2nd International Conference on Advances in Engineering and Medical Sciences

Official Conference Proceedings

International School of Technology and Sciences for Women

In Collaboration & Association with

Samarkand State University, Uzbekistan
Society of Public Health Experts, India

University of Technology and Applied Sciences, Ibri, Sultanate of Oman

Osiet & Octe, India

14th & 15th April, 2025 ‖ ISTS, Rajamahendravaram
Andhra Pradesh, India.

2nd INTERNATIONAL CONFERENCE ON

"ADVANCES IN ENGINEERING AND MEDICAL SCIENCES– 2025"

(ICAEM - 2025) - APRIL 14th & 15th 2025

ORGANIZED BY

INTERNATIONAL SCHOOL OF TECHNOLOGY AND SCIENCES FOR WOMEN (AUTONOMOUS)

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In Association with

ORGANIZATION OF SCIENCE AND INNOVATIVE ENGINEERING & TECHNOLOGY (OSIET)

Chennai, India

www.ijsiet.org

In Collaboration

Samarkand State University, Samarkand, Uzbekistan
www.samdu.uz/en

&

University of Technology and Applied Sciences, Sultanate of Oman, Oman

https://www.utas.edu.om/

ICAEM 2025

Proceeding of 2nd International Conference on Advances in Engineering and Medical Sciences

14th & 15th APRIL, 2025

INTERNATIONAL COLLABORATION –

SAMARKAND STATE UNIVERSITY, UZBEKISTAN

UNIVERSITY OF TECHNOLOGY AND APPLIED SCIENCES, OMAN

Hybrid Conference:

INTERNATIONAL SCHOOL OF TECHNOLOGY AND SCIENCES FOR WOMEN

(UGC Autonomous Institution)
Approved by AICTE, Affiliated to JNTUK, Kakinada,
Accredited by NBA , NAAC with A+ Grade
NH-16, East Gonagudem, Rajanagaram (M), E.G.Dist, A.P.–533 294

Sri K.Upender Reddy
Chairman , We are for You Society

MESSAGE

It is with great pleasure that I extend a warm welcome to all of you to the 2nd International Conference on Advances in Engineering and Medical Sciences.

This conference serves as a platform for the exchange of knowledge, ideas, and innovations at the intersection of engineering and medical sciences. As we gather here from around the world, we come together with a shared commitment to advancing human health and well-being through interdisciplinary collaboration and cutting-edge research.

The fields of engineering and medical sciences have witnessed remarkable advancements in recent years, thanks to the dedication and ingenuity of researchers, scientists, engineers, and healthcare professionals like yourselves. From breakthroughs in medical diagnostics and treatments to innovations in medical devices and technologies, our collective efforts have transformed the landscape of healthcare and improved countless lives.

I encourage each of you to actively participate in the sessions, workshops, and networking opportunities offered throughout the conference. Let us inspire and learn from one another as we explore new frontiers in engineering and medical sciences.

I wish you all fruitful discussions, valuable insights, and memorable experiences during the conference. May our time together be both enriching and inspiring as we work towards a future where engineering and medical sciences converge to create healthier, happier lives for all.

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Ms V.Anusha
Vice Chairperson, We are for You Society

MESSAGE

It is my honor to extend a warm welcome to all participants of the 2nd International Conference on Advances in Engineering and Medical Sciences.

I am thrilled to witness the gathering of brilliant minds from across the globe, all united by a common goal: to advance the frontiers of knowledge in the fields of engineering and medical sciences.

The convergence of engineering and medical sciences holds tremendous promise for revolutionizing healthcare delivery, improving patient outcomes, and addressing global health challenges. It is through collaborative efforts and interdisciplinary approaches that we can unlock this potential and drive meaningful change.

As we embark on this intellectual journey, let us remain committed to the principles of scientific inquiry, innovation, and ethical conduct. Let us leverage our collective knowledge and experiences to address the complex challenges facing healthcare and society at large.

I extend my sincere gratitude to the organizing committee, keynote speakers, presenters, sponsors, and volunteers for their dedication and hard work in making this conference possible. Your contributions are invaluable in shaping the success of this event and driving progress in our shared mission.

I wish you all a stimulating and productive experience during the proceedings of the conference. May our interactions lead to meaningful collaborations, groundbreaking discoveries, and lasting impact on the advancement of engineering and medical sciences.

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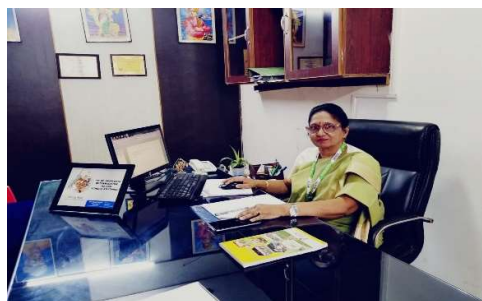
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| Dr Y.Rajasree Rao |
| Principal |

MESSAGE

It is with great pleasure that I welcome you to the proceedings of the 2nd International Conference on Advances in Engineering and Medical Sciences. As we gather here, we embark on a journey of discovery, innovation, and collaboration at the forefront of these two pivotal fields.

This conference serves as a platform for leading researchers, scholars, practitioners, and enthusiasts to exchange ideas, share insights, and explore the latest advancements in engineering and medical sciences. From groundbreaking research to transformative technologies, our collective efforts will shape the future of these dynamic disciplines.

I encourage you to actively engage in discussions, forge new connections, and leverage this opportunity to expand your knowledge and expertise. Together, let us push the boundaries of possibility and drive progress towards addressing the most pressing challenges facing our world today.

I extend my heartfelt gratitude to the organizing committee, sponsors, and all contributors for their dedication and support in making this conference possible. Your commitment to excellence ensures that this gathering will be a resounding success.

May this conference inspire innovation, foster collaboration, and pave the way for a brighter, healthier future for all.

Thank you, and I wish you fruitful deliberations.

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Mr Md Ahsaan Iqbal Administrative Officer

MESSAGE

It is with great pleasure and anticipation that I extend a warm welcome to all attendees of the 2nd International Conference on Advances in Engineering and Medical Sciences.

As the Administrative Officer of this prestigious event, I am honored to witness the convergence of brilliant minds from around the globe to share insights, research findings, and innovations at the forefront of engineering and medical sciences.

This conference serves as a vital platform for interdisciplinary collaboration, where experts and enthusiasts alike come together to explore the latest advancements and breakthroughs shaping the future of our fields. From cutting-edge engineering solutions to revolutionary medical discoveries, each presentation and discussion promises to inspire and enlighten.

Our esteemed speakers and panellists have dedicated themselves to pushing the boundaries of knowledge and driving positive change in their respective domains. I encourage you all to actively engage with their presentations, participate in discussions, and seize the opportunity to network with fellow professionals and researchers.

As we embark on this enriching journey of knowledge exchange and collaboration, let us remain committed to fostering an atmosphere of mutual respect, curiosity, and innovation.

Once again, I extend my heartfelt welcome to each and every one of you. May this conference be a rewarding and memorable experience for us all.

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Dr Prasad Rayi

Convener

MESSAGE

It gives me immense pleasure to be a part of this hosting team of "2nd International Conference on Advances in Engineering and Medical Sciences (ICAEM-2025)". The conference intends to bring together scientists, engineers and practitioners from different disciplines to discuss concerns related to various computation techniques in Engineering and Medical Science.

I take this opportunity to welcome all the delegates of the conference. On behalf of whole ICAEM-2025 team, I would like to thank all the authors, sponsors and keynote speakers for their support and co-operation. The rapid development in technologies and changes in lifestyle impose various issues in many countries. The conference ICAEM-2025 has been crafted to challenge the hurdles and we are fortunate to have leading speakers to share their experience and perspectives to achieve smart solutions through their innovation.

I hope that the conference serves as a locus for interdisciplinary, a space for discourse and collaboration. I would like to express my wishes to the organizing committee for their dedicated efforts to materialize the conference. I hope all the participants will have a fruitful and beneficial experience.

Finally, I thank to our Management and Principal for their excellent support and also thank to all the Heads of various departments, faculty, student representatives and participants for their efforts in organizing and participating in this conference and wish the conference all the success.

The technology used in various fields of engineering is advancing at a tremendous pace every passing day. There has been a boom in the usage of internet and the demand for high speed access to video and data is ever increasing. 10 years before, 3G and 4G were a distant dream, but today a lot of research is going in the field of 5G as well. In such a scenario, organizing such a conference is of paramount importance. This will enable researchers from different domains to share their views on a common platform. Particularly, I would like to congratulate International school of Technology and Sciences for Women, Rajamahendravaram for taking such a promising initiative. This will not only help the students by opening the vistas of opportunities in various fields of engineering, but also promote learning and sharing of ideas for the faculty members. I am confident that this conference will indeed generate a lot of interest among the students to explore and pursue the area of research, thereby bringing laurels to your institute and developing our society as a whole.

PROF. DR.TAHEREH JAFARI
ASSOCIATE PROFESSOR
CHEMICAL ENGINEERING
INTERNATIONAL MARITIME COLLEGE OMAN, SOHAR, OMAN
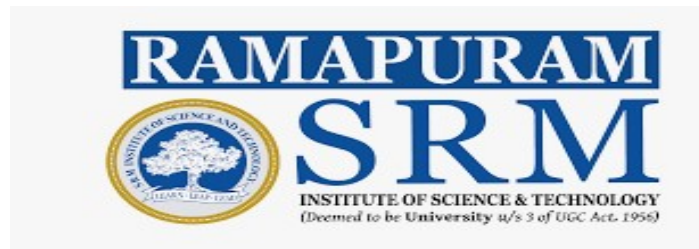
Dear Colleagues and Friends,

It is a great pleasure that ISTS is conducting 2nd International Conference on Advances in Engineering and Medical Sciences 2025 at Rajahmundry, AP.

This international conference aspires to provide a platform for researchers, academicians and other experts to share their views, experience and information on recent advances with colleagues and other working in field of modern technology and trends. I firmly believe that this conference will contribute towards betterment of industrial development, future development and eventually development of nation.

I extend my warm welcome to delegates of conference and I am sure the knowledge shared will propel the growth of new ideas. Finally, I take this opportunity to request you to actively participate to add the richness of this conference and make it memorable event.

I wish this conference a grand success.

DR DEEPTHA R
ASSISTANT PROFESSOR, DEPARTMENT OF IT, CET
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
RAMAPURAM CAMPUS, CHENNAI, TN, INDIA

Technical Education is the backbone of every nation and is the stepping stone for a country to move into the niche of a developed nation. India Entrepreneurs are emerging as a global Entrepreneur, Indian figuring increasingly in the list of the richest persons in the world. India's knowledge power making India as a preferred destination for outsourcing knowledge services from India. India is fast emerging as a destination for world class R&D centres and innovation hub. Young friends they are the signs of even a brighter tomorrow for India and its people.

You must therefore be highly excited to make your own contributions to the growth and development of India as a dream.

As a Keynote speaker of the 2nd International Conference on Advances in Engineering and Medical Sciences 2025 (ICAEM 2025), I congratulate all the participants who have contributed their technical articles in the proceedings.

DR. G. N. R. PRASAD
ASSOCIATE PROFESSOR
DEPARTMENT OF MCA
CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY
GANDIPET, TELANGANA, INDIA

ICAEM 2025

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Dr. G. N. R. Prasad, Associate Professor, Department of MCA, Chaitanya Bharathi Institute of Technology, Gandipet

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Dr. Harshavardhan Awari, Senior Assistant Professor, Computer Science, VNRVJIET, Hyderabad, Telangana, India

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1. CUSTOMER CHURN PREDICTION MODEL FOR VEHICLE RENTAL SYSTEM

[1.] DEEPANSHU, [2.] ANKIT SINGH, [3.] DR.MONIKA JAIN, [4.] PALLAV NAITHANI
SCAT, GALGOTIAS UNIVERSITY, Greater Noida

Active retention techniques are required in the market for vehicle car rentals, where high acquisition costs and fierce competition lead client churn to be a primary problem. This work provides a machine learning-based churn prediction model catered for the features of the premium automobile rental industry. We discover significant churn predictors: rental frequency, average rental duration, customer feedback, and income level by means of a large dataset encompassing customer demographics, rental history, transaction data, service interactions, and feedback from a top car rental organisation.Following ML algos, SVC classifier seems to be the best algo for the churn prediction. Feature importance analysis indicates that assessments of customer behavior—such as rental frequency and feedback scores—are vital markers of turnover; yet, demographic factors have rather little effect on this phenomena.

2. INFLUENCE OF FLAX FIBER AS ADDITIONAL MATERIAL ON STRENGTH OF CONCRETE

Shobha R
Assistant Professor, Department of Civil Engineering, BMS Institute of Technology & Management

In the ever-evolving field of construction materials, the demand for eco-friendly solutions continues to grow. Various type of synthetic and natural fibers has been used as concrete materials. Natural fiber is widely available and inexpensive source in accelerating the strength of concrete.
This paper presents the experimental results of an optimized flax fiber reinforced concrete promoting sustainable and eco-friendly building practices. Flax fiber in varying percentage is used along with M20 grade concrete mix as additional material, the compression strength is analysed at the age of 3 days, 7 days and 28days. The results addition of 2% Flax fibers shows the optimum compression strength of 30.03 N/mm2 at the age 28 days.

3. DUAL EDGE TRIGGERED FLIP FLOP DESIGN USING REVERSIBLE LOGIC

Abhay Chopade, Akanksha Deshmukh, Ameya Date, Megha Derkar
Department of E&TC Engineering
Vishwakarma Institute of Technology Pune, India

As compared to conventional logic gates, the use of reversible logic gates is preferred when the circuit design involves area efficiency and minimized power consumption. In this paper, we have designed a dual edge triggered D flip flop (DETDFF) utilizing Feynman and Fredkin gates which focused on reducing the circuit area and at same time optimizing the power consumption. The Xilinx ISE tool, version 14.7 was used for designing the cicuit.

