GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

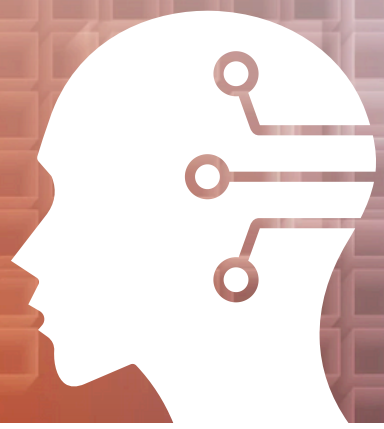
(AUTONOMOUS)
Accredited with NAAC ' A' Grade & NBA (B. Tech - ECE, EEE & MECH)
Gangavaram (V), Kovur (M), S.P.S.R. Nellore - 524137

PROCEEDINGS

International Conference on Latest Trends in Electronics Communication and AI Technologies (ICLTECAT - 2025)

2 & 3 APRIL 2025

ISBN :
978-93-6285-019-5



ORGANIZED BY :

DEPARTMENTS OF ELECTRONICS AND COMMUNICATION ENGINEERING & COMPUTER SCIENCE ENGINEERING (AI&ML)

IN ASSOCIATION WITH

ISTE - AP SECTION & IETE - TIRUPATI

Proceedings of

International Conference on Latest Trends in Electronics Communication and AI Technologies (ICLTECAT - 2025)

2nd & 3rd April, 2025

EDITORIAL BOARD :

Dr. B. Eswara Reddy,
Director of Sponsered Research,JNTUA
Dr. P. Nagendra Kumar,
Professor & HoD, Dept. of AI&ML, GIST

ISBN : 978-93-6285-019-5

GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY
(AUTONOMOUS)
Accredited with NAAC ' A' Grade & NBA (B. Tech - ECE, EEE & MECH)
Gangavaram (V), Kovur (M), S.P.S.R. Nellore - 524137

www.gist.edu.in

ACKNOWLEDGEMENT

It is our immense pleasure to put forth the proceedings of the **ICLTECAT - 2025 International Conference on Latest Trends in Electronics Communication and AI Technologies**, held on 2nd-3rd April 2025. This compilation is, without mentioning it, the testament of collective effort and dedication of too many individuals and organizations to whom we are immensely grateful.

First and foremost, we extend our sincere thanks to our Principal, Dr. K. Sundeep Kumar, who provided us constant encouragement with his visionary leadership and kept on supporting us endlessly throughout the conduction of the conference and preparation of the book.

We would like to extend our heartfelt thanks to our Director, Sri. G. Subba Rao, for his unwavering support and guidance throughout the preparation and execution of this Conference.

We would like to express our deepest gratitude to our Chairman, Sri. D. B. Ravi Reddy, who always inspired and guided us with his valuable suggestions, and also to our Secretary & Correspondent, Sri. N. Sudhakar Reddy, for his continuous support and valuable contributions towards this noble initiative.

We would also like to place on record our deep appreciation for the hard work and dedicated work with a collaborative spirit displayed by the Faculty, Staff, and Students of Geethanjali Institute of Science and Technology in making this conference a grand success. We further acknowledge IETE – TIRUPATI & ISTE – AP Section, our partners in organizing the same, who has extended invaluable support in making the program memorable and very successful.

PREFACE

The prime theme of the ICLTECAT – 2025 is to provide a common platform to people from diverse backgrounds and regions to share knowledge. The topics addressed during the conference ranged from new developments in Electronics and Communication Engineering to Innovations in Artificial Intelligence and Machine Learning and Computer Science. The interdisciplinary approach gave insights into the various subjects that interplay at times and what role each plays in influencing others to come up with solutions to modern challenges.

This book is the Proceedings of the International Conference and comprises some of the papers presented at the conference. It embodies almost all dimensions of the deliberations that ensued. Spotlighted in these proceedings are areas that address the dynamism of engineering and technology with theoretical insights and practical applications. It is believed that this collection will be a rich source of inspiration and a very useful reference for further research and innovation in such important disciplines for researchers, practitioners, and students alike.

It is our earnest hope that the insights learned and the network established during this event shall further act, inspire, and push forward further advancements in engineering, technology, and management.

MESSAGE FROM CHAIRMAN

First and foremost, I express my esteemed pleasure in extending a warm welcome to all delegates of the **International Conference on Latest Trends in Electronics Communication and AI Technologies - ICLTECAT – 2025**, scheduled on 2nd-3rd April 2025. This Conference organized by Geethanjali Institute of Science and Technology in association with IETE – TIRUPATI & ISTE – AP Section to our quest for pursuit of excellence in academics and novelty.

I wish to commend all the researchers, academicians, professionals who participated actively and provided high-quality contributions. Your involvement makes it easier for an atmosphere of collaboration where knowledge and ideas can be allowed to freely aspire.

I extend my warm gratitude to our Principal, Dr. K. Sundeep Kumar, for his leadership and dedication in making this conference a success. I also extend my deepest appreciation to our faculty, staff, and students, and our partners at IETE – TIRUPATI &ISTE – AP Section, most especially for their hard work.

Thank you all for your invaluable contributions. I wish the organizers a productive and inspiring conference and all the best wishes for their contribution for the proceedings in the upcoming era and all the hard work carried out by the acknowledgment by for the institution.

Sri. D. B. Ravi Reddy
Chairman,
Geethanjali Institute of Science and Technology.

MESSAGE FROM PRINCIPAL

It is my great pride and pleasure to extend a warm welcome to each of you to the **International Conference on Latest Trends in Electronics Communication and AI Technologies** ICLTECAT - 2025, scheduled on 2nd-3rd April 2025.This will be a career milestone for the events organized by the Geethanjali Institute of Science and Technology, in association with IETE – TIRUPATI & ISTE – AP Section, as it would be regarded as an event signifying our commitment towards fostering innovation, research, and academic excellence.

This overwhelming response to the Conference, with persons of eminence among researchers, academicians, industry professionals, and students, adds to its importance and relevance for our chosen themes. Your participation and high-quality research contributions are the keystones of the success of this conference.

I would like to express my heartfelt thanks to our Chairman, Sri. D. B. Ravi Reddy for incessant support and encouragement.

I would like to acknowledge the tireless efforts of our faculty, staff students, and also appreciate the help from IETE – TIRUPATI & ISTE – AP Section in organizing this mega event.

Thank you all and I wish you a stimulating and inspiring conference.

Dr. K. Sundeep Kumar
Principal,
Geethanjali Institute of Science and Technology.

