based businesses to understand the consumer needs and refine the consumer satisfaction.

Keywords: *subscription economy, consumer preferences, retention, digital services, Mumbai Metropolitan Region, subscription models.*

A REVOLUTIONARY FRAMEWORK FOR INCLUSIVE GROWTH IN INDIA AND THE GLOBAL SOUTH

Dr. Rashmi Bansal*

ABSTRACT

The cooperative movement in India has long been an engine for social and economic empowerment, particularly in rural communities. With the enactment of the Co-operative Societies (Amendment) Act, 2023, and the creation of an independent Ministry of Cooperation, a new chapter has begun in the evolution of Indian cooperatives. The said enactment marks a transformative shift in this landscape. Key reforms include the establishment of an independent Election Authority, a Cooperative Ombudsman, digitized audits, and professional management norms.

The cooperative sector contributes significantly to India's economy, especially through PACS, dairy, and housing. The global recognition of cooperatives, including the UN's International Year of Cooperatives (2012), underlines their role in inclusive growth. International models from Italy, Kenya, and Norway offer valuable lessons.

Drawing on the ideals celebrated during the International Year of Cooperatives, this paper proposes a new roadmap for building modern, autonomous, and technologically-enabled cooperatives that can become global exemplars of sustainable development to usher in a new era of "Sahkar se Samriddhi"—prosperity through cooperation. It also highlights the vision articulated by Prime Minister Shri Narendra Modi and Home & Cooperation Minister Shri Amit Shah to rejuvenate cooperatives as a powerful force for rural development and economic democratization aimed to make cooperatives central to Atmanirbhar Bharat and rural prosperity.

AGRIAQUAML: MACHINE LEARNING FOR WATER QUALITY AND ENVIRONMENTAL INSIGHTS IN INDIAN AGRICULTURE.

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ABSTRACT

AI-powered technologies are helping to transform Indian agriculture, for the benefit of over half of the country's population. As we face more pressures from climate change, lack of water and need to be sustainable, AI helps with making decisions about managing crops, irrigation, controlling pests and only using the resources needed. This overview gathers information from prior studies and the use of AI in water management, environmental protection and increasing yield in Punjab, Haryana and Uttar Pradesh before the most recent year. It also investigates the ways in which agricultural residues are used in health and nutraceutical applications, demonstrating multiple impacts. Microsoft's AI Sowing App, CropIn and DeHaat use technologies such as machine learning, expert systems, fuzzy logic and neural networks in the real world. It also looks closely at the obstacles facing the use of AI which are things like infrastructure, money, data sources and learning. The paper clearly highlights the significant role played by efficient policies and strong technology in boosting AI in India's farming sector, based on a wide review of governmental activities and start-up businesses. The study outlines important steps for researchers, policy experts and practitioners seeking sustainable changes in agriculture.

ABSTRACT

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BIOSIMILARS AND PUBLIC HEALTH: A CRITICAL ANALYSIS

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ABSTRACT

Biosimilars is one of the most important development in modern healthcare offering safe, effective, and more affordable alternatives to original biologic medicines. These products are designed to be very similar to their reference drugs in terms of safety, purity, and therapeutic effectiveness, but are usually available at a low cost. Their introduction has significantly transformed the landscape of healthcare by addressing two major challenges: the high cost of biologics and the limited accessibility of advanced therapies in many parts of the world.

The availability of biosimilars has widely patient access to treatments for life-threatening and chronic conditions such as cancer, diabetes, and autoimmune disorders, which often remain out of reach due to financial obstacles. By reducing expenditure on expensive biologics, biosimilars also allow governments, healthcare providers, and insurance systems to extend coverage to a large number of population, thereby improving equity in healthcare delivery beyond cost and accessibility. Biosimilars play a crucial role in promoting competition within the pharmaceutical industry. This competition not only helps in reducing prices but also encourages innovation, improved treatment options and maintain sustainability in healthcare systems.

This research paper explores contribution of biosimilars to public health by analyzing in affordability, accessibility, and policy frameworks and also highlights the need for regulatory support and patient awareness to expands the benefits of biosimilars. Overall, the study explore that biosimilars are not merely substitutes for biologics but strategic tools for advancing public health and ensuring sustainable access to life saving medicines.

Keywords – Biosimilars; Public Health; Affordability; Regulation; Access to Medicines

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