4. THE ROLE OF ARTIFICIAL INTELLIGENCE IN REVOLUTIONIZING PERSONALIZATION AND CUSTOMER ENGAGEMENT

Mona
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Galgotias University, Gautam Buddha Nagar, Greater Noida,

Harsh Mishra
23SCSE2030192, Department of Computer Applications and Technology
Galgotias University, Gautam Buddha Nagar, Greater Noida,

Artificial Intelligence (AI) plays a role, in changing the world of online shopping by creating tailored experiences for customers and improving interactions with them. In this piece of paper, we try to know how AI methods like Natural Language Processing (NLP) and machine learning are helping to study customers' feedback and scores to create customized recommendation systems. A set of real-life data containing 363K product reviews is employed to conduct sentiment analysis and construct a recommendation system. The research shows connections, among how customers feel about a product and their ratings and buying habits—giving ideas on using AI to enhance personalized strategies, for businesses.

5. AN ANGULAR MAGNETIC FIELD- MAGNETOHYDRODYNAMIC (MHD) FLOW INDUCED UNSTEADINESS BETWEEN TWO POROUS PARALLEL PLATES: A MATHEMATICAL ANALYSIS

C. R. Balamurugan[1], R. Delhi babu[2], S. Vaithyasubramanian[3]
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[1]Assistant Professor, Department of Mathematics,
P.T. Lee Chengalvaraya Naicker College of Engineering & Technology, Chennai.
[2]Assistant Professor, Research Supervisor, Department of Mathematics,
Sathyabama of Science and Technology, Chennai.
[3]Assistant Professor, PG and Research Department of Mathematics,
Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai.

This paper describes the unsteady magnetohydrodynamic (MHD) flow with angular velocity in a parallel configuration involving two porous plates and an inclined magnetic field. This carefully thought-out problem has an analytical solution that uses the dimensionless variable η and the similarity transformation method to represent MHD flow as an unstable state. It views fluid flow as a rotationally induced rise in axial velocity. Power (current) producers, fuel businesses, refrigeration systems, polymer technologies, and boiler systems utilized in aerodynamics are among the applications for MHD. We modify a third-order linear differential equation whose angular velocity depends on an M1-Hartmann number and an R-Suction Reynolds number to get an exact solution.

6. A SECURE AND PERSISTENT REVERSE SHELL WITH ROLE REVERSAL AND AUTHENTICATION FOR REMOTE SYSTEM ACCESS

Dr. K. Venkatesh, R. Balaji, M. Hari Haran, K. Surya, S. Graham Stains
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Reversing the roles commonly observed in backdoor settings, this project is a Python version of a reverse shell that offers an innovative perspective. Typically, the attacker connects as a server and the victim connects as a client. However, this conventional method creates issues when the attacker disconnects or the system breaks, making it impossible for the victim to communicate. Our project swaps these roles to tackle this challenge. The victim acts as the server, and the attacker acts as the client. This gives the attacker the ability to reconnect to the target machine at any time after disconnecting. Security is increased when password authentication is done via MD5 hashing. This feature ensures that, thanks to the hashed password, only authorized attackers are able to connect to the

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target system. The attacker can execute common commands and transfer files between the systems, including uploading and downloading files, once they have established a connection. Role reversal strengthens the connection's durability and dependability while enhancing flexibility in distant access situations. This endeavor is in line with three of the main Sustainable Development Goals (SDGs) namely SDG 9 (Industry, Innovation, and Infrastructure), SDG 16 (Peace, Justice, and Strong Institutions), and SDG 4 (Quality Education). One way the project helps SDG 9 is by making critical digital infrastructure cybersecure through the improvement of remote access measures and the introduction of efficient and robust authentication techniques. A turnabout in reverse shells facilitates penetration testing methodologies, thus helping industries to block the entry of unauthorized users and cyber-vulnerabilities. On the other hand, SDG 16 is further supported through the embodiment of the project as the promotion of ethical hacking and penetration testing that play a crucial role in the prevention of cybercrime, fraud, and data breaches is the essence of it. Properly safe remote access technologies are a guarantee of justice, responsibility, and transparency in digital security. Moreover, SDG 4 is taken care of by the project that offers a worthwhile learning tool for students, cybersecurity professionals, and ethical hackers. The project aid operations in authenticating hands-on training, revealing pragmatic attack scenarios in a controlled environment, and prompting the proper use of cybersecurity tools. Through the project's merging of innovation, security, and education, it is contributing to a safer and more resilient digital ecosystem.

7. EXPLORING EEG DATA FOR NEURAL STATE CLASSIFICATION USING DEEP MODELS

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The classification of neural states from EEG data has gained significant attention due to its applications in mental health monitoring, cognitive state detection, and Brain-Computer Interface (BCI) systems. Widely used EEG datasets have played a pivotal role in advancing research in this field. Various models have been explored to extract meaningful characteristics from EEG signals, leading to significant improvements in classification accuracy. Numerous studies have reported promising results using deep learning techniques for neural state classification. In this research, we focus on classifying neural states from EEG data using both Convolution Neural Networks (CNN) and Long Short-Term Memory (LSTM) models. Our CNN model achieved an accuracy of 91.36%, while the LSTM model achieved an accuracy of 96.04%. These results align with findings from previous studies, where CNN and LSTM models have demonstrated accuracies ranging from 85% to 90%, showcasing the potential of these models for EEG-based neural state classification.

8. THE STUDY OF MACHINE LEARNING APPROACHES FOR COLON CANCER DETECTION

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Classifying cancerous cells on their own is one of the trickiest problems in automatic learning. Although colorectal cancer can occur in people of any age, it is more common in older adults. Numerous studies on colon cancer have been conducted in recent years, and we have developed automatic learning algorithms that enable the automatic classification of genes from various disorders. Thanks to the advancement of computer techniques like machine learning (ML), it is now feasible to classify cancer more precisely with fewer human interventions and simpler technology. Numerous techniques have been used to assess medical data, most of which focus on the significant and minor elements, particularly those related to the networks of neurones. This is because the advancement of genetics has been closely linked to a detailed analysis of the graphic structure of the expression data. In the current study, automated learning is used to do a classification, specifically for colon cancer in individuals of various ages. The K-Nearest Neighbour (KNN) technique is the automatic learning method currently being used. It has been noted that the majority of implemented models achieve a medium level of accuracy of about 95%.

9. ADVANCED MULTIMODAL DEEP LEARNING FOR PREDICTING COGNITIVE DECLINE IN ALZHEIMER'S DISEASE

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Alzheimer's disease, a neurodegenerative condition that is progressive, is believed to be one of the big threats to global healthcare. Hence, there is a very severe need for early and accurate diagnosis. An advanced multimodal deep learning framework, which is based on DenseNet model and known for being dense in terms of its connectivity and reusing the same features, will improve the propagation of features and mitigate the problem of vanishing gradients. MRI scans from the ADNI (Alzheimer's Disease Neuroimaging Initiative) dataset have been used in this study for the experiment to predict cognitive decline and classify stages of it. The performance of DenseNet was also compared and evaluated with other models, among which there are several widely accepted models: CNN, VGG-16, and MobileNet. The results showed DenseNet had the highest test accuracy, which happened at 81.5% while the rest happened at less than 60% in detecting subtle neurodegeneration patterns associated with Alzheimer's progress, making it one of the most promising tools for the early stage of disease detection. This comparison may highlight the potential change that may be brought about by DenseNet in Alzheimer's disease research and later impact improved clinical results owing to timely intervention.

10. WEBSITE RECOMMENDATION USING ALTERNATING LEAST SQUARES (ALS) ALGORITHM

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In the advanced period, personalized suggestions have become a key highlight for online administrations, counting websites, and e-commerce stages. CF is one of the most successful strategies for creating these personalized recommendations, as it leverages client behavior to anticipate inclinations for things that clients have not however associating with. A noticeable CF method is Sub ALS, which stands out for its lattice factorization capabilities, breaking down huge user-item interaction frameworks into smaller, lower-dimensional idle components. This paper explores the application of ALS-based Collaborative Filtering to site suggestion frameworks, pointing to recommend websites to clients based on their past intelligence, such as visits, clicks, or ratings. The ALS calculation approximates the user-item interaction network by breaking down it into two low-rank lattices that speak to clients and websites. These networks are iteratively overhauled through substituting optimization until the framework merges, minimizing the remaking blunder. By applying ALS, websites with comparable interaction designs are clustered together, empowering the framework to prescribe websites that share idle components with those the client has already locked in with. This approach is exceedingly useful due to its proficiency in scaling with expansive datasets and its vigor in dealing with inadequate information, a visit challenge in suggestion systems. ALS demonstrates particularly compelling when user-item intelligence is meager, as it can handle lost information and anticipate appraisals for concealed intelligence, making it an effective instrument for giving personalized site suggestions. The viability of ALS-based Collaborative Filtering can be advanced and improved by joining extra data, such as client socioeconomics and site substance highlights, into cross-breed suggestion models.

11. BRAIN TUMOR DETECTION USING DEEP LEARNING

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Tumor detection using image segmentation is important in medical imaging because they enable doctors to diagnose and treat cancer at an earlier stage and more effectively. This paper is focused on the improvement of the detecting tumor with high accuracy in MRI and CT scans by utilizing advanced deep learning image segmentation techniques like Convolutional Neural Networks (CNNs). CNNs are being used primarily for the purpose of automatically learning and identifying important features within complex medical images, allowing the extraction of these features through multiple layers of CNNs, so as to accurately locate and segment tumors down to the pixel level. For tumour boundary to be precisely detected CNN architecture based image segmentation is used, especially in the case of irregular shapes

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or smaller datasets of medical images, dataset is available publicly for training CNN based models and basis of key metrices like accuracy and precision there performance are evaluated. This research highlights the power of advanced techniques like CNNs in improving medical imaging.

12. CHAMELEON-SPARROW SEARCH APPROACH-BASED 1D CNN FOR ARRHYTHMIA CLASSIFICATION

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Arrhythmia represents an inherited disorder of disordered heartbeats, which could be abnormal or irregular. If the electrical impulses controlling heartbeats do not work properly, then disturbances in heartbeats could occur and the heartbeats could become too slow, too irregular, or too fast. Early detection of diseases like arrhythmia, is crucial for monitoring of Electrocardiogram (ECG) signals for this purpose. In view of the rapid advancement in computer technology, improvements in computer-aided diagnostic methods and models for data collection have also been made. Recent research has demonstrated that deep learning-based approaches are more competent in classifying beats as arrhythmic as their counterparts in conventional machine learning (ML). Deep learning is fast becoming a powerful tool in the processing of ECG signals. Therefore, this research is aimed at optimizing the 1D Convolutional Neural Network (1D-CNN) for classifying arrhythmias from ECG signals. The processes include the first denoising by median filtering and normalization for pre-processing. A Chameleon-Sparrow Search Algorithm-based 1D CNN (CsSA-based 1D CNN) is proposed for arrhythmia classification, where the Chameleon-Sparrow Search Algorithm (CsSA) optimizes the training of the 1D-CNN. CsSA is a hybrid algorithm that integrates Sparrow Search Algorithm (SSA) and Chameleon Swarm Algorithm (CSA) to improve search efficiency of SSA. The experimental results show that proposed method gave 93.3% accuracy, 92.8% specificity, and 94.2% sensitivity, which is a testament to its effectiveness for arrhythmia classification.

13. DDOS PROTECTION SYSTEM FOR CLOUD: ARCHITECTURE AND MACHINE LEARNING-BASED DETECTION

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Growing adoption of cloud computing has brought new security risks, and Distributed Denial-of-Service (DDoS) attacks have been one of the largest security risks in this field. DDoS attacks are used to overwhelm cloud-based applications with extremely high volumes of traffic, which makes service unavailable, slows down performance, and causes financial loss to companies. Conventional security appliances like static firewalls and intrusion detection systems are usually ineffective in their mitigation because of the dynamic nature of DDoS attacks. This system suggests an automated and intelligent DDoS defense system that utilizes real-time monitoring, anomaly detection, and pro-active mitigation strategies to improve cloud security. This system utilizes cloud-native technologies such as Prometheus

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for real-time metric gathering, Loki for log gathering, and Azure Firewall for real-time traffic filtering. We also include machine learning-based anomaly detection so that the system can learn to distinguish legitimate traffic from actual attack patterns. Utilizing a scalable, adaptive platform, our solution sees less downtime with excellent availability whereas it is a cost-effective replacement for expensive third-party-reliant DDoS protection offerings. The solution identifies malicious action automatically based upon pre-defined, dynamically set up traffic patterns triggering countermeasures that range from IP blocking and rate limiting through real-time notifications on the fly. Experiment validations carried out on a cloud simulator prove the system's excellent detection rate and response time. The outcomes demonstrate its success in repelling all forms of DDoS attacks, making continuous service availability with little disruption to operations. This work adds value to the emerging area of smart cloud security technologies, and the resulting work allows for the enhancement of AI-aided threat detection as well as autonomous mitigation techniques.

14. HANDWRITTEN INFORMATION RECOGNITION USING CONVOLUTIONAL NEURAL NETWORKS

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Convolutional Neural Networks (CNNs) are used in this paper to provide a comprehensive solution for handwritten information recognition. The main objective is to correctly classify handwritten numbers from the front page of an exam response sheet—where the numbers correspond to the marks given to each question—by utilising deep learning and image processing techniques. Each answer script's marks assigned by the exam paper valuator are identified by the system. By combining important technologies, the suggested method shows how adaptable and powerful contemporary machine learning frameworks are for handwritten digit recognition. A specially created dataset for handwritten digit recognition on exam sheets is used to train the system, guaranteeing that the data is extremely pertinent to the particular use case. The model smoothly integrates machine learning capabilities into the recognition process by using an effective machine learning framework for training and evaluation. In order to provide the best possible input quality for the neural network, this article is used for crucial image preprocessing tasks like thresholding, noise reduction, and scaling. It also improves the recognition process, increasing the handwritten digit recognition accuracy. The system offers insights into how its performance in identifying and interpreting handwritten marks corresponds with predetermined educational objectives by including Course Outcomes (CO) and Program Outcomes (PO) mapping. This guarantees that the system efficiently supports learning objectives. A bespoke dataset of exam response sheets was used to test and assess the technology, proving CNNs' practicality in handwritten digit recognition. In addition to connecting performance outcomes with educational frameworks, this research advances machine

learning applications by merging deep learning and image processing approaches for accurate handwritten information identification.