LIST OF SELECTED ABSTARCT FOR PROCEEDINGS IN ICLTECAT - 2025

17	**ICLTECAT-2025-117**	A LOW – COST FPGA IMPLEMENATION OF RETINEX BASED LOW LIGHT ENHANCEMENT ALGORITHM	17
18	**ICLTECAT-2025-118**	ENHANCING ACTIVITY MONITORING IN SMART HOMES WITH IOT ENABLED SENSOR NETWORKSUSING MACHINE LEARNING	18
19	**ICLTECAT-2025-119**	IDENTIFYING LIVER CANCER USING IMAGE PROCESSING TECHNIQUES	19
20	**ICLTECAT-2025-120**	IMPLEMENTATION OF ARDUINO ATMEGA 2560 BASED SMART ENERGY METER THROUGH PREPAID TRANSACTION USING IOT	20
21	**ICLTECAT-2025-121**	CNN-DRIVEN FOOD RECOGNITION AND CALORIE ESTIMATION FOR PERSONALIZED DIETARY MANAGEMENT	21
22	**ICLTECAT-2025-122**	DETECTING FRAUDULENT ACTIVITIES ON MOBILE DEVICES USING MULTI – VIEW BAGGING TECHNIQUES	22
23	**ICLTECAT-2025-123**	G-MATCH: ENSURING SECURITY AND PRIVACY IN GROUP MATCHING WITHIN SOCIAL NETWORKS	23
24	**ICLTECAT-2025-124**	EARLY DYSLIPIDEMIA PREDICTION IN STEEL WORKERS USING UNIFIED TIME SERIES APPROACH WITH BI-LSTM MODEL	24
25	**ICLTECAT-2025-125**	BLOCKCHAIN FORENSICS: LEVERAGING DEEP LEARNING AND ML ALGORITHMS TO DETECT SUSPICIOUS CRYPTOCURRENCY TRANSACTIONS	25
26	**ICLTECAT-2025-126**	PRIVILEGE ESCALATION ATTACK DETECTION AND MITIGATION IN CLOUD USING MACHINE LEARNING	26
27	**ICLTECAT-2025-127**	HYBRID DEEP LEARNING FOR EMBRYO CLASSIFICATION FROM MICROSCOPIC IMAGES	27
28	**ICLTECAT-2025-128**	LIVER DISEASE DETECTION USING SOCIAL SPIDER OPTIMIZATION AND RANDOM FOREST CLASSIFIER	28
29	**ICLTECAT-2025-129**	AI-DRIVEN AUTOMATED TRASH CLASSIFICATION FOR EFFICIENT WASTE SORTING	29
30	**ICLTECAT-2025-130**	A COLLABORATIVE DETECTION MECHANISM OF BOTNETS USING EXPLAINABLE AI	30
31	**ICLTECAT-2025-131**	DETECTING AND CLASSIFYING MALICIOUS UNIFORM RESOURCE LOCATIONS USING ADVANCED MACHINE LEARNING	31
32	**ICLTECAT-2025-132**	JUTE LEAF DISEASE CLASSIFICATION WITH RESNET 50 – KNN	32
33	**ICLTECAT-2025-133**	AN OPTIMIZED DEEP LEARNING MODEL FOR EARLY DETECTION OF RETINAL DISEASES	33

34	**ICLTECAT-2025-134**	II TOOL FOR MODELLING SATELLITE EXPECTED LIFETIME FOR ISRO'S SPACE MISSIONS	34
35	**ICLTECAT-2025-135**	AI- ENHANCED HEALTH MANAGEMENT APPLICATION FOR PATIENTS	35
36	**ICLTECAT-2025-136**	AUTOMATED STAR TYPE CLASSIFICATION WITH MACHINE LEARNING USING NASA DATA	36
37	**ICLTECAT-2025-137**	ENSURING RESILIENT AND CONFIDENTIAL DATA TRANSMISSION WITH ARTIFICIAL INTELLIGENCE IN AD-HOC NETWORKS	37
38	**ICLTECAT-2025-138**	MACHINE LEARNING APPROACH FOR PREDICTION OF OBESITY LEVELS BASED ON EATING HABITS	38
39	**ICLTECAT-2025-139**	DEEP LEARNING APPROACH FOR ANEMIA CLASSIFICATION FROM AUTOMATED BLOOD IMAGE ANALYSIS	39
40	**ICLTECAT-2025-140**	ENHANCED SECURITY FOR BANKING TRANSACTIONS USING IMAGE BASED STEGANOGRAPHY	40
41	**ICLTECAT-2025-141**	DETECTION OF DEEP FAKES ON SOCIAL MEDIA USING DEEP LEARNING AND FAST TEXT EMBEDDINGS	41
42	**ICLTECAT-2025-142**	ENSEMBLE LEARNING-BASED PREDICTION OF DISSOLVED OXYGEN LEVELS IN AQUA ENVIRONMENT	42
43	**ICLTECAT-2025-143**	ML-ENABLED INTELLIGENT BOT DETECTION IN INTERNET COMMUNICATION	43
44	**ICLTECAT-2025-144**	AI DRIVEN EPILEPTIC SEIZURE DETECTION FROM EEG SIGNALS	44
45	**ICLTECAT-2025-145**	AI REVOLUTION IN STROKE DIAGNOSIS: A MACHINE LEARNING APPROACH TO NEURO IMAGE-BASED DETECTION	45
46	**ICLTECAT-2025-146**	EXPLORING E-COMMERCE PRODUCT EXPERIENCE BASED ON FUSION SENTIMENT ANALYSIS METHOD CHAINING	46
47	**ICLTECAT-2025-147**	SMART RAINFALL FORECASTING: LEVERAGING MACHINE LEARNING FOR IMPROVED INSIGHTS	47
48	**ICLTECAT-2025-148**	INTELLIGENT FABRIC DEFECT DETECTION USING DEEP LEARNING AND REAL-TIME VISION SYSTEMS APPLICATION	48
49	**ICLTECAT-2025-149**	PERFORMANCE EVALUATION OF DEEP LEARNING MODELS USED FOR REMOTE SENSE IMAGE CLASSIFICATION	49
50	**ICLTECAT-2025-150**	DETECTION OF INSURANCE FRAUDS USING MACHINE LEARNING ON CLASS IMBALANCE DATASETS WITH MISSING VALUES	50
51	**ICLTECAT-2025-151**	IMAGE DE NOISING USING RESO FOCUS & FRAGMENTUM ZOOM AUTO ENCODERS	51

52	**ICLTECAT-2025-152**	DEEP LEARNING-BASED TIME SERIES FORECASTING FOR FOOD DEMAND IN SUPPLY CHAINS	52
53	**ICLTECAT-2025-153**	SIGNATURE AUTHENTICATION VERIFICATION USING SIAMESE NETWORK	53
54	**ICLTECAT-2025-154**	ENTITY RECOGNITION IN INDIAN LEGAL JUDGEMENTS	54
55	**ICLTECAT-2025-155**	ANALYZING EMOTIONS FROM EEG RESPONSES ELICITED BY VIDEOS USING MACHINE LEARNING TECHNIQUES	55
56	**ICLTECAT-2025-156**	LEGAL DOCUMENT SIMILARITY MATCHING BASED ON ENSEMBLE LEARNING	56
57	**ICLTECAT-2025-157**	LIVER DISEASE PREDICTION USING MULTILAYER PERCEPTRON NEURAL NETWORK AND VOTING CLASSIFIER	57
58	**ICLTECAT-2025-158**	INTELLIGENT PLANT DISEASE RECOGNITION AND CLASSIFICATION USING AI TECHNIQUES	58
59	**ICLTECAT-2025-159**	HYBRID DEEP LEARNING SYSTEM FOR PREDICTING STUDENTS PERFORMANCE IN ONLINE EDUCATION	59
60	**ICLTECAT-2025-160**	AN ENHANCED DEEP SENTIMENT ANALYSIS MODEL USING A DECISION-BASED RECURRENT NEURAL NETWORK (D-RNN)	60
61	**ICLTECAT-2025-161**	ENHANCING IMAGE CAPTIONING WITH CLIP AS A PREFIX MODEL	61
62	**ICLTECAT-2025-162**	AI-DRIVEN GLIOMA CLASSIFICATION AND PROGNOSIS: INTEGRATING MACHINE LEARNING, DEEP LEARNING, AND EXPLAINABLE AI	62
63	**ICLTECAT-2025-163**	BLOCKCHAIN-BASED SECURE AND TRANSPARENT SYSTEM FOR ONLINE EXAM RESULT MANAGEMENT	63
64	**ICLTECAT-2025-164**	BLOCKCHAIN-BASED DECENTRALIZED SUPPLY CHAIN MANAGEMENT FOR ENHANCED TRANSPARENCY AND EFFICIENCY	64
65	**ICLTECAT-2025-165**	TRUSTWORTHY DATA SHARING VIA MULTI-ATTRIBUTE BASED AUTHENTICATION MECHANISM	65
66	**ICLTECAT-2025-166**	EDGE BLOCKCHAIN-BASED SECURE DATA SHARING SCHEME FOR IOT ENVIRONMENTS	66
67	**ICLTECAT-2025-167**	CNN-BASED SYNTHETIC IMAGE DETECTION USING COMPUTER VISION AND EXPLAINABLE AI	67
68	**ICLTECAT-2025-168**	ENHANCED CARDIOVASCULAR DISEASE PREDICTION USING OPTIMIZED FEATURE	68

		SELECTION AND MACHINE LEARNING	
69	**ICLTECAT-2025-169**	EDGE BLOCK CHAIN-BASED SECURE DATA SHARING SCHEME FOR IOT ENVIRONMENTS	69
70	**ICLTECAT-2025-170**	COMPARATIVE ANALYSIS OF AI AND HUMAN-GENERATED MEDICAL RESPONSES	70
71	**ICLTECAT-2025-171**	OPTIMIZED CROP YIELD FORECASTING USING ADVANCED MACHINE LEARNING TECHNIQUES	71
72	**ICLTECAT-2025-172**	ENHANCED DIABETES PREDICTION USING KNN IMPUTATION AND TRI- ENSEMBLE LEARNING	72
73	**ICLTECAT-2025-173**	OPTIMIZED SLEEP DISORDER CLASSIFICATION USING MACHINE LEARNING AND GENETIC ALGORITHM	73
74	**ICLTECAT-2025-174**	ENHANCED FAKE NEWS DETECTION USING TEXT DATA AUGMENTATION AND MACHINE LEARNING	74
75	**ICLTECAT-2025-175**	DEEP LEARNING-BASED INTELLIGENT PROCTORING FOR ONLINE EXAM INTEGRITY	75
76	**ICLTECAT-2025-176**	ENHANCED VOICE-BASED PERSON IDENTIFICATION USING CRNN AND SUPERVISED CONTRASTIVE LEARNING	76
77	**ICLTECAT-2025-177**	AUTOMATED DETECTION OF ASPHALT CRACKS USING DEEP LEARNING AND OPTIMIZATION TECHNIQUES	77
78	**ICLTECAT-2025-178**	ENHANCED CLASSIFICATION OF DARK WEB SERVICES USING LDA-TEXT CNN AND HYBRID DEEP LEARNING MODELS	78
79	**ICLTECAT-2025-179**	COMPARATIVE ANALYSIS OF SOC ESTIMATION TECHNIQUES FOR LITHIUM-ION BATTERIES	79

International Conference on Latest Trends in Electronics Communication and AI Technologies (ICLTECAT - 2025) ISBN: 978-93-6285-019-5

Automated Emotion Classification in Animal Vocalizations using Deep CNN-Driven MFCC Analysis

Dr. Thanveer Jahan[1],Ainavolu Bharathi[2], Chetla Roshini[2], Chandupatla Nithish Reddy[2], Gujila Charan[2]

[1]Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Corresponding Email:thanvevcecse@gmail.com

Abstract

Animal vocalization has long been a subject of interest in both scientific research and human-animal interaction studies. The ability to understand animal emotions based on their vocalizations has the potential to improve animal welfare, enhance communication with pets, and contribute to advancements in behavioral studies. Traditional methods for analyzing animal vocalizations often relied on human observation and manual interpretation, which can be highly subjective and prone to error. These methods typically involved recording animal sounds, then analyzing their acoustic features such as frequency, pitch, and duration, using rudimentary signal processing techniques to infer emotions. The need for more robust, accurate, and scalable solutions has driven researchers to explore machine learning techniques, the proposed system aims to use deep learning techniques, particularly Convolutional Neural Networks (CNNs), to automatically classify and predict emotions in animal vocalizations. To enhance the accuracy of emotion prediction, the system employs Mel-Frequency Cepstral Coefficients (MFCC) for audio pre-processing, a widely used technique for feature extraction in speech and sound analysis. MFCC captures essential frequency and temporal characteristics of animal vocalizations, enabling the CNN to focus on the most relevant acoustic features for emotion classification. This automated approach offers a promising solution to the challenges posed by traditional methods, ensuring more consistent, scalable, and precise emotion prediction in animals. Such advancements could have significant implications for veterinary care, animal training, and the broader field of human-animal interaction.

Keywords: Animal Vocalization, Emotion Recognition, Convolutional Neural Networks, Mel-Frequency Cepstral Coefficients, Animal Behavior Analysis, Human-Animal Interaction.

Adaptive implants that change shape or function post-implantation

Ramu Vasa[1]
[1] Associate Professor, Department of Mechanical Engineering, Geethanjali Institute of Science and Technology, Nellore, India
*Email: vasaramu2@gmail.com
Dr.N.Padma Sravya[2]
[2]Assistant Professor, Department of Mechanical Engineering, Geethanjali Institute of Science and Technology, Nellore, India
*Email: navuluri.sravya@gmail.com

Guddanti Nilima[3]
[3]Assistant Professor, Department of Mechanical Engineering, Geethanjali Institute of Science and Technology, Nellore, India
*Email: neelima.gns443@gmail.com
Y.Murali Krishna[4]
[4]Assistant Professor, Department of Mechanical Engineering, Geethanjali Institute of Science and Technology, Nellore, India
*Email: muralikrishnay@gist.edu.in

Abstract

4D bioprinting has emerged as a groundbreaking technology in biomedical engineering, enabling the creation of adaptive implants that dynamically respond to physiological conditions post-implantation. Unlike traditional static implants, 4D-printed implants integrate smart biomaterials capable of shape transformation, self-healing, or functional adaptation in response to external stimuli such as temperature, pH, moisture, or biochemical signals. This review explores the advancements in 4D bioprinting for adaptive implants, emphasizing material selection, actuation mechanisms, and biocompatibility challenges. Key applications, including self-expanding stents, shape-morphing orthopedic implants, and responsive tissue scaffolds, are discussed. Furthermore, computational modeling, fabrication techniques, and potential clinical translation are analyzed to address the limitations and future directions of this evolving technology. By bridging material science, bioengineering, and regenerative medicine, 4D bioprinting holds immense promise for personalized and next-generation medical implants that enhance patient outcomes and long-term functionality.

Keywords: bioprinting, biomedical engineering, biocompatibility

Heart Disease detection based on machine learning algorithms

Ramakrishna Reddy Badveli
Assistant Professor
AMC Engineering College
Bangalore

Dr.Nijaguna GS
Professor & HoD
SEA College of Engineering & Technology
Bangalore

Dr.Sundeep Kumar K
Professor & Principal
Geetanjali Institute of Science & Technology
Nellore

Abstract

Heart disease is one of the crucial impacts of mortality in the country. In clinical data analysis, predicting cardiovascular disease is a primary challenge. In today's world, cardiovascular diseases are prevalent becoming the leading cause of death; more than half of the cardiovascular diseases are due to coronary heart disease which generates the demand of predicting them timely so that people can take precautions or treatment before it becomes fatal. On time and efficient identification of heart disease plays a key role in healthcare, particularly in the field of cardiology. The accurate prediction of heart disease is essential to efficiently treat cardiac patients before a heart attack occurs. This goal will be achieved using an optimal machine learning model with rich healthcare data on heart diseases. Various systems based on machine learning have been presented recently to predict and diagnose heart disease. However, the existing systems cannot handle high dimensional datasets due to the lack of a smart framework that use different sources of data for heart disease prediction. In addition, the existing systems utilize conventional techniques to select features from a dataset and compute a general weight for them based on their significance. These methods have also failed to enhance the performance of heart disease diagnosis. . In order to solve such issue, proposed feature selection approach by using evolutionary algorithm for heart disease detection.