15. DEVELOPMENT AND IMPLEMENTATION OF A COLLEGE CHATBOT USING NLP AND MACHINE LEARNING

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This research focuses on creating a college chatbot using Natural Language Processing (NLP) and Machine Learning (ML). The chatbot acts as a virtual assistant to make communication easier within a college setting. By using NLP, it can understand and reply to questions in natural language, while ML helps it improve over time by learning from its interactions. The chatbot is designed to quickly provide information on courses, admissions, events, and other college-related topics, improving efficiency and user satisfaction. The development involves cleaning and processing data, identifying user intentions, and predicting responses using advanced learning methods. The chatbot is built with a strong and scalable architecture, making it easy to integrate into existing college systems. Performance tests show the chatbot is effective, with high accuracy in answering questions. This project demonstrates how NLP and ML can provide innovative solutions for communication challenges in education, making it easier for students and staff to access information quickly.

16. AN NLP-BASED PLAGIARISM DETECTION APPROACH FOR MODERATE-LENGTH SENTENCES

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In the realm of plagiarism detection, a key challenge lies in evaluating semantic similarity between obfuscated sentences, particularly within moderate length sentences comprising only 10-20 words. To address this issue, a novel technique called Typed Dependencies Relationship (TDR), rooted in Natural Language Processing, has been introduced for identifying plagiarized content within moderate sentences. This method was tested on existing datasets of sentences and was compared against three leading plagiarism detection methods. The findings indicate that this method showing good results with keep the meaning of sentences with intricate linguistic structures.

17. ENTERPRISE MORTGAGE MANAGEMENT SYSTEM USING POWER PLATFORM

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Contoso Mortgage System is a financial management solution that helps to manage the mortgage application process, mortgage payments, and communication with the customer via Microsoft Dynamics 365. A public-facing website enables customer mortgage applications, document downloads, and tracking the status of loans. Once an application is submitted, it is processed by the backend team, and the process is followed through stages (New, Review, Approval). Automated tasks such as notifying customers, conducting credit checks, and generating payment records are part of the approval workflow. AI-driven credit risk assessments have been shown to improve loan approval efficiency, reducing manual effort and processing time [4]. Finally, the APR is based on the base APR, margin, a risk score, and the sales tax, which varies from state to state. The payments on monthly will be calculated according

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to pre-defined formulas. It allows customers to open and track service requests, with case management features. Additional information is provided, including cyclic logic for assigning cases or one for workload balancing and SLA guidelines for resolution. Directors have visibility across business units, and user roles can limit data access and security. Incorporating Azure Service Bus, the system synchronizes data with multiple outside services such as real-time credit history and exchange rates. Real-time data integration in mortgage systems has been recognized as a crucial factor in improving financial decision-making [8]. With reporting, document storage through SharePoint, and a knowledge base for search, the Contoso Mortgage System offers a consolidated and secure platform for mortgage origination.

18. REAL-TIME CROWD AND VIOLENCE DETECTION USING YOLOV8 WITH AUTOMATED ALERTS AND NOTIFICATIONS

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The timely identification of crowd density alterations and violent conduct matters for ensuring public security at risky sites where large gatherings take place. This piece of work envisions a live tracking system which applies the YOLOv8 advanced detection method to identify suspicious crowd activities and security violations within video sequences. Once triggered by system activity it will activate audible alarms together with email alerts to necessary authorities. The proposed solution addresses manual surveillance problems to boost accuracy and speed and adaptability in detection. The system leverages advanced deep learning models together with multiple datasets and friendly interfaces while using diverse information to improve safety from a proactive perspective. Experimental data confirms the effectiveness of this system since it delivers precise detection alongside quick responses when performing various real-world scenarios.

19. SMART TRAFFIC SURVEILLANCE: HELMET MONITORING AND LICENSE PLATE IDENTIFICATION USING DEEP LEARNING

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Motorcyclists are particularly vulnerable to road accidents, often resulting in severe injuries or fatalities. Helmets are a proven safety measure that significantly reduces the risk of head injuries; however, many riders fail to comply with helmet laws, making enforcement a challenge for traffic authorities. This paper presents an advanced, automated traffic violation detection system that integrates real-time helmet detection and automatic license plate recognition to enhance road safety and streamline enforcement. Our system employs an optimized YOLOv3 model to efficiently detect motorcycles and determine whether riders are wearing helmets. Unlike conventional implementations, we enhance detection accuracy by fine-hyperparameter tuning YOLOv3 on a diverse dataset that includes various helmet types, different lighting conditions, and occlusions. To address challenges such as low-light environments, we incorporate preprocessing techniques, including contrast enhancement and adaptive thresholding, improving detection performance under suboptimal conditions. For license plate recognition, we utilize EasyOCR, further improved through custom preprocessing steps such as noise reduction and edge enhancement and GA-based Adaptive Thresholding enabling better recognition of partially occluded or low-quality license plates. Upon detecting a violation, the system automatically extracts and logs the license plate details into a structured database, facilitating streamlined enforcement and legal action. Our experimental results demonstrate increased accuracy while reducing inference time compared to existing methods, making this system a scalable and deployable solution for real-time traffic monitoring. By automating violation detection and reporting, the proposed approach reduces the burden on law enforcement while encouraging greater compliance with helmet laws, ultimately contributing to safer roads.

20. MAPPING AFFECTIVE DYNAMICS IN EEG THROUGH UNSUPERVISED DATA PARTITIONING

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This study explores unsupervised emotion categorization from EEG signals using K-Means clustering, addressing the limitations of supervised methods that require extensive labeled data. Unprocessed EEG signals were clustered, with the optimal number of clusters determined by the Elbow Method. Cluster assignments were then compared to manually assigned emotion labels. Results indicate K-Means can identify patterns in EEG signals that align with emotional states, demonstrating the feasibility of unsupervised emotion analysis. This research lays groundwork for improving unsupervised affective computing models, with future work focusing on enhancing clustering accuracy and exploring alternative algorithms.

21. AI BASED FRAUD DETECTION SYSTEM FOR ONLINE TRANSACTIONS WITH REAL-TIME ALERTS

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With the rise of online transactions, financial fraud has become a significant issue. Traditional rule-based fraud detection methods struggle to keep up with evolving fraudulent tactics, resulting in financial losses. This paper introduces an AI-powered fraud detection system that continuously examines transaction patterns, detects anomalies, and generates real-time alerts. The system utilizes machine learning techniques, including Logistic Regression, Random Forest, and Deep Learning, while employing SMOTE to address data imbalance. The proposed approach is implemented as a Flask-based web application, featuring an automated email alert mechanism. Experimental findings highlight the system's high accuracy and efficiency in fraud detection, enhancing security while minimizing false positives.

22. SCAN SECURE: A SECURE CODE REVIEW APPLICATION

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Security loopholes in software development today are fraught with serious threats like data compromise, code breaches, and monetary loss. Identifying and addressing such vulnerabilities by hand during the development process is both expensive and error-prone. This article introduces the creation of a Secure Code Review Bot to automate real-time detection of security vulnerabilities throughout code development. The suggested bot harmoniously fits into version control systems like GitHub and GitLab, allowing developers to receive real-time vulnerability analysis. Through the use of static code analysis and AI-driven vulnerability detection, the bot offers actionable findings, security advice, and automated code suggestions to improve overall security. This system's deployment is meant to block security vulnerabilities from being added into the end product, thus providing a more secure software development life cycle.

23. AI-DRIVEN CIBIL SCORE ANALYSIS AND PREDICTION SYSTEM

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CIBIL score is an important indicator in assessing creditworthiness in India. This is critical for loan approval. However, the traditional CIBIL scoring system has limitations. This leads to an increase in non-performing assets (NPAs) and bad loans. These limitations arise from the exclusion of important parameters that can provide a more nuanced risk assessment. This research addresses these issues by improving CIBIL score estimation by integrating additional features and advanced machine learning algorithms. This study used models such as logistic regression. Random forest classifier Supported vector machines and gradient boosting classifiers to analyze past loan data The goal is to develop a more accurate and robust prediction system using cluster learning techniques. The improved system aims to better identify and manage credit risk. Reduce the chance of bad loans and improve the loan approval process .The findings may provide financial institutions with a more reliable tool for evaluating loans. This reduces the risk of NPAs.This research focuses on developing and comparing machine learning models for loan approval prediction, employing algorithms such as Logistic Regression, K-Nearest Neighbors, Support Vector Machine, Decision Tree, and Random Forest. The study also examines the impact of feature Selection methods Like K-Best and Recursive Feature Elimination (RFE) on model performance, alongside evaluating cross-validation techniques. Findings indicate that Random Forest, with RFE and cross-validation,The study highlights that married, high-income, male, and university-educated individuals are more likely to receive loan approval, emphasizing the effectiveness of feature selection in enhancing model accuracy.

24. RAVEN - INTEGRATED CLOUD DEPLOYMENT TOOL USING CLI

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The integration of cloud computing and DevOps practices is essential for efficient software deployment, yet many users struggle with the complexities involved. To address this, we are developing RAVEN, a command-line tool designed to simplify cloud deployment for individuals with limited technical

knowledge. RAVEN automatically detects a project's technology stack, manages compilation and building tasks, and provides DNS for the deployed application. By consolidating these functions into a single command, RAVEN makes cloud deployment accessible to a broader audience. This tool streamlines the deployment process, allowing users to focus on their projects rather than the intricacies of deployment. As the significance of cloud computing and DevOps continues to rise, RAVEN enhances productivity and encourages innovation by enabling more individuals to bring their ideas to life in the digital space.

25. A DEEP LEARNING-BASED DIAGNOSTIC SYSTEM FOR DIABETIC RETINOPATHY CLASSIFICATION

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This paper presents an automated classification system for Diabetic Retinopathy (DR) using deep learning techniques to differentiate between Healthy and Severe DR cases from retinal fundus images. The proposed approach leverages Convolutional Neural Networks (CNN) and Transfer Learning models, specifically InceptionV3 and VGG16, to improve classification accuracy. Data augmentation techniques such as rotation, zoom, and flipping are applied to enhance dataset diversity and generalization. Additionally, fine-tuning of pre-trained models is performed to adapt them for DR classification. The effectiveness of the models is evaluated using accuracy, precision, recall, F1-score, and AUC-ROC. A comparative analysis is conducted between a baseline CNN model and Transfer Learning architectures to identify the most optimal model. This system aims to assist ophthalmologists in the early detection of diabetic retinopathy, reducing the risk of vision impairment and blindness. The study also highlights the potential of deep learning and Transfer Learning in medical image classification, paving the way for future advancements in automated diagnostic systems.

26. A SMART DYNAMIC TRAFFIC MANAGEMENT SYSTEM

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The research presents an advanced traffic control system that integrates AI, RSSI technology, and some elements of IoT for improvement of urban traffic flow while the promotion of emergency vehicles movement. In this system, AI algorithms evaluate real-time vehicle counts and adjust timings to ease congestion by supplying green light phases to lanes with larger density. This makes sure rapid clearance for emergency vehicles as it uses RSSI technology to detect by monitoring signal strength from transmitters fitted on the vehicle. Whenever an ambulance or emergency vehicle is sensed approaching, the system triggers pre-set clearance procedures on the open lanes in order to ensure no hindrance in passage. Also, IoT components enable wireless communication between transmitters and receivers ensuring seamless integration and real-time decision-making. In so doing, the system enhances flow efficiency in traffic by drastically reducing the response time for emergency vehicles. Overall benefits from the system include safety on roads, reduced traveling delays, and enhanced mobility in urban areas, thereby showing the potential of implementing the system on a mass scale in modern cities.

27. CAR POOLING SYSTEM FOR PUBLIC USING BLOCK CHAIN TECHNOLOGY

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The rise in urban traffic congestion, pollution, and demand for sustainable transport necessitates innovative solutions for efficient, secure, and decentralized ride-sharing. This paper presents a blockchain-based carpooling system that prioritizes privacy, transparency, and efficiency, eliminating the need for intermediaries. Leveraging smart contracts, our approach automates user agreements, enhances data security, and facilitates trust through transparent peer-to-peer transactions. Key components include a reputation-based user management module, an optimized route and matching system, real-time GPS tracking, and flexible payment processing, which encourage trust and usability. Our work demonstrates the potential of decentralized technology to transform carpooling into a secure, efficient, and environmentally-friendly mode of transport.

28. A COMPARATIVE STUDY OF TECHNIQUES FOR HANDLING IMBALANCED DATASET

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Mostly in regression and classification problems, unbalanced data seriously challenges machine learning since under-representation of the minority class produces distorted predictions and lower model performance. This work proposes a comparison of histogram-based data-level sampling methods, namely HistUS (Histogram-Based Undersampling), HistOS (Histogram-Based Oversampling), and their hybrid combination with SMote (Synthetic Minority Over-sampling Technique) and NCL (Neighbourhood Cleaning Rule) in order to solve the imbalanced data stream issue. By use of synthetic data generation and histogram-based techniques, these methods balance the class distribution and thereby solve the shortcomings of traditional approaches such Chebyshev's inequality. We investigate both synthetic and real-world datasets in order to evaluate HistUS, HistOS, and SMote-NCL against conventional approaches including random oversampling and undersampling. The core focus of the research is model accuracy; integrity, resilience, and robustness in dynamic data environments follow second. Our results reveal that HistUS, Histos, and the SMote-NCL hybrid strategy perform rather better than standard resampling techniques in managing rare events and prediction accuracy. The findings provide perceptive data to improve predictive maintenance, healthcare diagnostics, and fraud detection model performance. This work aims to provide machine learning professionals with effective tools for quickly managing unbalanced data, hence producing more accurate and dependable models for pragmatic application.

29. A COMPREHENSIVE STUDY ON OBJECT DETECTION AND TRACKING USING YOLOV8 AND DEEPSORT

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Smart traffic management systems are essential for city growth with more cars on the roads. Object detection and tracking are key for monitoring traffic, controlling congestion, and helping self-driving cars navigate. This paper looks at current object detection and tracking methods, mainly focusing on YOLOv8, optimising YOLOv8 for small object detection and DeepSORT. YOLOv8 is a top deep-learning model that detects objects quickly and accurately. DeepSORT improves tracking by keeping track of object identities from frame to frame. Combining these technologies allows for better tracking of many vehicles, which helps with traffic analysis and management. This paper discusses recent improvements, compares traditional tracking methods with deep learning, reviews performance measures, and points out challenges and future tasks in smart traffic monitoring.