Keywords: Heart disease classification, feature selection, disease diagnosis, intelligent system, medical data analytics

Dual Axis Solar Tracking System with Weather Sensor

Kuruva Kishore
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Adoni,,India
kuruvakishore23@gmail.com

Boya Anil Kumar
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Peddakadaburu, India
boyaanilkumar2003@gmail.com

Kadapa Naveen kumar
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Kodumur, India
nk0637119@gmail.com

Kare Chandu
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Yemmiganur, India
Karechandu914@gmail.com

Golla Chandhra
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Yemmiganur, India
Gollachandra7671@gmail.com

Abstract

Renewable energy sources, particularly solar power, have gained significant importance in the quest for sustainable and clean energy solutions. Maximizing the efficiency of solar panels is crucial to harness the full potential of solar energy. This project presents the design and implementation of an Arduino- based dual-axis smart solar tracking system aimed at enhancing the energy output of photovoltaic panels. Since the sun change its position with time, hence dynamic tracking system is needed. The aim of this project, to develop a dual solar tracker that can absorb more lights and real-time monitor its performances. The proposed system employs two 360 degrees Servo motors to control the orientation of the solar panel in different axes, ensuring that it continuously faces the sun throughout the day. An array of 4 light-dependent resistors (LDRs) is used to detect the sun's position. The DHT11 also added to monitor temperature and Humidity of the environment. The Arduino microcontroller processes the data from the LDRs and adjusts the panel's position accordingly, ensuring that it maintains its optimal alignment with the sun. Additionally,the system incorporates real-time data monitoring and control through a user-friendly interface. The dual-axis smart solar tracking system not only enhances energy generation but also contributes to reducing the overall cost of solar power installations by increasing their efficiency. By use of light dependent resistor sensors, the sun position is tracked, and the Arduino microcontroller controls the servo motors to align the solar panel perpendicular to the sun. As a result, the dual solar axis tracker can capture 27.4% more solar power compared to fixed tilted axis.

Keywords: ESP32 Microcontroller, 4 LDR (LIght dependent resistor), 4- 10K Ohm Resistor, 2- servo motors, 1-Solar Panels, Jumper wire, Breadboard, Voltage sensor, Amptex 6v/12v battery, LCD display, I2C module, Voltage regulator, DHT11 Temperature and humidity sensor, Switch, Arduino IDE, Embedded C.

Fingerprint Based Exam Hall Authentication

Kondameedi Vamshi
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Devenakonda , India
kkvamshi98@gmail.com

Badinehal Anil Kumar Reddy
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Kowthalam , India
badinehalanilr@gmail.com

Chinnivalla Veeresh
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Adoni , India
chinniveeresh80@gmail.com

Harijana Talari Basava
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Kowthalam , India
bh963168@gmail.com

Kamma Ravichandra
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Yemmiganur , India
iravicc341@gmail.com

Abstract

Authentication has always been a major challenge in all types of examination. Verification of the authentic candidate is not an easy task, and also it consumes a lot of time and process. Here we propose a fingerprint based examination hall authentication system. The system is designed to pass only users verified by their fingerprint scan and block non verified users. Our system consists of a fingerprint scanner connected to a microcontroller circuit. The person needs to first scan his finger on the scanner. The microcontroller now checks the persons fingerprint validity. If the fingerprint is authorized the microcontroller now sends a signal to a motor driver. The motor driver now operates a motor to open a gate. This ensures only authorized users are allowed to enter the examination section and unauthorized users are not allowed to enter. Recognition of person on the basis of biometric future is an emerging phenomenon in our society. It Might involve validating personal identity and also other identity. This project is enhanced with keypad based security system to allow person with particular password. In examination process we can use the biometric authentication for reducing impersonation. It is a security process that we release on the unique biological characteristics of an individual to verify that whether he/she valid for this examination hall. The System is designed to pass only uses by verifying their finger print module was designed to scan the finger print, ID number and also other personal details which were properly saved into database of the system and confirm the eligibility of candidate for examination. To create a system that is capable of tracking impersonators in the examination system using the methodology of finger print biometrics. To reduce rate of corruption in the educational sector and increase the rate of self-confidence on students.

Keywords: Atmega Microcontroller,R305 Fingerprint Sensor, 4X3 keypad, Resistor, Lcd , Cables and Connectors, Diodes, PCB and Breadboards, LED, Transformer/Adapter ,Push Buttons, Switch, Ic, Door motor, Arduino compiler, Embedded C.

Machine Learning Based Differential Diagnosis of Erythemato-Squamous Diseases from Clinical and Microscopic Features

Zareena Begum[1], V. Sai Kiran[2], Neha[2], A. Suresh[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of CSE (Data Science)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Corresponding Email: zareena@vaagdevi.edu.in

Abstract

Erythemato-squamous diseases characterized by erythema and scaling, present significant diagnostic challenges due to their overlapping clinical features and variability in patient presentations. Traditional diagnostic methods, relying on clinical examination and histopathological analysis, often involve subjective assessments and can be time-consuming. Therefore, this is research proposes the development of a machine learning-based differential diagnosis system to improve the accuracy and efficiency of diagnosing erythemato-squamous diseases.The system leverages advanced machine learning algorithms to analyze patient data, including clinical images and histopathological features, identifying subtle patterns that may be overlooked by conventional methods. By automating the diagnostic process, the system aims to provide consistent and accurate differential diagnoses, assisting dermatologists in making more informed decisions. The machine learning model is trained on a comprehensive dataset of dermatological cases, enabling it to handle the complexities and variabilities inherent in erythemato-squamous diseases. Additionally, the system supports personalized treatment plans by enabling timely and precise diagnosis, ultimately improving patient outcomes and disease management. By integrating machine learning into the diagnostic workflow, this research aims to advance the field of dermatology, offering a robust tool to enhance diagnostic precision and efficiency in managing erythemato-squamous diseases. This innovative approach promises to transform traditional diagnostic practices, paving the way for improved patient care and optimized clinical operations.

Keywords: Dermatology, Erythemato Squamous disease, Clinical diagnosis, Computer aided diagnosis, Machine Learning, Optimized clinical operation.

Machine Learning-Based Classification of Shoulder Implant X-Rays for Manufacturer Identification

Sayyed Hasanoddin[1], B. Shiva[2], B. Sai Gagan[2], V. Pallavi[2], M. Saikiran[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (DataScience)

[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Corresponding Email: hasanoddin.sayyed@gmail.com

Abstract

Health systems must be efficient in order to provide high-quality care and optimize the use of resources. The global healthcare sector was under increasing pressure to control rising costs while perfecting service delivery, with projected spending of almost $12 trillion in 2023. Traditional software engineering approaches consistently fall short of these intricate challenges because of their limited rigidity and integration capabilities. Health systems today rely on antiquated software and do-it-yourself methods, which can be difficult to adapt to changing needs and require continual integration for seamless data inflow. Large amounts of health data are difficult to handle and analyze since these systems are inflexible all the time, which results in inefficiencies. The shortcomings of traditional software engineering methods demonstrate the need for more dynamic and intelligent outcomes to improve the efficacy of the health system. Combining machine learning with modern software engineering generalities is a ground-breaking method for increasing the efficacy of the healthcare system. By using advanced algorithms and data analytics, machine learning models can optimize patient scheduling, resource allocation, and predictive analytics for sickness operation, among other fundamental aspects of healthcare delivery. Machine learning techniques such as natural language processing and prophetic modeling enable more accurate and instantaneous perception of case conditions and system performance. This integration reduces costs, enhances functional efficacy, and eventually improves patient issues by promoting flexible, data-driven decision-making. Rethinking the efficacy of the health system by combining software engineering and machine learning could result in more responsive, efficient, and successful healthcare outcomes.

Keywords: Shoulder Implant Identification, X-ray Image Classification, Healthcare AI Applications, Neural Networks for Implant Detection.

Machine Learning Driven Advanced Défense Mechanisms Against Blackhole and Flooding Attacks in Wireless Sensor Networks

Dr. Ayesha Banu[1], S. Nikitha[2], K. Vinitha[2], E. Laxmi[2], Ayesha Tarannum[2]
[1]Associate Professor and Head, [2]UG Student, [1,2]Department of CSE (Data Science)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Corresponding Email: ayeshabanuvce@gmail.com

Abstract

Wireless Sensor Networks (WSNs) correspond of spatially distributed independent detectors that cover physical or environmental conditions, similar as temperature, sound, and pressure. These networks transmit their data to a central position for processing and analysis. The conception of WSNs surfaced in the early 2000s, driven by advancements in wireless communication and miniaturization of detector technologies. The original focus was on creating energy-effective protocols to extend the lifetime of these networks. Over time, as WSNs came more integral to critical operations, the need for robust security mechanisms grew, especially against pitfalls like blackhole and flooding attacks. Blackhole attacks involve a vicious knot falsely flashing optimal paths to block and discard data packets, leading to data loss. Flooding attacks overwhelm the network with inordinate business, causing network traffic and draining the battery life of detector bumps. Traditional defense mechanisms in WSNs calculate on cryptographic ways and simple anomaly discovery styles. Cryptographic ways, while effective against unauthorized access, are computationally ferocious and consume significant energy, which is a scarce resource in WSNs. Anomaly discovery styles frequently fail to distinguish between licit high- business scripts and factual flooding attacks, leading to false cons and negatives. The need for advanced defense mechanisms in WSNs is consummate to ensure the integrity and vacuity of data in critical operations. Machine learning(ML) offers promising results by enabling the development of adaptive and intelligent defense systems that descry and respond to attacks in real- time. The significance of this design lies in its implicit to enhance the security and adaptability of WSNs.

Keywords: Blackhole Attack, Network Security, Wireless Sensor Networks (WSNs), Adversarial Attacks

ML Driven Anomaly Detection for IoT Edge Devices: Insights from ADMM-Based Frequency Management

Pallavi Gudimilla[1], S. Sanjana[2], G. Nikitha[2], Mohammed Abrar Saqib[2], B. Sriram[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (DataScience)

[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Corresponding Email: pallavi.gudimilla@gmail.com

Abstract

The rapid growth of Internet of Things devices has generated an urgent requirement for the development of efficient and dependable anomaly detection systems to ensure system integrity, security, and performance. Traditional centralized systems for anomaly detection are becoming increasingly ineffective due to issues related to scalability, periods of inactivity, and difficulties in handling the diverse and substantial volumes of data generated by IoT edge bias. This design presents a novel framework for anomaly detection powered by machine literacy, specifically tailored for IoT edge devices. The Alternating Direction Method of Multipliers (ADMM) is employed to effectively enhance frequency operation. This proposed framework adeptly addresses the considerable challenges associated with constrained computational resources, the requirement for real-time processing, and the variety of biases by distributing the computational load and facilitating original anomaly detection at the edge. The combination of advanced machine learning techniques with ADMM-based optimization enables accurate and rapid anomaly detection, greatly enhancing the reliability and security of IoT networks. This system improves the performance and energy efficiency of edge bias, facilitating scalable and effective anomaly detection in diverse IoT environments. This design is highly important because it has the potential to transform IoT edge operations by providing scalable, efficient, and dependable anomaly detection outcomes. Enhanced reliability ensures ongoing and consistent operation, while improved security protects against potential breaches. Improved performance and resource efficiency allow edge bias to successfully address the increasing requirements of modern IoT operations. This design addresses limitations while fostering innovation in IoT operations, positioning itself at the forefront of advancements in edge computing and machine learning-based anomaly detection.

Keywords: Anomaly Detection, ADMM (Alternating Direction Method of Multipliers), Real-Time Processing, Scalability in IoT.

An Innovative AI Chat bot for Proactive Mental Health Support and Early Intervention

Dr. P. Latha[1], Gayatri M[2], B. Kishore[2], A. Kavya[2], G. Somachandar[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)

[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Email: latha_panjala@vaagdevi.edu.in

Abstract

Globally, anxiety, depression, and other mental health concerns are a major public health issue. Early detection of risk factors can improve outcomes and interventions. Technology and the growing use of smart phones and wearable devices offer an opportunity to construct a real-time emotional health monitoring system to detect potential psychological problems before they escalate. Traditional mental health assessments focused on self-reporting and professional visits. These methods had drawbacks, such as inaccurate emotional reporting and long assessment delays. Access to mental health services was also limited, delaying diagnosis and treatment. To overcome the limits of standard methodologies, a novel emotional health monitoring system is needed. With machine learning and natural language processing, we can construct a continuous, unobtrusive monitoring system. This device may record an individual's emotions, behavior, and physiological responses in real time. Early detection and support of emotional disorders improves mental health and reduces mental health service use. This novel monitoring system could greatly enhance mental health results. This proactive approach to emotional well-being empowers people to manage their mental health and helps mental health practitioners detect and support those at risk of psychological problems.

Keywords: AI chat bot, natural language processing (NLP), neural networks, mental health monitoring, emotional well-being, real-time detection

AI-Driven Fitness Recommendation System with Diet Planning

G. Vijayalaxmi[1], A. Kavya Sri[2], T. Nagaharsha[2], Vijay Vardhan[2], Dattathreya[2], Shivamani[2]
[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Corresponding Email: vijaya.gopuu@gmail.com

Abstract

In recent years, there has been a growing awareness and emphasis on health and fitness. People are becoming more health-conscious, leading to an increased demand for personalized fitness guidance.Traditional fitness assistance systems typically involve generic workout plans, dietary guidelines, and limited interaction with users. Personal trainers, while providing personalized guidance, are expensive and may not be accessible to everyone. Generic fitness apps offer predefined workouts, but they lack the adaptability and personalization artificial intelligence (AI) can provide. These systems often do not consider individual preferences, past fitness experiences, or real-time feedback, leading to suboptimal results for users. The integration of AI in fitness assistance systems can be traced back to the early 2000s when researchers began exploring machine learning algorithms to analyze user behavior and preferences. Over the years, advancements in AI technologies, particularly in deep learning and natural language processing, have significantly improved the capabilities of these systems, enabling them to provide more accurate and personalized recommendations. Therefore, the need for AI-based recommender systems in fitness assistance arises from the diverse and unique requirements of individuals concerning their fitness goals, preferences, and health conditions. A personalized approach ensures that users receive tailored workout routines, nutrition plans, and lifestyle recommendations, leading to higher motivation, adherence, and ultimately, better fitness outcomes. Moreover, AI-based systems can continuously adapt and learn from user interactions, providing ongoing support and motivation. Therefore, this research aims to build AI-based recommender systems for fitness assistance to provide personalized and adaptive recommendations to users based on their unique fitness goals, preferences, and health conditions.