30. REAL-TIME SOIL MOISTURE MANAGEMENT SYSTEM FOR EFFICIENT WATER USAGE IN SMALLHOLDER FARMING

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This paper introduces an innovative IoT-based irrigation system designed to enhance water management efficiency for smallholder farmers through a synergy of real-time data and big data analytics. The system employs an Raspberry pi zero WH microcontroller integrated with a capacitive soil sensor and DHT22 for monitoring soil moisture, temperature, and humidity, alongside a water pump for automated irrigation. By incorporating satellite-derived data from Google Earth Engine, including land surface temperature, evapotranspiration, and normalized difference vegetation index, as well as wind speed from the OpenWeather API, it provides a comprehensive environmental assessment. The approach combines threshold-based irrigation triggers with advanced scheduling models derived from big data analysis, processed offline and relayed via a web dashboard and Twilio SMS alerts. This dual mechanism ensures precise water delivery, reduces wastage, and supports crop resilience by offering features such as soil health monitoring and pest risk detection. The solution stands out for its cost-effectiveness and adaptability, surpassing traditional irrigation methods in optimizing resource use and promoting sustainable agricultural practices [1], [5].

31. A COMPREHENSIVE REVIEW ON ENVIRONMENTAL MONITORING USING HYBRID DEEP LEARNING MODELS ON DRONE IMAGING QUALITY

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Environmental monitoring practices have become highly important over recent years because of climate change alongside urbanization and ecological degradation. Drone-based imaging with deep learning technology offers real-time high-resolution environmental assessment outputs which help track land cover types as well as deforestation and monitor water bodies while measuring urban growth. Existing models currently experience two fundamental limitations in dealing with complex environmental conditions along with performance efficiency problems. We suggest EcoDroneNet as a new hybrid deep learning model which combines ResNet features with Inception modules to analyze multiscale data for effective aerial imagery segmentation. High-resolution aerial drone images featuring labeled environmental features of vegetation, buildings, roads and water bodies are provided through the Aerial Semantic Segmentation Drone Dataset available on Kaggle. Hybrid noise reduction and adaptive

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contrast enhancement (ACE) and data augmentation form part of extensive preprocessing methods that work to increase model generalization potential. We are expecting an accuracy of 96.76% with EcoDroneNet, outperforming conventional models such as U-Net and DeepLabV3. Environmental applications of EcoDroneNet involve detecting land covers as well as identifying deforestation zones and detecting water pollution and supporting sustainable urban designs. The model supports large-scale rollout because its lightweight character makes it run efficiently on edge AI devices. The analysis demonstrates that EcoDroneNet shows promising potential for conservation policies and environmental governance together with climate resilience through drone-based environmental surveillance development.

32. ATTACK DETECTION AND MTIGATION IN BANKING TRANSACTIONS

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In the modern era of digital banking and online financial transactions, attacks have emerged as a sophisticated and covert form of cybercrime. These attacks exploit the rounding-off practices in financial computations, enabling malicious actors to siphon off small amounts of money from numerous accounts over time. Although each transaction appears insignificant, the cumulative impact can be substantial, resulting in severe financial losses. Existing mechanisms often rely on periodic audits to detect such activities, but these methods are reactive and insufficient to address the problem proactively. The proposed study introduces a neural network-based framework for the early detection of salami attacks in banking systems. This methodology leverages historical transaction data and employs anomaly detection algorithms to identify patterns indicative of fraudulent activities. By integrating advanced machine learning techniques, the framework aims to enhance the detection precision and mitigate financial risks. Comparative analysis demonstrates the model's efficacy in detecting salami attacks with improved accuracy and reduced false positives compared to traditional methods.

33. SMART HEALTH NEPAL: AI-DRIVEN DISEASE PREDICTION WITH TAILORED MEDICAL AND LIFESTYLE RECOMMENDATIONS

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Nepal is advancing steadily in infrastructure development, with ongoing investment and international partnerships aiming to modernize. It is facing numerous issues related to proper management and disease diagnosis due to the unavailability of healthcare infrastructure and resources. It is evident from the major alarming rise that an efficient and accurate diagnostic system is the primary requirement for both infectious and non- infectious diseases. Currently, most disease diagnosis techniques are manual and time-consuming, prone to errors that mostly end in incorrect or delayed treatment. Our solution to this problem is a computer-based disease prediction system implemented through machine learning algorithms Random Forest, Gradient Boosting, SVC, KNN, Multinomial Naive Bayes that will enhance the accuracy and efficiency of disease diagnosis and treatment. AI- powered solutions in disease diagnosis and treatment, as well as personalized health and lifestyle recommendations, can be an innovative way in which improvements are made in the health- care sector by the government of Nepal. It is well advanced and efficient while public health outcomes will be greatly improved to 94%.

34. REAL-TIME EVENT DETECTION FOR PUBLIC SAFETY USING BI-LSTM AND NLP

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This paper proposes a real-time event detection system to enhance public safety using Natural Language Processing (NLP) and Deep Learning. By analyzing ambient sounds captured through smartphone microphones, the system classifies audio events such as screams, gunshots, and glass breaking, which are indicators of potential threats. The model integrates deep learning techniques, including 1D CNN, 2D CNN, and Bidirectional Long Short-Term Memory (Bi-LSTM) networks, to improve detection accuracy. With a focus on minimizing false positives and ensuring prompt emergency alerts via SMS, email, and WhatsApp, the system offers a novel solution for improving individual safety in various environments.

35. ADVANCED FAKE ACCOUNT DETECTION AND THEIR PREVENTION SYSTEM

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The rise of fraudulent accounts on social media networks has witnessed an emergence of several challenges with focus on misinformation, privacy violation, and confidence erosion among users. Current approaches are only aimed at identifying fake accounts after the fact through follower profile content or activity signals which creates a gap that can be exploited by malicious actors. This paper proposes an all-inclusive system that detects and eliminates the existing fake accounts and also prevents their creation. It employs a combination of machine learning algorithms like Random Forest, Support Vector Machines (SVM), and Convolutional Neural Networks (CNN) to detect patterns in account data, textual bios, and profile images to classify accounts as fake or genuine. NLP performs its function in analyzing user bios and names, whereas image processing techniques are used to determine the authenticity of profile pictures. During the registration process itself, mechanisms such as IP address verification, phone number validation, and email validation will ensure that fake accounts are not allowed. Thus these CAN be considered proactive rather than reactive in closing loopholes identified to pave way for phony accounts; hence CAN be utilized to lay down a foundation right away for enhancements towards security besides integrity social media.

36. NEW METHOD OF PREDICTION IPL MATCH OUTCOME USING MACHINE LEARNING TECHNIQUES

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The Indian Premier League (IPL) is a highly competitive and unpredictable cricket tournament. Predicting match outcomes is a challenging task due to the complexity of factors influencing the game. This study proposes a novel method for predicting IPL match outcomes using machine learning techniques. Large dataset of IPL matches, including ball-by-ball commentary, player statistics, and match outcomes.comprehensive dataset of IPL matches, including team and player statistics, weather conditions, and other relevant factors. We then employ a range of machine learning algorithms, including logistic regression, decision trees, and neural networks, to develop predictive models. Our

results show that the proposed method achieves a high accuracy of 85.2% in predicting match outcomes, outperforming existing methods. We also conduct a detailed analysis of the key factors influencing match outcomes, providing valuable insights for team management and strategy development. This study demonstrates the potential of machine learning techniques in predicting sports outcomes and contributes to the growing field of sports analytics.

37. BLOCKCHAIN-ENABLED SOCIAL SECURITY USING SMART CONTRACT

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The old social security systems are becoming less and less capable of delivering distributed sharing, traceability, consensual trust, tamper-proof methods, transparency, and reliability as a result of technological advancements. Due to the frequent centralization of these systems, there may be only one point of failure. We suggest a consortia blockchain-based approach to improve social security informatization in response to these issues. In order to manage approval papers, images, and videos pertaining to social security services in a safe, traceable, and accessible manner, our system applies blockchain technology and the Interplanetary File System (IPFS). In order to simplify and secure the approval process, the suggested solution integrates blockchain technology with IPFS and includes a multi-party trust and data-sharing mechanism. We outline the algorithm's testing and implementation in smart contracts, demonstrating how it may be used to automate social security approvals and lessen the workload associated with manual reviews. In our final analysis, we contrast our approach with current systems, emphasizing its benefits for online processing, safe access, and document traceability pertaining to social security.

38. COMPREHENSIVE STROKE DETECTION USING 3D CONVOLUTIONAL NEURAL NETWORK AND RISK ASSESSMENT

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Stroke detection and risk assessment are major obstacles in the medical industry. In this paper, a novel hybrid strategy integrating machine learning models and 3D Convolutional Neural Networks (3D CNNs) for CT image-based stroke diagnosis is proposed. For clinical risk prediction, market-leading algorithms like Random Forest and XGBoost are contrasted and put into practice. Using a hybrid approach, the methodology combines non-image (ML algorithms) and image (3D CNN) data to provide a thorough diagnostic. The model's remarkable accuracy and resilience are demonstrated by numerous experiments and comparison with existing works highlighting its potential for practical uses.

39. MULTI-MODAL GLAUCOMA DETECTION AND STAGING USING CNN SVM HYBRID MODEL WITH FUNDUS IMAGING

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This study presents a multi-modal glaucoma detection and staging system that combines fundus imaging to enhance diagnostic accuracy. A novel integrated analysis framework that leverages the deep learning for pattern identification and machine learning for decision support. This framework is designed to prevent model degradation and enhance adaptability across the diverse dataset. This system integrates Cup-to-Disc Ratio (CDR) analysis for precise staging into Normal, Mild, Moderate, and Severe categories. Grad-CAM visualization helps interpret the system's decisions. The proposed approach outperforms traditional methods, offering a scalable and interpretable AI solution for early detection, monitoring, and treatment planning in glaucoma care.

40. INTELLIGENT ENERGY-EFFICIENT ROUTING IN WIRELESS SENSOR NETWORK

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The emergence of intelligent Wireless Sensor Networks (WSNs) integrated with Internet of Things (IoT) and Artificial Intelligence (AI) technologies marks a significant advancement in the field of smart sensing and automated decision-making. These systems leverage interconnected sensor nodes that not only collect data from the physical environment but also process and transmit it intelligently using embedded computational resources. Unlike traditional WSNs that rely heavily on centralized control and static configurations, intelligent WSNs enable decentralized, context-aware operation by employing edge-level intelligence and adaptive algorithms.

This paper explores the design and implementation of an intelligent WSN architecture capable of real-time environmental sensing, self-optimization, and predictive analysis. The integration of IoT ensures seamless data communication and remote accessibility, while AI techniques such as machine learning and pattern recognition enable the system to detect anomalies, predict trends, and make autonomous decisions. Applications span across domains like precision agriculture, environmental monitoring, industrial automation, and smart cities.

The proposed system architecture supports modular deployment, energy-efficient routing, and scalable node communication. It employs a hierarchical sensing model where low-level nodes perform initial data processing and transmit only relevant insights, thereby conserving energy and reducing network traffic. A lightweight machine learning model is embedded into each node to enable adaptive behavior based on environmental feedback.

Performance evaluations through simulations and prototype testing reveal that the intelligent WSN achieves enhanced energy efficiency, reduced data latency, and higher prediction accuracy compared to conventional WSN models. This research demonstrates the feasibility and advantages of integrating AI and IoT in sensor networks, paving the way toward more robust, autonomous, and intelligent sensing platforms for next-generation smart environments.

41. COMBINATION OF VAPT TOOLS USING CLI

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The project introduces an automated Vulnerability Assessment and Penetration Testing (VAPT) system that helps hackers' and pen-testers' reconciliation by providing three tools, Metasploit, MSFvenom, and WafW00F, in one package. The objective is to provide useful cybersecurity testing practices. It recognized a need for cybersecurity testing integration tool for real systems, which would have solved some of the inherent challenges of traditional pen-testing, including manual testing and manual use of disconnected tools, and a non-standardized report findings. In short, the system provides a consolidated system penetration testing solution. This work provides a structured workflow, with the opening phase utilizing WafW00f automated reconnaissance capabilities to identify the existence of web application firewalls. This would then lead on to the creation of dynamic payloads, utilizing MSFvenom, to facilitate control via YAML files. The pen-testing engine uses Metasploit's structure for exploitation, with automated repetition provided much of the testing process with Python's subprocess module, through the pymetasploit3 RPC library. The entirety of the framework has been developed in Python 3, which will provide the possibility of further development and modularity for extendability and closure on any attack or vulnerability issues. Overall, the technical features associated with the system and integration of features, support the case of a unified testing system. Some features include, but not limited to, structured organized based logging in JSON for an analysis of results at any point in the testing process, YAML based configuration management equipment for creating replicable testing environments and automated reporting for document results of vulnerabilities testing with simplicity and comprehensiveness. The framework was tested own on industry benchmark vulnerable test environments (Metasploit, DVWA) demonstrating measurable improvements for overall testing performance compared to utilizing manual testing. The final takeaway during normalisation, would be a confident improvement of automated testing practice via an integrated solution to reduce human effort.

42. HEALTH ASSESSMENT AND PERSONALIZED RECOMMENDATION SYSTEM USING RANDOM FOREST ALGORITHM

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The application of artificial intelligence (AI) in medicine has revolutionized the diagnosis and treatment of diseases. Our research introduces an AI-based Health Assessment and Personalized Recommendation System that uses the Random Forest algorithm[8][20] and a large language model (LLM)[1] to forecast diseases from user- provided symptoms and offer personalized recommendations for treatment. The system further uses the RxNorm API to check for drug interactions, providing safety for the prescribed drugs. This method enhances diagnostic precision[21], increases patient interaction, and offers scalable AI-driven healthcare solutions, especially for distant and underserved patients. The paper also mentions the shortcomings of symptom- based diagnosis and suggests future developments like EHR integration, IoT-based health monitoring, and AI- driven telemedicine.

43. AUTOMATED ANIMAL DETECTION SYSTEM AND ACCIDENT PREVENTION

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The rising number of animal-related traffic accidents especially in rural or forest-adjacent areas has raised serious concerns because it endangers both people and wildlife. In order to address this urgent problem our research presents an Automated Animal Identification System that uses cuttingedge deep learning algorithms specifically YOLOv8 to recognize animals in real time and send out instant alerts, preventing accidents. After processing video or picture frames the system marks any animals it detects with bounding boxes, sounds an alarm to warn drivers or starts automated procedures to prevent collisions. The YOLOv8-based model shows excellent accuracy and dependability in detecting animals under a variety of circumstances obtaining a precision of 95% and an F1 score of 93. Additionally, an application termed Streamlit has been created to enable smooth detection in real time in both image and video streams. Its interactive interface ensures accessibility and implementation flexibility. By reducing the likelihood of accidents this creative solution not only improves road safety but also helps protect animals representing an exciting advancement in automated transportation.

44. FAKE SOCIAL MEDIA ACCOUNT AND DETECTION

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Impersonation social media accounts have been a major issue, leading to disinformation, identity thefts, and cyber scams. Rule-based traditional techniques which have been employed for the identification of scam accounts have failed to work because they are unable to cope with the evolving fraud patterns. A machine learning-based Fake ID detection system has been presented to address the problem, utilizing a Random Forest Classifier to identify real or fake social media accounts. The process involves the evaluation of 11 significant features derived from user profiles, including username patterns, bio information, privacy settings, and account activity measures. A React frontend has been utilized to facilitate profile data entry, which is classified in real time by a Flask backend through RESTful APIs. The system implemented here attained an impressive accuracy of 91% and can be utilized as a powerful tool for the detection of spurious accounts. Future developments include the integration of image recognition with deep learning, cross-platform support, and the implementation of privacy-preserving techniques such as federated learning.

45. RFID CHILD TRANSPORTATION MONITORING SYSTEM WITH GPS TRACKING USING IOT

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Ensuring the safety of children during school transportation is a critical concern for parents and institutions alike. This project presents an IoT-based solution integrating RFID, GPS, GSM, and cloud technologies to monitor and secure student transit. Each child is assigned an RFID tag, enabling

automated check-in and check-out logging as they board or exit the bus. Real-time location tracking is achieved through GPS, while GSM modules send instant notifications to parents and school authorities in case of emergency or missed boardings. A panic button and collision sensors further enhance safety by enabling immediate alerts in critical situations. All system data is visualized and stored via cloud integration for live monitoring and historical analysis. This intelligent framework not only prevents incidents like children being forgotten in buses but also streamlines attendance and enables rapid emergency response, redefining school bus safety through automation and connectivity.

46. EZUTHAMIL DIGITIZING AND TRANSLATION OF ANCIENT TAMIL CHARACTERS

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The preservation and digitization of ancient Tamil inscriptions play a vital role in understanding the historical, linguistic, and cultural evolution of the Tamil language. However, accurately recognizing and translating ancient Tamil characters remains a significant challenge due to factors such as character erosion, noise, and variations in script styles. Traditional Optical Character Recognition (OCR) techniques often fail to provide accurate results due to the complexity of ancient inscriptions. To address these challenges, this research proposes a deep learning-based approach for converting ancient Tamil script into its modern equivalent. The methodology involves image preprocessing, including noise removal, binarization, and segmentation, to enhance character clarity and structure. The extracted characters undergo feature extraction using ResNet18, which serves as a robust feature extractor for distinguishing unique character patterns. Following this, cosine similarity is used to map the extracted features to their closest modern Tamil equivalents, ensuring accurate recognition. This approach effectively processes ancient stone-carved inscriptions and reconstructs their modern Tamil representations with high accuracy, experimental results demonstrate that the proposed system outperforms traditional OCR techniques in recognizing and translating ancient Tamil inscriptions. The accuracy improvements highlight the effectiveness of deep learning and similarity-based mapping for handling historical scripts. This research contributes significantly to epigraphy and digital heritage preservation, offering an automated solution for scholars and historians. Future work will focus on expanding datasets, improving model robustness, and integrating contextual analysis to enhance recognition accuracy for highly degraded inscriptions.

47. A REAL-TIME & SCALABLE NETWORK INTRUSION DETECTION SYSTEM WITH DEEP LEARNING AND THREAT INTELLIGENCE INTEGRATION

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As computer networks become increasingly integral to daily life, the need for advanced and adaptable defences against cyberattacks is critical. Traditional intrusion detection systems (IDS) often rely on labelled datasets for training, which are limited and labour-intensive to curate, making it difficult for these systems to adapt to new, unknown attack vectors. In response, we present an innovative IDS based on self-supervised contrastive learning within a deep neural network architecture. Our system addresses the limitations of traditional IDS by learning rich representations of network traffic and system logs, enabling it to effectively discriminate between normal and anomalous patterns without the need for extensive labelled data. We carefully select and engineer features from network traffic and logs to ensure accurate data representation for training the model. A contrastive learning approach is employed to enhance the system's capacity to differentiate between typical and malicious patterns. We rigorously

evaluate the system's performance through extensive experiments, benchmarking it against both traditional and state-of-the-art IDS techniques, demonstrating its superior adaptability and effectiveness in detecting novel cyber threats.

49. AI BASED AGENCY CRM

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The project focuses on creating an AI-powered CRM (Customer Relationship Management) system designed to simplify and improve business operations. The CRM includes various features to help businesses manage tasks efficiently and boost productivity. Key features include employee management, which helps track tasks, deadlines, and workforce performance.

The system also offers AI-driven proposal generation, powered by Geny Ace, allowing HR teams to create detailed proposals with a single click, saving time and effort. The social media management tool lets users post on multiple platforms at once while generating AI-based captions and descriptions to ensure engaging content. Additionally, the CRM includes project and lead management tools that assign tasks to team members, track progress, and ensure timely delivery.

By automating routine tasks and centralising business operations, the CRM simplifies workflows, reduces errors, and improves overall efficiency. It serves as an all-in-one solution for businesses looking to streamline their processes and adopt smarter, AI- driven tools. The CRM system stands out with its integration of advanced artificial intelligence, making it more than just a traditional management tool.

The AI-powered insights offer actionable recommendations based on data trends, enabling better decision-making and proactive management. These capabilities ensure the system adapts to dynamic business environments, catering to specific organisational needs.

Furthermore, the platform emphasises ease of use with a user-friendly interface that requires minimal training, ensuring accessibility for diverse users. The inclusion of automation reduces manual effort, allowing businesses to focus on strategic goals rather than operational challenges. Ultimately, AI-powered CRM aims to be a transformative solution, fostering collaboration, improving engagement, and driving growth.

By addressing critical pain points such as inefficiency, fragmented communication, and time-intensive processes, the project sets a new benchmark for intelligent business management tools.

50. OPTIMIZING SPECTRUM USAGE IN ULTRA-DENSE WIRELESS COMMUNICATION SYSTEMS

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This study attempts to address the growing demand for efficient spectrum use in ultra-dense networks (UDNs) as a result of the exponential growth in data traffic and wire- less communication devices. Traditional spectrum management techniques are unable to manage the increasing number of connected devices, which leads to congestion, interference, and inadequate resource allocation. This study provides a compre- hensive examination of how to optimise spectrum usage in ultra-dense wireless communication networks using cutting-edge technologies such as cognitive radio (CR), dynamic spectrum access, and machine learning. The proposed approach ensures that underutilised spectrum bands are efficiently used by utilising cognitive radio to provide adaptive allocation and spectrum sensing. Two machine learning techniques that are used in tandem to predict traffic patterns and improve resource allocation in real-time, lowering interference and boosting throughput, are reinforcement learning and neural networks. The results of this study are anticipated to contribute to the development of dependable wireless communication systems that can meet the requirements of future 5G/6G technologies, Internet of Things (IoT) networks, and smart cities. Future studies will look into the combination of blockchain technology and quantum computing to enhance spectrum optimisation in ultra-dense networks.

51. NATURAL LANGUAGE QUERY SYSTEM FOR EXCEL DATA

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In today's data-centric environment, accessing and analyzing information efficiently is crucial for effective decision-making. However, traditional spreadsheet tools like Microsoft Excel often require users to possess technical skills in formulas, functions, and data manipulation techniques. This paper proposes a Natural Language Query (NLQ) System for Excel Data that enables users to interact with spreadsheet data using plain English queries. The system leverages Natural Language Processing (NLP) techniques to interpret user queries, identify relevant data elements, and convert them into structured operations executable on Excel files. By bridging the gap between natural language and spreadsheet functionalities, this system empowers non-technical users to perform data filtering, aggregation, and analysis without prior programming or Excel formula knowledge. The proposed system enhances data accessibility, reduces dependency on technical expertise, and promotes user-friendly interaction with tabular data.

52. MEDICINE AVAILABILITY AND UTILIZATION MONITORING SYSTEM

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The system allows users to register and login using credentials like username, password, email, and phone number to access the medical stock management platform.The input dataset, which is in the form of a CSV file, undergoes preprocessing steps such as handling missing data and label encoding. Feature extraction is done through Principal Component Analysis (PCA), and the dataset is split into training and testing sets for model evaluation and prediction.The system utilizes a hybrid machine learning approach, combining Random Forest (RF) and Multi-Layer Perceptron (MLP) algorithms for classification tasks, and evaluates the model's performance based on metrics such as accuracy, It also

features a chatbot to answer user queries and facilitate communication, along with automated reordering, expiration alerts, and weekly report generation to manage medical stock efficiently.

53. CUSTOMER BEHAVIOUR PREDICTION USING WEB USAGE MINING

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Web usage mining is the recording and analysis of user behavior and navigation patterns on a Website. It is especially useful to e-commerce websites; they can conduct an in-depth analysis over their traffic in order to improve their performance and optimize the users' experience. Using web usage mining, an e-commerce website predicts future user behavior, provides personalized recommendations, and personalizes the offerings of services. The system tracks all important user activities, such as spending habits, bounce rates-for example, cases where users return to the payment page-and more detailed analytics metrics that assist in strategies for customer retention and acquisition. Information on returning customers, purchases, and engagement levels as deeply acquired allows website owners to present customers with personalized content and product recommendations, which boosts user satisfaction and enhances conversion rates. The use of the work will be characterized by real-time processing of data and score prediction through an application developed with PHP, SQL, Twitter API, and XGBoost. Continuous optimization of several features of the site concerning insights derived from behavioral knowledge will make the sites perform better by maximizing their profitability while streamlining the online experience towards the best response to user needs and preferences.

54. AI – DRIVEN ADAPTIVE TRAFFIC SIGNAL CONTROL USING COMPUTER VISION AND MACHINE LEARNING

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Traffic congestion and road rule violations are serious issues in contemporary cities, affecting safety, travel efficiency, and city planning. Conventional traffic monitoring systems depend on manual surveillance, which is time-consuming and inaccurate. This paper introduces an AI-based Traffic Monitoring System that uses machine learning (ML) and computer vision to automate traffic monitoring, violation detection, and traffic pattern analysis. The system combines real-time video processing and deep learning models to detect vehicles, monitor movement, and recognize traffic offenses like over-speeding and signal breaches. The implementation provides high accuracy for vehicle detection and traffic surveillance, leading to improved law enforcement and traffic control.

55. INTELLIGENT WATER COMPOSITION ANALYSIS USING MACHINE LEARNING

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Clean drinking water is essential for human well-being and the preservation of ecological balance. Yet, global water quality remains under constant threat from industrial discharges, agricultural runoff, and naturally occurring contaminants. This study investigates the potential of machine learning (ML) to improve water quality assessment by enhancing both efficiency and predictive accuracy. Samples collected from a variety of sources—including taps, wells, rivers, lakes, and sump water—were evaluated for critical physicochemical properties using standard titration techniques and UV-Vis spectroscopy. ML models, specifically Support Vector Machines (SVM) and Logistic Regression (LR), were implemented in MATLAB to predict water potability and determine the most influential quality indicators. A comparative evaluation of the models was conducted to assess their effectiveness in identifying complex relationships among parameters such as pH, electrical conductivity, hardness, alkalinity, and ion concentrations It was found that SVM gave 95.83% accuracy and LR gave 91.67% accuracy and the F1 score for SVM was found to be 0.97 and for LR it was 0.94. These findings contribute to the development of smarter tools for sustainable water management and public health safeguarding.

56. PREDICTIVE LIFE BLUEPRINT GENERATOR USING MULTI-MODEL LEARNING

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In today's fast-paced world, decision-making across career, financial, and health domains requires careful planning to achieve a balanced and fulfilling life. Existing systems often treat these areas in isolation, failing to account for their interdependencies. This paper presents the Predictive Life Blueprint Generator, an AI-driven framework integrating career growth, financial stability, and health metrics into a unified life evaluation system. By leveraging Soft Actor-Critic (SAC) and Proximal Policy Optimization (PPO), in combination with transformers, the system generates a holistic score across these three domains. Visualizations such as charts, graphs, and triangular range representations enhance user interpretability. Additionally, reinforcement learning tailors personalized action plans that optimize life outcomes while mitigating risks. Unlike conventional decision-making tools, this system ensures a comprehensive and data-driven approach to long-term personal planning.

57. AI DRIVEN FASHION AND TREND FORECASTING PLATFORM: PERSONALIZED WARDROBE OPTIMIZATION AND SUSTAINABLE STYLING SOLUTIONS

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Fashion preferences vary widely among individuals, influenced by personal style, body type, skin tone, and current fashion trends. To enhance personalized shopping experiences, the AI-Powered Fashion Recommendation System has been developed as an intelligent solution that leverages machine learning, computer vision, and data analytics to recommend outfits tailored to users' unique characteristics. The

system integrates Python for data processing and analysis, with a dynamic web-based interface for real-time user interaction.

Our model employs deep learning techniques such as convolutional neural networks (CNNs) and clustering algorithms to analyze user preferences, body shape, and skin tone, generating personalized fashion recommendations. By collecting user input, image-based analysis, and preference metrics, the system curates a wardrobe that aligns with seasonal trends and individual aesthetics. The color analysis module utilizes computer vision algorithms to determine suitable clothing colors based on a user's skin undertone, enhancing their overall styling experience. Additionally, features such as "My Wardrobe Recommendations" provide personalized outfit suggestions, while "Fashion Assistant AI" acts as an interactive styling guide. The system also includes a "Scan Outfit and Search the Web for Similar Outfits" function, allowing users to find visually similar fashion items online through computer vision-based search.

The results demonstrate the system's effectiveness in understanding fashion compatibility, with recommendation algorithms achieving high accuracy in predicting user preferences. This paper outlines the methodology, system architecture, and AI-driven fashion analysis techniques, along with potential enhancements such as integrating augmented reality (AR) for virtual try-ons and refining outfit suggestions through reinforcement learning.

Ultimately, this project aims to transform fashion selection into a smart, personalized, and data-driven experience, empowering users with AI-based styling recommendations.