Keywords: AI-driven fitness, personalized workout plans, Machine learning, Adaptive recommendations, User behavior analysis

Deep GNN Model for Multiclass Diagnosis of Retinal Disease from Color Eye Fundus Images

Dr. Swetha Arra[1], Ch. Jashwanth[2], T. Mani Chandra[2], M. Sai Surya[2], K. Sri Vaishnave[2]
[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)
[1,2]Vaagdevi college of engineering, Bollikunta, Warangal, Telangana.
Corresponding Email: swetha_a@vaagdevi.edu.in

Abstract

Diabetic retinopathy, a leading cause of blindness worldwide, occurs due to damage in blood vessels. Clinicians diagnose the disease by analyzing fundus images, a process that is often time-consuming and prone to errors. Computer-assisted techniques can significantly aid in detecting disease severity. In medical imaging, convolutional neural networks (CNNs) have demonstrated impressive results in automated diagnosis. However, CNN-based retinal image classification often struggles to preserve high-quality information.To address this limitation, a novel deep learning approach based on a Graph Convolutional Neural Network (GCNN) is introduced. The proposed model effectively extracts essential retinal image features using a Variational Autoencoder (VAE) and captures topological correlations through GCNN. Experiments conducted on the EyePACS dataset evaluate the model's performance using accuracy, U-kappa, sensitivity, and specificity. The results demonstrate superior performance compared to other state-of-the-art techniques.Artificial Intelligence (AI)-based deep learning methods play a crucial role in improving the detection of diabetic retinopathy, particularly in the analysis of medical fundus images. This paper explores various techniques, including preprocessing, segmentation, feature extraction, feature selection, and classification for DR lesion detection. Additionally, a comprehensive review of publicly available diabetic retinopathy datasets is provided, along with an analysis of existing challenges and limitations. This survey will serve as a valuable resource for new researchers in this domain.

Keywords: Diabetic Retinopathy (DR), Graph Convolutional Neural Network (GCNN), Variational Autoencoder (VAE), EyePACS Dataset, Medical Fundus Imaging.

Smart Detection of Dermatophyte Fungi

Salim Amirali Jiwani[1], Abhi Preetham[2], Paka Sirisha[2], Jyothirmay[2], Shashi Preetham[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)

[1,2]Vaagdevi college of engineering, Bollikunta, Warangal, Telangana.

Corresponding Email: salim_a@vaagdevi.edu.in

Abstract

A major public health concern globally is the presence of dermatologtophyte fungus, which cause a range of skin illnesses. Dermatophyte infections impact around 20-25% of the world's population every year, according to recent epidemiological studies, and the number of cases has been steadily rising over the last decade. There is an immediate need for better diagnosis procedures, as evidenced by statistics from the World Health Organization (WHO) which shows a 15% increase in reported illnesses between 2015 and 2020. Treatment and management of dermatophyte diseases rely on accurate and prompt species identification. Morphological analysis and culture-based procedures have long been the backbone of dermatophyte identification. Delays in diagnosis and treatment are common since these methods are labourintensive, time-consuming, and error-prone. Traditional methods are not only inefficient and unreliable, but they are also made more difficult by the fact that fungal morphology can vary greatly and professional knowledge is sometimes required throughout the identification process. Deep learning (DL) approaches have arisen as potential answers to these problems, offering automation and improvement in dermatophyte identification. Deep learning models are able to quickly and accurately assess massive amounts of fungal photos because they use sophisticated algorithms and neural network designs. These models provide a scalable and reliable substitute for human analysis by learning to spot dermatophyte specimens' finer details. Consequently, DL-based methods may help with better dermatophyte infection treatment, faster processing times, and more accurate diagnoses.

Keywords: Dermatophyte, Fungi, Infection, Diagnosis, DeepLearning, Automation, Identification, Morphology, Neural Networks, Epidemiology, WHO, Healthcare, Dermatology, AI, Medical Imaging.

The Future of Finance and Technology: Exploring the Challenges and Opportunities in Cryptocurrencies using Artificial Intelligence

K. Rajashekar[1], Varshini[2], K. Chandini[2], K. Amulya[2], Anusha[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of Computer Science and Engineering (AI & ML)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India

Abstract

Cryptocurrencies and artificial intelligence (AI) are driving the fast convergence of finance and technology. Decentralized transactions have been made possible by cryptocurrencies, and artificial intelligence is improving financial decision-making and automating intricate procedures. The financial scene in India has changed dramatically in the last ten years. The Reserve Bank of India (RBI) reports that between 2017 and 2022, digital payments expanded at a compound annual growth rate (CAGR) of more than 50%. However, there have been regulatory ambiguities in the bitcoin space. The Supreme Court reversed the RBI's 2018 banking restriction on cryptocurrency transactions in 2020. to examine how cryptocurrencies and artificial intelligence (AI) can transform India's financial industry, solve issues with established systems, and spot technological and legal opportunities. The title examines how two ground-breaking technologies—AI and cryptocurrencies—are changing the financial industry. Financial systems used human data processing, paperwork, and conventional banking techniques prior to artificial intelligence. Customer service, transaction management, and risk assessment required a lot of work, which resulted in slower and inefficient procedures. By increasing effectiveness, accessibility, and security, investigating AI and cryptocurrency technologies can help overcome the shortcomings of India's conventional banking institutions. The study intends to use these technologies to promote innovation in India's economy and improve financial inclusion. The suggested solution will use AI models to automate fraud detection, offer tailored financial services, and use predictive analytics for risk assessment. By lowering transaction costs and guaranteeing safe, decentralized transactions, cryptocurrencies can further promote inclusive finance and build a more resilient, easily accessible financial system.

Keywords: Cryptocurrencies, Artificial Intelligence, FinTech, Digital Payments, Financial Inclusion, Automation, Fraud Detection, Predictive Analytics, Regulatory Challenges

Electric Wheel chair with Voice Control and Ultrasonic Sensor for Disable

K. C. Rama Krishna, E. Urukundu, B. Eranna, B. Mohan Krishna, J. Sanjay

Abstract

Physically disabled people always need assistance from others when they are moving from one location to another. One important technology that could open up new avenues for human interaction with tools or machines is speech recognition. The goal of the proposed project is to help elderly individuals who are unable to move around and those who are disabled or handicapped. Here, the voice-controlled wheelchair moves via a speech recognition module based on an Android application, and it has the ability to avoid obstacles by using an ultrasonic sensor. This intelligent system's design will enable some people to live less dependent lives. People with physical disabilities and elderly individuals who are unable to move on their own due to weakness are the target audience for the proposed system. Voice recognition is used in this project to control the wheelchair. It moves the wheelchair by using the voice recognition module HC05 Bluetooth, which is interfaced with motors to receive user input commands. Additionally, the suggested system is interfaced to operate the wheelchair through a smartphone app for Android. The wheelchair is moved by means of DC motors and an Arduino microcontroller circuit. Bluetooth has transformed the way people use digital devices at home and at work by converting wired devices into wireless ones. Here, we Androidapplication,aninterfacemicrocontroller, and Bluetooth communication. Here, obstacles are avoided through the use of an ultrasonic sensor that continuously scans the area for obstacles that are close to moving cars. The Bluetooth module and microcontroller are being interfaced via Arduino software. The motion of the robot can be controlled by commands received from an Android device. We came up with straightforward ideas to offer a framework for creating wheelchairs that are extremely inexpensive but have high processing and sensing power thanks to the smart phone that serves as the control device.