58. DEEP LEARNING-BASED DETECTION OF INTRACRANIAL NEOPLASMS

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This project introduces a methodology for brain tumor classification that leverages transfer learning with the VGG19 convolutional neural network (CNN). We start by preprocessing a collection of brain MRI images, applying augmentation techniques such as rotation, shifting, shearing, and flipping to mitigate class imbalance between tumorous and non-tumorous samples. Further preprocessing steps include converting images to grayscale, applying Gaussian blurring, thresholding, erosion, dilation, and contour detection to highlight areas of interest. The primary approach utilizes a VGG19 model that has been pre-trained on the ImageNet dataset, serving as a feature extractor. Initially, we train a classifier on top of the frozen convolutional layers, followed by a gradual unfreezing and fine-tuning process, where specific convolutional layers are unfrozen to better adapt to our dataset. The project employs standard evaluation metrics, including accuracy and loss, across training, validation, and test sets to assess the effectiveness of various training phases. This work underscores the potential of transfer learning with VGG19 for automated brain tumor classification and illustrates the significance of these techniques in enhancing medical image diagnostics.

59. MULTI MODEL SECURITY: OBJECT DETECTION, DISTANCE ESTIMATION WITH AN ALERT MESSAGE SYSTEM

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Worldwide, security and surveillance are crucial for public safety, especially in high-risk environments like airports and public events. Early detection of potential threats, such as weapons or suspicious individuals, is critical for ensuring safety and preventing harm. Traditional security systems often rely

on manual checks and are prone to delays and human error. To address these challenges, we propose a sophisticated system that integrates the YOLOv8 algorithm for real-time object detection. YOLOv8 is a state-of-the-art deep learning model known for its precision and speed in detecting objects, including people and weapons, within video streams. The system also includes a distance estimation module, crucial for crowd monitoring and social distancing, enhancing safety during public health situations or emergencies. Additionally, a weapon detection alert mechanism is incorporated to notify security personnel immediately when a weapon is detected, ensuring a prompt response. This system provides a proactive, efficient, and reliable approach to managing security in dynamic environments.

60. OBJECT DETECTION AND ENVIRONMENTAL MONITORING

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The Object Detection and Environmental Monitoring system is a very great leaping stone in the field of geospatial analysis that combines high-definition point cloud processing LiDAR with the use of machine learning methods, which reveals insights that have never existed before in environmental studies. The system manages to work around the shortcomings of the traditional techniques of monitoring by a height-adaptive classification approach for recognizing with high accuracy natural and artificial features in whatever type of terrain. A good Pipeline for Data Abstraction Library has enabled the handling of LiDAR data on an enormous scale without compromising on the right feature extraction susceptible to thorough scrutiny in a particular Area of Interest. The spectral-spatial segmentation scheme simplifies the differentiation of complex environmental elements utilizing deeper color-coding systems and enhanced spatial filtering procedures. Experiments in both the urban and rural precincts show that the system has immense computational capabilities with low processing latency while maintaining all data quality. Furthermore, a nice graphical user interface is implemented on the platform, allowing users to visualize and analyze data in real time and so assist with environmental evaluations, infrastructure development, and disaster response. Thus, the holistic methodology represents a big push into the development of smart city projects, forestry management, and climate adaptation strategies.

61. A NOVEL FRAME WORK FOR DECENTRALIZED HEALTH CARE RESOURCE ALLOCATION USING BLOCK CHAIN TECHNOLOGY

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The efficient and equitable allocation of healthcare resources remains a critical challenge, especially in the face of pandemics, aging populations, and increasing demands on medical infrastructure. Traditional centralized systems often suffer from inefficiencies, single points of failure, and limited transparency. In this paper, we propose a novel blockchain-based framework for decentralized healthcare resource allocation that ensures transparency, fairness, and tamper-proof tracking. Leveraging smart contracts and decentralized consensus mechanisms, the system automates resource distribution while preserving patient data privacy and regulatory compliance [1], [2]. Our framework incorporates auction-based

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strategies for dynamic allocation and priority handling [3], [4]. It also integrates optimized consensus algorithms to enable secure and scalable decision-making in real time [5]. The system addresses gaps in existing literature by combining resource optimization, identity management, and trustless execution within a single interoperable platform [6]. Simulation results suggest significant improvements in allocation efficiency, latency, and transparency over centralized models [7]. This study contributes a robust, secure, and patient-centric solution to modernize healthcare infrastructure through blockchain technology.

62. TRANSFORMING AND ENHANCING DIGITAL ARTISTICS CREATIVITY USING VGG-19 MODEL AND CONVOLUTION NEURAL NETWORK

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The IST AIS project uses advanced deep learning to easily move visual data as binary code through any image style changes using Convolutional Neural Networks. Customary image processing methods are sought to be transformed by this revolutionary system. Neural style transfer is incorporated, enabling the generation of several visually impressive representations. These representations preserve an important amount of necessary content while simultaneously adopting multiple artistic styles. This project uses the VGG19 model and SRCNN for super-resolution tasks and it shows the capacity to improve image quality and detail with at least three effective training and optimization strategies. Advanced loss functions, three of which include content, style and total variation loss, enable the model to generate at least a hundred high-fidelity stylized images that satisfy user-defined aesthetic preferences. This approach improves visual appeal and explores at least three new avenues in data representation, thus promoting the development of several original applications in fields such as digital art, marketing and content creation.

63. ESHELFCLOUD: A MODERN CLOUDBASED BOOKSTORE PLATFORM

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The Online Bookstore System on Cloud Infrastructure is designed to enhance the accessibility and efficiency of book purchasing in the digital age. Leveraging cloud technology, this system offers a scalable and reliable platform that supports users in browsing, selecting, and purchasing books seamlessly. The architecture comprises a user-friendly front end for intuitive navigation, a robust backend for effective inventory management, and a secure payment processing system. Key features include real-time inventory updates, personalized book recommendations based on user preferences, and community-driven reviews to enrich the shopping experience. The use of cloud services ensures high availability and quick scalability during peak traffic periods, allowing the system to handle fluctuating user demands efficiently.

64. REVOLUTIONIZING OCR: INTELLIGENT HANDHELD SCANNER FOR INSTANT TEXT DIGITIZATION

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Optical Character Recognition (OCR) is, perhaps, the automation of data extraction of scanned documents, images, or text. This research analyses the evolution of OCR systems, starting from the basic rule-based systems to contemporary ones based on artificial intelligence and deep learning. Primary research like R.W. Smith's research in video image text recognition served problems like noise removal and segmentation. Later Tesseract OCR added parallel brain processors to improve accuracy, speed, and multilingual features. Domain specific applications such as mobile OCR systems and automatic vehicle license plate recognition exemplify the omnipresence of OCR face technology in constrained and real-time environments. As much as progress has been made, challenges such as the recognition of handwritten or multi-lingual texts, noisy data sources, and real-time processing remain. This review integrates findings from multiple sources and outlines the strengths and limitations of various OCR technologies and suggests further research strategies to advance the field.

65. IOT NETWORK SECURITY: ENSEMBLE BASED LEARNING FOR IMBALANCED INTRUSION DATA

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The increasing adoption of the Internet of Things (IoT) has revolutionized various industries, enabling smart connectivity and data sharing. However, this widespread integration has made IoT networks a prime target for malicious attacks. Effective intrusion detection systems (IDS) are critical to safeguard these networks against evolving threats. This project addresses the challenge of securing IoT networks by employing ensemble learning techniques to detect intrusions in imbalanced datasets, a common issue in cybersecurity. Using the NSL-KDD dataset as a benchmark, the study preprocesses data through normalization and label encoding to improve model efficiency. The imbalance in the dataset, characterized by underrepresented attack types, is tackled using techniques that enhance the learning process of classifiers. The Random Forest algorithm, known for its robustness and ability to handle diverse data, is implemented as the core classifier. The system is evaluated using confusion matrices, classification reports, and other performance metrics to analyze its ability to detect both majority and minority class intrusions. Results demonstrate that the proposed model achieves high accuracy, precision, and recall, even for rare attack types, underscoring its suitability for real-world IoT applications. This work highlights the importance of ensemble learning in addressing data imbalance and proposes a scalable solution for enhancing IoT network security. The findings contribute to the development of advanced IDS capable of mitigating modern cybersecurity threats in IoT environments.

66. STRESS DETECTION OVER SOCIAL MEDIA INTERACTIONS USING MACHINE LEARNING AND NATURAL LANGUAGE PROCESSING

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Detecting psychological stress in a timely manner is crucial for proactive healthcare but poses significant challenges. With the growing popularity of social media platforms, this study explores the potential of utilizing online social network data for stress detection. Our investigation reveals a strong

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correlation between users' stress states and those of their social media friends. We analyze a large-scale dataset from real- world social platforms to systematically explore this correlation, defining stress-related attributes that encompass textual, visual, and social cues. To advance stress detection, we propose a novel hybrid model that integrates a factor graph model with Support Vector Machine (SVM) and Long Short-Term Memory (LSTM) networks. The SVM is adept at capturing local patterns and features in textual content, such as key phrases and sentiment indicators, while the LSTM networks excel at understanding the sequential nature and context of the text, making them well- suited for handling the temporal dynamics of social media posts. This hybrid approach allows for a more nuanced analysis of tweet content by leveraging both spatial and temporal information and effectively incorporating social interaction data.

67. SCULPTCV - ADAPTIVE RESUME OPTIMIZER

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In today's competitive job market, tailoring resumes to specific job descriptions is crucial for securing interviews. However, many job seekers struggle with optimizing their resumes for Applicant Tracking Systems (ATS) and aligning them with role-specific requirements. SculptCV is an AI-powered adaptive resume builder that bridges this gap by leveraging the best open-source models and Generative AI technologies. The platform enables users to create personalized, ATS-friendly resumes tailored to individual job descriptions. SculptCV analyzes job postings to extract critical keywords, skills, and qualifications, which are seamlessly integrated into the user's resume. The tool provides real-time suggestions to improve content, format, and keyword relevance, ensuring the final output aligns with industry standards. Additionally, SculptCV adapts to various professional needs by offering customizable resume formats and dynamic tone adjustments, ensuring the final output resonates with the target industry and audience. The solution's novelty lies in its focus on ATS optimization, ensuring resumes pass automated screening processes while maintaining a natural and professional tone. By automating keyword embedding and formatting, SculptCV saves users significant time and effort in the job application process. SculptCV empowers job seekers by increasing their chances of landing interviews through tailored, polished, and data-driven resume optimization. With its adaptability and emphasis on employability, the tool stands out as an essential resource in the modern job market. By automating the keyword embedding, formatting, and content improvements, SculptCV helps users save valuable time and effort. The platform significantly increases the chances of securing interviews by ensuring resumes are not only ATS-optimized but also engaging for recruiters.

68. AI MODEL FOR HEN INFECTION DETECTION USING YOLO V8

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In the poultry industry, detecting chicken illnesses is essential to avoid financial losses. Conventional techniques depend on manual observation, which is laborious and prone to mistakes. Using YOLO v8 (You Only Look Once, version 8), a state-of-the-art deep learning model for real-time object recognition. This study suggests an AI-based approach, by developing a system that analyzes high-resolution chicken photos, YOLO v8 detects signs of illness, such as abnormalities in behavior and appearance. A sizable, annotated dataset has been used to train the algorithm, which provides accurate

real- time identification of infected chicken and prompt warnings to farm operators for prompt action. By facilitating early infection identification, eliminating the need for human inspection, and enhancing biosecurity in large-scale farms, this AI technology improves chicken health management. The real-time features of YOLO v8 provide a scalable and effective method for improving farm management techniques.

69. EMERGENCY MEDICINE DELIVERY USING DRONE IN REMOTE AREAS

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In developing countries, last-mile delivery of medical products is a challenge, especially in hilly and rural areas where there is no road connectivity. Drones, or unmanned aerial vehicles (UAVs), present a transformative solution by enabling rapid and efficient transportation of life-saving medicines, vaccines, and medical supplies. This study explores the design and implementation of a drone-based emergency medicine delivery system tailored for remote areas. As helicopters or other air services are not affordable all the time, drones can be used for the supply of medical products. They are cost-effective as compared to other air or road transport. However, the carrying capacity of drone is less, it is not able to carry heavier payloads. Also, operating drones requires trained operators, and it is a new venture in a developing country so possibilities of confusion and lack of clarity on operating procedures are there. Drones are becoming increasingly reliable for the health care delivery. This narrative review explores the use of drones in healthcare delivery globally.

70. SMART HOME USING IOT

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The Internet of Things (IoT) is changing the paradigm of smart homes to the greater extent than it was previously. The paper focuses on the design of a smart home automation system which is managed by means of an android application and uses Wi-Fi to communicate. Instead of enjoying these amenities in the house, the users can control these appliances from a distance in a timer mode setting controlled by the use of mobile phones. This system also features an arm's length graphic user interface (GUI) which is simple enough for an average user for ease of operation and control purpose.
The commands are transmitted via the Wi-Fi network from the mobile application to the home automation system which performs the required operation and gives the user a real-time response. Users can also check and modify their appliances settings using the mobile application when in Wi-Fi range. This paper also evaluates the advantages of having such system among them energy demand satisfaction, safety and comfort in the modern life. This study aims to demonstrate the practicality and scope of technologies for integrating mobile smart home systems with IoT-based home automation systems. The system lays a strong base for further development of smart homes aiming at the creation of a networked and automated house.

71. PHYTOCHEMICALS AS POTENTIAL INHIBITORS OF KRAS: INSIGHTS FROM DOCKING AND IN SILICO DRUG PROFILING

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Oncogenic RAS proteins induce aberrant signalling, which is a characteristic of most human malignancies. Among the RAS family, KRAS has emerged as a heavily studied protein due to its prevalence in several highly lethal cancers. Targeting KRAS protein, which is essential for regulating cell proliferation, differentiation and apoptosis, holds significant promise for cancer therapeutic. In this study, a library of 300 phytochemicals was curated from the NPACT database and retrieved from PubChem. These compounds were subjected to molecular docking using PyRx (v0.8), which identified four phytochemicals Subtrifloralactone E, Artoindonesianin P, 24-Epibrassinolide and Orientanol C with higher binding affinity as opposed to the current standard drug Sotorasib (AMG 510). Further assessment including Lipinski's Rule of Five, ADMET profiling, and PASS (Prediction of Activity Spectra for Substances) analysis was conducted to evaluate drug-likeness, pharmacokinetics, and predicted biological activity. Findings from this study highlight the potential of these phytochemicals in targeting the KRAS protein, underscoring their promise for application in cancer therapy.