Keywords: Arduino nano, L293D motor driver module, 4RPM Gear motors, LCD display, I2c module, HC05 bluetooth module, Ultrasonic sensor, SG 90 Servo motor, Arduino IDE, Embedded C, Bluetooth application

Water Pollution Monitoring RC Boat

Kondameedhi sudharshan
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Devanakonda , India
Kondameedhisudharshan@gmail.com

Harijana prasad
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Kowthalam , India
harijanaprasad@gmail.com

Akula Nagaraju
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Aspari , India
nagaraju080703abc@gmail.com

Chukka sai kumar
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Adoni , India
Saikumar.chukka12@gmail.com

Gittar Anjineyulu
dept. ECE
St. Johns College of Engineering and Technology
(JNTUA)
Adoni , India
Gittaranji7@gmail.com

Abstract

The quality of drinking water plays a crucial role in the health of animals and human beings. Lakes and reservoirs, canals one of the major sources of drinking water. Water quality monitoring of these water bodies requires a lot of effort as operators need to get in a boat with all sensors and manually check the entire lake. So we here design a solution for easy water quality checking of vast water bodies with ease.. This RC boat will help to measure the turbidity level. This will further help us to maintain the water clean. This project is remote-operated and controlled by an wifi using which it can be maneuvered accordingly. As per the commands received by the wifi the controller operates the DC motor which rotates the propeller through a flexible bearing and shaft. Now we have an a rudder attached to a servo motor used to steer the boat as per controller instructions. Additionally, we have two sensors to determine water quality, we include turbidity sensor. These sensors will detect the presence of suspended particles in the water. Thus the water quality monitoring rc boat can be used for water quality monitoring on lakes and reservoirs with ease.

Keywords: RC boat, water quality, turbidity level, DC motor, sensors

A Low – Cost FPGA Implementation of Retinex Based Low Light Enhancement Algorithm

Smt. C.Vidya
Assistant Professor, Department of ECE, NBKR Institute of Science Of Science and Technology, Vidyanagar
vidyasiju9@svcn.ac

Dr.S.Penchala Reddy
Assistant professor Department of ECE, PBR Visvodaya Institute Of Technology and Science, Kavali-524201
sura.440@gmail.com

Allari.Lokesh
Department of ECE, NBKR Institute of Science and Technology, Vidyanagar
allarilokesh2002@gmail.com

Abstract

Low-light image enhancement plays a critical role in improving the quality of images captured in environments with insufficient lighting. Traditional software-based methods often struggle with real-time performance, making them unsuitable for embedded and resource-constrained systems. This paper presents a low-cost FPGA-based implementation of the Retinex algorithm, which enhances images by mimicking the human visual system's ability to distinguish between illumination and reflectance components. FPGA hardware accelerates this process, enabling high-speed, real-time enhancement while maintaining low power consumption and minimal cost. The proposed system is ideal for applications in surveillance, medical imaging, robotics, and security, where low-light conditions hinder image clarity.

Keywords: FPGA, Retinex algorithm, illumination

Enhancing Activity Monitoring in Smart Homes with IoT enabled Sensor Networks using Machine Learning

Sristi Laxmi Lalitha[1],K. Srujana[2], B. Harshith[2], V. Soumith Reddy[2], B. Akhil[2]

[1]Assistant Professor, [2]UG Student, [1,2]Department of CSE (DataScience)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Corresponding Email: lalithayagnam03@gmail.com

Abstract

The rapid advancement of the Internet of Things (IoT) has enabled the incorporation of intelligent sensor networks in smart homes, enhancing activity monitoring, security, and automation capabilities. This design emphasizes the creation of an advanced IoT-enabled detector network aimed at real-time exertion monitoring within smart homes, thereby improving security, energy efficiency, and supported living operations. Traditional monitoring systems frequently encounter extended durations of inactivity, constrained data accessibility, and restricted data processing functionalities. This design implements machine learning algorithms to attain accurate human activity recognition and incorporates edge computing to improve the efficiency of real-time data processing. The system will utilize a network of intelligent detectors, including stir sensors, environmental detectors, and wearable devices, to collect and analyze exertion patterns for the purpose of identifying anomalies and automating responses. Advanced machine learning models, including deep learning-based sequence classifiers and anomaly detection algorithms, are expected to enhance the accuracy of activity recognition and security monitoring. Furthermore, the implementation of energy-efficient adaptive literacy methods will lead to a decrease in computational output, which will subsequently improve the scalability and sustainability of the system. Sequestration will entail the application of conservation mechanisms, including secure encryption and authentication protocols, to safeguard sensitive user data. The proposed frame improves home security, facilitates independent living for seniors, and enhances smart home automation, thereby contributing to the creation of safer, more intelligent, and energy-efficient living environments.

Keywords: Activity Monitoring, Sensor Fusion, Human Activity Recognition, Edge Computing in IoT.

Identifying Liver Cancer Using Image Processing Techniques

Hima Bindu Gaggara
Microsoft DWH/BI developer
Xad spot effects GMBH
Munich, Germany.
bindusuja11@gmail.com

Tejaswi Gaggera
Asst. Professor
GIST
Nellore, A.P.
gtejaswi@gist.edu.in

Abstract

The early detection of liver cancer is critical for improving treatment outcomes and increasing patient survival rates. This project aims to develop a system for identifying liver cancer using image processing techniques applied to medical imaging data, such as CT scans or MRI images. By leveraging advanced image processing algorithms and machine learning models, the system can automatically identify abnormal growths, lesions, and tumours in the liver, indicating potential cancerous conditions. The process involves several steps, including image preprocessing, feature extraction, and classification. Preprocessing techniques such as noise reduction, contrast enhancement, and image normalization are applied to improve the quality of medical images. Features like texture, shape, and intensity of liver lesions are then extracted to characterize potential tumours. Finally, machine learning algorithms, such as Convolutional Neural Networks (CNNs), are used for classifying the images into benign or malignant categories. The proposed system not only aids in early detection but also improves the accuracy and efficiency of liver cancer diagnosis, reducing the reliance on manual interpretation by radiologists. This technique can be integrated into clinical workflows to support medical professionals in making timely, data-driven decisions, ultimately improving patient care and outcomes in the battle against liver cancer.

Keywords: Liver Cancer Detection, Image Processing, Medical Imaging

Implementation of Arduino ATMEGA 2560 Based Smart Energy Meter through Prepaid Transaction Using IOT

Vemparala Sarathchandu
Master in computer science,
Heidelberg Universität,
Germany.
Vemparalachandu@gmail.com

Tejaswi Gaggera
Asst. Professor
GIST
Nellore, A.P.
gtejaswi@gist.edu.in

Abstract

The implementation of a Smart Energy Meter based on Arduino ATmega 2560, utilizing prepaid transactions and integrated with IoT (Internet of Things), offers an innovative solution to monitor and manage energy consumption efficiently. This system provides a seamless method for users to prepay for energy, ensuring better control over usage and cost. The energy meter is equipped with sensors like ZMPT101B (voltage sensor) and ACS712 (current sensor) to measure real-time energy consumption. The system maintains a prepaid balance that is decremented as energy is consumed, and when the balance reaches zero, the energy supply is automatically disconnected using a relay module. Additionally, the system communicates with IoT platforms such as ThingSpeak or Blynk via an ESP8266/ESP32 WiFi module to enable remote monitoring and balance updates. The remaining energy balance and consumption data are displayed on an LCD screen for real-time user feedback. This system not only improves the efficiency of energy usage but also enhances user convenience through remote monitoring and control, contributing to cost savings and sustainable energy consumption. Through the combination of Arduino, IoT, and smart energy management, this solution offers an effective approach to managing energy in a prepaid model, providing a reliable and scalable platform for users and utility companies alike.