72. ENHANCING MENTAL HEALTH CHATBOTS WITH RETRIEVAL-AUGMENTED GENERATION (RAG): A HYBRID AI APPROACH

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This research envisions a Retrieval-Augmented Generation (RAG) model for improving AI-powered mental health chatbots by tackling factual discrepancies only in generative models. While models such as LLaMA3 produce human-like responses, these are most probably contextually meaningless in real-time. With LangChain for prompt creation and FAISS for vector-based search, the chatbot first conducts contextually related mental health lookups and thereafter produces responses, providing improved accuracy, coherence, and empathy. Performance measures with BLEU, Precision, Recall, F1-score, MRR, and Recall prove improved response quality. Results indicate RAG's promise to provide real-time, contextually relevant emotional support, and improve the trustworthiness of AI-powered mental health interventions.

73. EMAIL CLUTTER NEUTRALIZER: AI-POWERED DETECTION

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With the exponential increment in e-mail communication spam emails have ended up a critical cybersecurity risk encouraging phishing assaults extortion and malware conveyance conventional rule-based sifting and domain-based strategies battle to combat advancing spam strategies requiring the appropriation of machine learning- based approaches this consider actualizes and assesses numerous machine learning models counting nave bayes bolster vector machines and irregular timberland for their viability in recognizing spam from genuine emails by preprocessing e-mail datasets extricating pertinent printed highlights and applying classification calculations we point to improve discovery precision whereas minimizing untrue positives and negatives execution measurements such as exactness review and f1-score are utilized to compare the viability of each demonstrate the discoveries highlight the predominance of probabilistic classifiers like nave bayes in taking care of spam discovery proficiently

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this investigate contributes to the improvement of an versatile and strong spam sifting framework that progresses cybersecurity measures decreases client helplessness to email- based dangers and guarantees effective e-mail communication future work will investigate profound learning methods to upgrade classification exactness further

74. MACHINE LEARNING BASED IRIS RECOGNITION MODERN VOTING SYSTEM

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In order to significantly enhance both security and precision, a contemporary voting solution efficiently employs iris recognition and machine learning. By examining numerous iris photographs for voter authentication with Convolutional Neural Networks (CNNs), the system ensures a minimum degree of biometric authenticity. H-5 node technology drives encrypted links as well as real-time computation; all of these significantly enhance the robustness of the system. This groundbreaking approach gives a safe, scalable election solution through addressing common issues of voting such as identity theft and error caused by humans. Because every individual's iris is unique, only qualified individuals can cast their votes in the election. The CNN algorithm allows globally efficient feature extraction for both voter classification and verification, while all H-5 nodes ensure always smooth connectivity in addition to globally efficient data management. All this forms a system with the aim of ensuring that voting is always secure and absolutely free of tampering through its innate adaptability in all situational conditions. It encourages more trust, reliability, and openness in democratic elections by incorporating ML-based approaches. This incorporation creates a contemporary choice for future elections.

75. DEEP LEARNING DRIVEN PERSONALIZED NUTRITION THROUGH GUT MICROBIOME ANALYSIS

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The study utilizes deep learning methods to understand how gut microbiome testing results can lead to individualized dietary guidance. Every individual has a distinct gut microbiome that influences both digestion processes and metabolic activities as well as total wellbeing. This research investigates the use of deep learning algorithms combined with microbiome sequencing data and dietary information to develop forecasts about the most beneficial dietary approaches that enhance health results. The proposed system uses artificial intelligence analysis together with microbiome profiling capabilities to generate tailored nutritional advice for its users. Through this method the researchers aim to boost precise nutritional recommendations which improve both gastrointestinal health and general health status.

76. FAKE PRODUCT DETECTION USING BLOCKCHAIN TECHNOLOGY

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Counterfeiting of products poses significant challenges across various industries, leading to economic losses, compromised consumer safety, and brand reputation damage. Traditional methods of product authentication often fall short in effectively combating this issue due to their limitations in traceability and transparency. In response, emerging technologies like blockchain offer a promising solution by providing a decentralized, immutable ledger for recording transactions securely. This paper proposes a novel approach for fake product identification utilizing blockchain technology. The proposed system employs blockchain to create a transparent and tamperproof record of the product life cycle, from manufacturing to distribution and eventual sale. Each product is assigned a unique digital identity, recorded on the blockchain along with relevant information such as production details, supply chain journey, and authentication checkpoints. Smart contracts are utilized to automate verification processes, enabling seamless tracking and authentication at every stage of the product's journey. Furthermore, the system integrates various authentication mechanisms, such as QR codes, NFC tags, or RFID chips, to facilitate easy and secure verification by consumers and stakeholders. These physical identifiers are linked to the corresponding digital records on the blockchain, allowing instant validation of product authenticity using a smartphone or dedicated scanning device. In conclusion, the integration of blockchain technology for fake product identification represents a promising approach to address the growing threat of counterfeiting. By establishing a decentralized and transparent ecosystem, this solution offers a robust mechanism for ensuring product authenticity, thereby benefiting consumers, businesses, and society as a whole.

77. SENTIMENTAL ANALYSIS FOR YOUTUBE COMMENTS

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In today's digital era, YouTube serves as a vast platform for user-generated content, making it a valuable source for analyzing audience reactions through sentiment analysis. Understanding the sentiment of YouTube video comments can provide insights into viewer engagement, preferences, and overall satisfaction. This paper proposes a system that leverages the YouTube API for comment extraction and utilizes the HuggingFace Library's foundation model for sentiment analysis. The system collects comments via the YouTube API, preprocesses the text to eliminate noise, and applies a pretrained Language Learning Model (LLM) from HuggingFace for sentiment classification. Unlike conventional methods relying on rule-based or statistical approaches, the proposed model employs deep learning techniques that excel at understanding context and handling informal language commonly found in user comments. The LLM is fine- tuned for improved accuracy, enhancing its ability to classify sentiments into positive, negative, or neutral categories. Experimental results demonstrate high accuracy and consistency in sentiment detection across various YouTube channels and genres. Comparative analysis shows that the proposed approach outperforms traditional models in terms of accuracy, adaptability, and scalability. The system's robustness and efficiency highlight its potential applications for content creators, marketers, and researchers aiming to enhance audience engagement and optimize content strategies.

78) PREDICTING STUDENT PERFORMANCE USING MACHINE LEARNING

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Correctly forecasting student performance is vital to improve learning outcomes and individualized learning experiences. This research examines the use of machine learning methods, namely Support Vector Machines (SVM) and Random Forest, to predict student performance based on various academic and demographic factors. A dataset containing student records, including grades, attendance, and socio-economic indicators, is used to train and evaluate the models. Feature selection and hyperparameter tuning are employed to optimize performance. The results demonstrate that both models achieve high accuracy, with Random Forest outperforming SVM in handling non-linearity and feature interactions. The findings suggest that machine learning can serve as an effective tool for early identification of students at risk of poor performance, enabling timely interventions. This study emphasizes the promise of data-driven methods in education and sheds light on the strengths and weaknesses of various machine learning models for predictive analytics in student performance evaluation.

79) IDENTIFICATION OF FAKE INDIAN CURRENCY USING CONVOLUTIONAL NEURAL NETWORK

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Economic stability is seriously threatened by the spread of counterfeit money, which makes sophisticated detection techniques necessary. Conventional methods, such as human verification and traditional machine-based procedures, sometimes fall short of offering a dependable and expandable solution. Convolutional Neural Networks (CNNs), a deep learning technique, are used in this study's

sophisticated counterfeit detection system. Several models are examined in the study, including MobileNet, a hybrid model that combines MobileNet with Support Vector Machines (SVM), and an improved version that combines MobileNet with Random Forest and SVM. The main model is MobileNet, which is renowned for its effectiveness and accuracy in image classification because of its capacity to extract complex information from banknotes. By utilising the advantages of both MobileNet and SVM, the hybrid model seeks to increase classification accuracy and provide better generalisation in differentiating between real and fake cash. By using ensemble real-world counterfeit detection settings, experimental assessments are carried out based on accuracy, precision, recall, and general resilience. The findings demonstrate how deep learning and ensemble methods may reduce the risks associated with counterfeit cash and enhance financial security.

80) EVOLVING NPCS: AI-DRIVEN LEARNING AND ADAPTATION IN COMBAT GAMES

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The dynamic nature of modern gaming necessitates intelligent systems that respond to player behaviour and changing gameplay scenarios. Evolving NPCs: AI-Driven Learning and Adaptation in Combat Games takes a novel approach to incorporating adaptive Artificial Intelligence (AI) into game development, allowing NPCs to learn and evolve in real time. This framework improves immersion by analysing player behaviour, dynamically adjusting game difficulty, and encouraging emergent interactions in procedurally generated environments. The system was created using Unreal Engine, which has powerful tools for AI integration, real-time physics simulation, and high-fidelity visual rendering. Key components include behaviour modelling for intelligent NPCs, procedural scenario generation, and seamless player-world interactions. This work is unique in that it uses a modular, in-game learning mechanism that allows NPCs to adapt continuously without external training, providing a scalable solution that can be applied to a variety of game genres such as survival, adventure, and simulation.

81) DEPRESSION DETECTION USING BRAIN MRI SCANS

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This project rigorously focuses on the use of precise brain imaging and thorough+h sleep pattern analysis to develop a fully automated system that sharply detects depression early. Machine learning models, such as Convolutional Neural Networks (CNN), Logistic Regression, Random Forest and Support Vector Machine (SVM), allow the system to predict depression with high accuracy. Real-time physiological and behavioral data, combined with sufficiently advanced technology, allows for more precise diagnoses. Scalable to a certain extent, this solution strives to improve quite a few mental health outcomes by enabling very timely interventions as well as somewhat increasing accessibility to mental healthcare. The system detects early depression and strongly assists healthcare professionals. It helps them make well-informed decisions, reducing the burden of mental illness and increasing the quality of life for people with depressive symptoms.

82) DEVELOPMENT AND IMPLEMENTATION OF A WATER MONITORING AND TRASH COLLECTING AUTONOMOUS ROBOT FOR ENVIRONMENTAL CONSERVATION

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River and lake pollution poses a serious threat to human health and marine ecosystems because tainted water is frequently consumed by humans. These water bodies deteriorate as a result of a variety of contaminants, such as chemicals and plastics, with plastics accounting for a sizable amount of the trash. Considering how common waterborne illnesses are, coming up with creative strategies to address this issue is essential. This work introduces a multipurpose robot that can monitor water quality measures, identify and gather floating garbage, and navigate aquatic settings on its own. Through the use of cutting-edge sensors, robotics, and computer vision, the robot hopes to lessen pollution and promote a healthier, cleaner environment. This preventive measure is crucial for shielding human health from the damaging impacts of water pollution as well as aquatic life.

83) DIGITAL CURRENCY INVESTMENT PREDICTIONS BY LSTM ALGORITHMS IN MACHINE LEARNING

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Predicting the direction of Bitcoin prices is a difficult endeavor because of the unpredictable and intricate nature of cryptocurrency markets. This highlights a machine learning approach to examining the cryptocurrency market and its effects on financial risk management. The built-in volatility and decentralized characteristics of cryptocurrencies create considerable obstacles for risk evaluation and investment strategies. Traditional financial models struggle to predict market fluctuations accurately due to the nonlinear and complex nature of price movements. To address this, we employ various machine learning algorithms to identify risk patterns and improve financial decision-making. By leveraging historical market data and key technical indicators, our proposed models aim to forecast market volatility, assess risk levels, and provide data-driven insights for investors and financial institutions. Experimental results demonstrate the effectiveness of deep learning models, particularly Long Short-Term Memory (LSTM) networks and Transformer-based architectures, in capturing temporal dependencies and predicting price trends. Our findings contribute to advancing risk assessment methodologies in the cryptocurrency domain, enabling more robust financial strategies in an evolving digital asset landscape.

84) PREDICTING LIQUIDITY OF NOSTRO VOSTRO ACCOUNT

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The proposed system combines machine learning techniques to estimate liquidity for both Nostro and Vostro accounts. For financial institutions to maximize cash flow management, reduce funding costs, and avoid overdrafts or idle balances, accurate liquidity forecasting is essential. This method predicts daily liquidity needs using important financial indicators and previous transaction data, guaranteeing

effective money allocation. The solution improves decision-making accuracy by utilizing deep learning techniques and sophisticated predictive models like Random Forest. The suggested model helps banks maintain optimal cash reserves while efficiently satisfying transaction demands by enhancing financial stability, lowering operational risks, and streamlining liquidity management

85) AI-POWERED INSIGHTS: TRACKING STUDENT ENGAGEMENT IN VIRTUAL CLASSROOMS

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Our project aims to the application of artificial intelligence (AI) for tracking and analyzing student engagement in virtual classrooms. It examines the potential of AI to provide objective, real-time feedback on student participation and attention levels, overcoming the limitations of traditional methods. The paper reviews current approaches, proposes a framework for AI-driven engagement monitoring, and discusses the ethical considerations associated with this technology. Ultimately, it argues that AI has the potential to transform virtual education by enabling instructors to create more responsive and engaging learning environments. In existing system there is a difference between the behaviour and the ability to research conduct behavioural assist for getting to know includes bodily exploration, and follows behaviour. These consist of increasing the complexity and uncertainty of the version, introducing biases and errors into the model, and limiting the generalizability and adaptableness of the version. This makes analysing and optimizing the version very hard, in particular for small or noisy records units. Therefore, this study regularly uses machine learning techniques to classify college students into attentive and inattentive RGB-D sensor statistics.

86) REAL-TIME LANGUAGE TRANSLATION FOR MULTILINGUAL COMMUNICATION

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This work introduces TranslanGo, a real-time multilingual translation system that integrates neural machine translation (NMT) with object detection to support fluent communication between languages. Developed using state-of-the-art NLP methods like tokenization, normalization, and transformer-based models with attention mechanisms, the system supports precise translation of textual and visual inputs. TranslanGo features more than 200 languages and includes an interactive world map that shows native country names, a quiz game that builds vocabulary, and an easy-to-use interface built with React.js and TypeScript.

Performance assessment of the system shows strong results with 84% accuracy, a BLEU score of 0.72, a response time of 0.2 seconds, and an object detection speed of 3 FPS. These scores identify the efficacy of the system for real-time scenarios and the superior performance it shows compared to currently available models like Google Translate and M2M-100, particularly for low-resource languages like Telugu, Malayalam, and Kannada. Through the unification of visual and text-based translation in one platform, TranslanGo overcomes major shortcomings in conventional systems and presents itself as a multimodal tool for learning, travel, and cross-cultural communication. Upcoming improvements will focus on the addition of speech recognition and ethical AI principles for wider accessibility and equity in translation.

87) ADVANCING EARLY AUTISM DETECTION: LEVERAGING MACHINE LEARNING FOR OBJECTIVE AND COMPREHENSIVE ASSESSMENT FROM BEHAVIORAL AND PHYSIOLOGICAL DATA

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Early detection of Autism Spectrum Disorder (ASD) is crucial for effective intervention and support. This project leverages machine learning to analyze behavioral and physiological data for objective and comprehensive autism detection. Traditional diagnostic methods are subjective, time-consuming, and often rely on parent-reported data, which can introduce biases. This proposed system integrates advanced algorithms, wearable sensors, and video analysis to identify patterns and anomalies associated with ASD. A user-friendly interface provides real-time diagnostic feedback to parents and clinicians, enabling earlier detection and improving diagnostic consistency. Utilizing libraries such as TensorFlow,

PyTorch, OpenCV, and scikit-learn, this approach combines modern technology with traditional practices, setting a benchmark for scalable and accurate autism detection systems.

88) COLORECTAL CANCER DETECTION USING DEEP LEARNING

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In humans, colorectal cancer usually affects the gastrointestinal tract.One of the best ways to find cancer is with a colonoscopy. With a restricted set of deep learning techniques, the current system makes it easier to identify cancer using computer-assisted diagnosis (CADx) systems. It does not mean that mixed datasets must be shown in order for the system to function. ColoRectalCADx, the suggested system, is supported by deep learning (DL) models appropriate for cancer research. Convolutional neural networks (CNN), support vector machines (SVM), long short-term memory (LSTM), visual explanations like gradient-weighted class activation mapping (Grad-CAM), and the semantic segmentation phase are the five steps that make up the CADx system.The system is primarily composed of a mixed data set that includes information from Kvasir2, Hyper Kvasir, and CVC Clinic DB.

89) HANDWRITTEN TAMIL CHARACTER RECOGNITION USING MACHINE LEARNING AND NLP TECHNIQUES

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Handwritten Tamil character recognition is a complex problem due to the unique script, diacritic marks, and variations in handwriting styles. This study explores the application of machine learning (ML) and natural language processing (NLP) techniques to improve the accuracy of recognizing handwritten Tamil text. The process involves data collection, preprocessing, feature extraction, and model training using convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformer-based architectures. NLP techniques play a crucial role in post-processing by ensuring correct word formation and reducing recognition errors. Performance evaluation metrics such as accuracy, precision, recall, and F1-score are used to assess the efficiency of the models. The applications of Tamil character

recognition extend to digitizing historical manuscripts, enhancing Optical Character Recognition (OCR) systems, and improving accessibility in AI-driven applications. With continuous advancements in ML and NLP, handwritten Tamil character recognition can achieve higher accuracy and broader usability.

90) OSINT DATA BUNCHING USING AI AND WEB CRAWLING

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The physical and digital method of OSINT gathering produces every kind of information available publicly through dataset collection. available datasets such as web pages, social networking sites, and other documents. Throughout history, OuSInt has been Throughout history OSINT has been employed in many variations until the modern age made it significantly more advanced. At present, it makes a contribution to security, law enforcement, business intelligence, as well as individual-initiated research. Though, the very The process of accumulating and sorting data by hand remains as a time-consuming method that absorbs extensive resources. this colossal data. A self-operating OSINT investigation platform can resolve current issues encountered when processing data. Such a system should automate all stages from data collection through analysis to reporting. Implementing this system pays employees fewer manual labor duties on the end-user side. The integration of technological processes enables the development of systems to replace the traditional labor-demanding data page/scraping process. The system receives significant data by automated transfer followed by a simple filtering process to extract the essential material. Such a platform will The main research outcome exists as an email document which provides easy understanding through clear structure for quick reading and immediate comprehension of important findings. All essential analysis findings appear at the beginning of the document. A platform built for this purpose would aim to reduce the need for manual entry of data information. The system requires basic search parameters only while maintaining minimal data input from users. The system would provide all data through plain text reports containing crucial information. The application provides clear access to complete information for users to both read and execute operations through the data. The means would save time and Through efficient expenditure the platform would receive analyst and investigator focus which leads to decision-based actions.

91) DEEP LEARNING FOR MONKEYPOX (MPOX) DETECTION

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The recent Monkeypox outbreak has become a significant public health concern primarily in South Asia and Africa, emphasizing the necessity for advanced diagnostic tools to facilitate early detection. Mpox detection in humans presents significant challenges, especially in cases where conventional laboratory tests like PCR are not feasible due to resource constraints, high expenses, or limited access. Advances in deep learning and transfer learning have reduced reliance on conventional diagnostic practices by enabling automated detection. This study summarises various Convolutional Neural Network (CNN) architectures used for Mpox detection, including DenseNet, ResNet, VGG16, and several custom classifiers. Within the scope of the study, the ResNet18 model was the most accurate, with 99.4% accuracy, followed by SqueezeNet and GoogleNet respectively at 98.08% and 97.8%. This paper explores advancements in deep learning for Mpox detection, identifies gaps, and suggests future directions for improving diagnostic accuracy in Mpox and similar infectious diseases like smallpox, chickenpox, and measles.

92) AN IOT BASED OPTIMAL COLD STORAGE UNIT FOR FRUIT INDUSTRIES: ENHANCING FOOD SECURITY AND ECONOMIC GROWTH

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Ensuring the freshness and shelf life of perishable products such as fruit, is necessary to increase food security and support the economy of agriculture. The fruits and vegetables produced in India were lost to an extent of 30% post-harvest due to inefficient storage conditions, which alarms India's fruit exporter market. This article presents an IoT- controlled smart cold storage system specially designed to preserve fruits in India. The system uses Raspberry Pi 4 which integrates various sensors that continuously monitor temperature, humidity, pressure, vibration, and door activity. The control action was taken to prevent immediate loss in quality and subsequently alert crews through voice notification. The IoT-based solution aims to reduce post-harvest losses, optimize energy consumption, and increase the revenue from fruit exports.This system will improve India's Gross Domestic Product (GDP) and achieve national food security goals.

93) CONTEXT EXTRACTION FROM BIOMEDICAL TRANSCRIPTS USING BERT FOR ENHANCED INFORMATION RETRIEVAL

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The Biomedical Speech-Based Context Extraction System extracts key medical information from patient-doctor conversations using Automatic Speech Recognition (ASR) and Natural Language Processing (NLP). It converts speech to text and employs BERT to identify symptoms, diseases, and medical details. Manual documentation is time-consuming and error-prone, leading to inefficiencies and cognitive overload for healthcare professionals. The system automates data extraction, structuring information for efficient retrieval and aiding decision-making. Implementing ASR and BERT-based NLP models, it ensures high accuracy in medical context extraction. BERT's deep contextual understanding outperforms traditional retrieval methods like BM25, which relies on keyword matching. Unlike BM25, which lacks semantic comprehension, BERT captures context, improving precision and recall in medical information retrieval.

94) METAVERSE CRYPTO DLT

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The revolutionary decentralized platform that brings together virtual reality, cryptocurrency, and Distributed Ledger Technology (DLT) is the Metaverse Crypto DLT project. Users can immerse themselves in a shared, interacti'e virtual world where they can create, experience, and monetize unique digital assets and experiences thanks to this innovative ecosystem. The platform makes sure that transactions take place in a safe, transparent, and tamper-proof environment by utilizing the power of DLT. This builds trust and confidence among users. A custom cryptocurrency is at the center of the platform. It was made to make transactions easier and to encourage ecosystem participation. Users can buy, sell, and trade digital assets like experiences, virtual real estate, and artifacts in a secure and

efficient manner with this native cryptocurrency. Additionally, the platform's DLT architecture guarantees the integrity and provenance of digital assets by recording all transactions on a public ledger. A number of ground-breaking features are included in the Metaverse Crypto DLT project, such as a decentralized governance model that enables users to participate in decision-making processes and shape the platform's future. In addition, the platform's AI-driven content creation tools let users create and personalize their own digital experiences, including interactive games, simulations, and virtual environments. The Metaverse Crypto DLT project has far-reaching implications for entertainment, education, healthcare, and commerce due to the convergence of cutting-edge technologies. This platform has the potential to open up new revenue streams, develop novel business models, and rethink the boundaries of human interaction and creativity by democratizing access to digital assets and virtual worlds.

95) AGRICULTURE WEBAPP FOR FARMER

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Farmers are the backbone of our country, and while they confront many obstacles, the most important one is getting timely and relevant information about crop and weather conditions. This agriculture software's main objective is to provide users with better farming practice ideas. Weather forecasts, crop information, smart farming methods, agricultural concepts, and the most recent market prices are just a few of the elements available in our agriculture app. But today, the biggest problem for farmers is selling their goods, where intermediaries make money. This led to the creation of a selling platform, which offers these features as well as news on government-introduced initiatives and agriculture in various places. In this case, we have also employed a technique for formulating opinions based on agricultural expertise, weather and climate, and the best resources accessible to farmers. This project's main objective is to provide an online application for farmers that provides elements including crop information, weather forecasts, smart farming methods, agricultural concepts, and the most recent market prices. As a result, it shows that it is easy to use. As stated before, the proposed system has the

potential to be reliable, secure, and error-free. As a management system, it can help the user focus on other things instead of keeping track of documents. This will help to improve farming in some way.

96) ETHEREUM BASED DECENTRALIZED E-VOTING SYSTEM USING METAMASK API

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The decentralised voting system creates a safe, transparent, and impenetrable voting platform by utilising Ethereum blockchain technology. Voter anonymity, duplicate voting prevention, and real-time vote verification are all provided by the digital solution that replaces conventional voting procedures. By employing smart contracts, the system streamlines vote casting and tallying processes, thereby removing the necessity for intermediaries and minimizing the risk of manipulation. Additional information, such as election details, is securely stored off-chain utilizing decentralized storage like IPFS, thereby ensuring scalability and data integrity. This innovative approach not only improves the trustworthiness and efficiency of the electoral process but also tackles key challenges such as accessibility, transparency, and security within contemporary voting systems.

97) AN EFFICIENT DOCTOR-PATIENT PORTAL : WEB-BASED MEDICAL APPOINTMENT SYSTEMS

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Through the use of a secure internet application, a patient portal gives patients 24/7 access to their personal health information. In addition to securely communicating with their healthcare providers, patients may examine their recent visit details, prescriptions, lab and exam results, and doctor appointments. Many attempts have been made to create efficient patient portals, but they have not been able to fully solve the concerns of cost, security, and compliance. In light of this, the research's

objectives are to develop a safe patient portal that grants access to patient data, put in place all the security features that are needed for a healthcare system, and secure patient data using industry-standard encryption methods. Patient portals are becoming increasingly popular around the world, but their impact on individual health and the efficiency of healthcare systems remains unclear.

98) FAKE CURRENCY DETECTION USING IMAGE PROCESSING

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Fake currency production has significantly increased as a result of the development of sophisticated printing technologies, especially in emerging nations like India. A few years ago, printing could be done in a printing house, but now, with the laser printer, anyone can print currency notes with the highest precision. As a result, the problem of counterfeit notes has increased significantly compared to genuine notes. With the increase and availability of sophisticated tools, it is almost impossible to detect these notes manually. To deal with this disruption, it is imperative to design a system to detect counterfeit notes. While there are many such systems available in the market, our system proposes a method to identify fake Indian currency notes based on the image of the note alone. Our system leverages deep learning with a pre-trained ResNet50 model fine tuned for currency classification. The ResNet50 model is modified by adding customs fully connected layers, enabling it to classify currency notes as real or fake. We use a combination of Convolutional Neural Networks (CNNs) for classification and K-Nearest Neighbors (KNN) for feature extraction. This hybrid approach ensures high accuracy, achieving a success rate of 91.46%. To evaluate performance, the system computes metrics such as accuracy and generates confusion matrices, classification reports, and visualizations. The presented work advocates a highly accurate and effective counterfeit currency detection method by utilizing the visible and hidden properties of Indian currency notes.

99) ENHANCING DEEP LEARNING TECHNIQUES FOR EARLY LUNG CANCER DETECTION

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Lung cancer is among the highest mortality diseases, and early diagnosis is key to enhancing patient survival. Same days, same methods are used to medical images, particularly computer tomography images, to help treatment for cancer caused due to lung. This explains how lung cancer kinds can be identified and categorized using a deep learning network. The photos were enhanced for quality and taken from public database datasets. A U-Net architecture was utilized for segmenting the lung regions, and deep learning and structure- based methods were utilized to derive the characteristics. The most effective characteristics that are employed to increase accuracy, precision and feature selection was applied. The classification of a nodule's benign or malignant nature, as well as its stage and kind of cancer, was then done using a Deep CNN model. Through the interpretation of these CT scans, the model may examine the tumor's position and characteristics, such as size and shape, which are crucial for cancer staging. It also identifies types, i.e., NSCLC and SCLC. This show that this framework is a useful and stable for early detection, providing useful support for radiologists and enhancing diagnostic performance while facilitating individualized treatment planning.

100) HARNESSING DEEP LEARNING FOR SKIN CANCER CLASSIFICATION

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Skin cancer is among the fastest-growing diseases worldwide, making early detection critical for effective treatment and prevention. Due to the complexity of skin lesions and scarcity of resources, early detection of skin cancer has become a major challenge for dermatologists. Recent advances in deep learning have revolutionized medical image processing, with convolutional neural networks (CNNs) demonstrating superior performance in tasks such as object detection and classification. This study uses XceptionNet, an advanced model of concentration learning, to classify various types of skin cancer. HAM10000 datasets, including 10,015 images in seven categories of skin lesions, are used for learning and evaluation. We apply various data preprocessing techniques, including image augmentation and segmentation, to optimize the model's performance. Transfer learning with XceptionNet enables efficient feature extraction, and its performance is compared with other deep learning models such as DenseNet169 and ResNet50. Our findings demonstrate that XceptionNet achieves superior accuracy, establishing it as a valuable tool for automated skin cancer detection and classification.

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