Keywords: Arduino ATmega 2560, Energy Monitoring, ZMPT101B (Voltage Sensor) , ACS712 (Current Sensor) , Relay Module

CNN-Driven Food Recognition and Calorie Estimation for Personalized Dietary Management

G. Vijayalaxmi[1], E. Sravika[2], D. Sridhar[2], M. Nagashiva[2]

[1]Assistant Professor, [1]UG Student, [1,2]Department of CSE (AI & ML)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Corresponding Email: vijaya.gopuu@gmail.com

Abstract

In the modern era, increasing awareness of health and nutrition has made calorie monitoring an essential part of daily life. People often find it difficult to estimate calorie intake accurately due to manual logging, lack of nutritional knowledge, or inconsistent habits. Therefore, there is a need for an intelligent system that can automate the process of recognizing food items and estimating their calorie content accurately using image analysis. Hence, this research proposesa system that leverages the power of Artificial Intelligence, particularly a Convolutional Neural Network (CNN), to recognize food items from images and estimate their calorie content automatically. The system uses the Food11 dataset, which includes thousands of images categorized into 11 different food types along with their associated calorie information. The application is designed to allow users to upload food images, which are then preprocessed, normalized, and resized for consistency. Once the model is trained and validated, the user can input a test image, and the AI will predict the food category and fetch the estimated calorie value from a nutritional dataset. If the user exceeds the daily limit, the system notifies them by indicating negative pending calories. Performance of the model is evaluated through metrics such as accuracy, precision, recall, F1-score, and confusion matrix visualization, with the CNN2D model achieving a high accuracy of 99%. The application includes a graphical interface developed using Tkinter for ease of use and visualization. The significance of this system lies in its ability to offer a smart, efficient, and user-friendly solution for real-time dietary monitoring, reducing dependency on manual logging and enabling healthier lifestyle management. It holds great potential for integration into fitness platforms, hospitals, dietary recommendation engines, and personal health management systems.

Keywords: Healthcare, Nutritional information, Calorie estimation, Deep learning, dietary management.

Detecting Fraudulent Activities on Mobile Devices using Multi – view Bagging Techniques

Ganavi Gurram[1], Sudeep Samuelson Ezra[2], Dr.Babu Pandipati [3]

[1] *Site Reliability Engineer, ClearCaptions, USA*

[2]*Department of Computer Science, Vikrama Simhapuri University College, Kavali*

[3] *Department of AI & DS, Geetanjali Institute of Science and Technology, Nellore*

Abstract

With the rapid growth in smart phone usage, preventing leakage of personal information and privacy has become a challenging task. One major consequence of such leakage is impersonation. This type of illegal usage is nearly impossible to prevent as existing preventive mechanisms (e.g., passcode and fingerprinting), are not capable of continuously monitoring usage and determining whether the user is authorized. Once unauthorized users can defeat the initial protection mechanisms, they would have full access to the devices including using stored passwords to access high-value websites. We present a new framework to detect impersonation based on a multi-view bagging deep learning approach to capture sequential tapping information on the smart-phone's keyboard. We construct a sequential-tapping biometrics model to continuously authenticate the user while typing. We empirically evaluated our system using real-world phone usage sessions from 26 users over eight weeks. We then compared our model against commonly used shallow machine techniques and find that our system performs better than other approaches and can achieve an 8.42 percent equal error rate, a 94.24 percent accuracy and a 94.41 percent H-mean using only the accelerometer and only five keyboard taps. We also experiment with using only three keyboard taps and find that the system still yields high accuracy while giving additional opportunities to make more decisions that can result in more accurate final decisions.

Key Words: Fingerprinting, Passcode, H-mean, Deep learning.

G-MATCH: Ensuring Security and Privacy in Group Matching within Social Networks

Ms. Radhika Penubarthi
Software Development Engineer, Group on International, Ireland

Dr. V. Gayatri
Associate Professor, Department of CSE, Geethanjali Institute of Science and Technology, Nellore, Andhra Pradesh, India

Abstract

With the rise of online social networks, group-based interactions have become increasingly prevalent in various applications such as interest-based communities, collaborative work, and matchmaking services. However, ensuring secure and privacy-preserving group formation remains a critical challenge. Traditional methods often expose sensitive user data or rely on centralized authorities, leading to potential privacy risks and security vulnerabilities. G-MATCH addresses this issue by proposing a novel cryptographic protocol that enables secure and privacy-preserving group matching in social networks. Our approach leverages secure multi-party computation (SMPC) and homomorphic encryption to allow users to participate in group matching without revealing their personal attributes to other parties. G-MATCH ensures that users can find optimal group formations based on shared interests or predefined criteria while maintaining confidentiality and preventing unauthorized access. The protocol operates efficiently even in large-scale social network environments, balancing computational complexity and communication overhead. Extensive security analysis and experimental evaluations demonstrate that G-MATCH achieves strong privacy guarantees and practical performance, making it suitable for real-world applications. By integrating this framework into existing social networking platforms, we provide users with enhanced privacy protection while enabling seamless and secure group matching.

Keywords: secure and privacy-preserving, secure multi-party computation

Early Dyslipidemia Prediction in Steel Workers using Unified Time Series Approach with Bi-LSTM Model

Sravankumar B[1], Chippa Sirichandana[2], Vemulapelli Saakshitha[2], Neelam Sruthi[2], B. Rajesh[2]

[1]Assistant Professor, [2]UG Student, Department of Computer Science and Engineering (AI & ML)
Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Email id- sravan.researcher@gmail.com

Abstract

Blood lipid abnormalities, such as cholesterol and triglycerides, are called dyslipidemia. Heart attacks and strokes are greatly influenced by it. Dyslipidemia can result from physical strain, loudness, and bad habits in steel and iron workers. Predicting dyslipidemia in this occupational category is crucial for preventive healthcare. Usually, the Framingham Risk Score or the ACC/AHA atherosclerotic cardiovascular disease (ASCVD) risk calculator are used to determine dyslipidemia risk in a group. Age, gender, blood pressure, cholesterol, and smoking status are used to determine cardiovascular event risk in these programs. These general instruments not sufficiently address steel and iron workers' unique occupational and lifestyle features. Therefore, precisely predicting dyslipidemia in steel and iron workers is critical due to their higher cardiovascular disease risk. Early detection and treatment can reduce the risk of significant health conditions and improve employee welfare. Through identification of sensitive individuals, tailored therapy can include lifestyle changes, nutritional changes, and medical surveillance. This work attempts to establish a reliable and accurate dyslipidemia prediction system for steel and iron workers. To assess dyslipidemia risk, occupational exposure, lifestyle, medical history, and genetics are examined. The main objective is to create a tool that can identify at-risk individuals and provide healthcare practitioners with actionable information to intervene. The models can continuously learn from new data, improving their precision and ensuring that forecasts are current and relevant.

Keywords: Dyslipidemia prediction, Bi-LSTM, time series analysis, steel workers, cardiovascular risk, occupational health, preventive healthcare.

Block chain Forensics: Leveraging Deep Learning and ML Algorithms to Detect Suspicious Cryptocurrency Transactions

Dr.Thanveer Jahan[1],J.Sandeep[2],A.Ravinder[2], MD.Safwan Ahmed[2], Ch.Keerthana[2]

[1]Associate Professor & Head, [1]UG Student, [1,2]Department of CSE (AI & ML)
[1,2]Vaagdevi College of Engineering, Bollikunta, Warangal, Telangana, India
Corresponding Email: thanvivcecse@gmail.com

Abstract

The increasing use of cryptocurrencies like Bitcoin has brought significant attention to the issue of transaction anonymity and its implications for regulatory compliance and financial transparency. Bitcoin transactions, by design, are pseudonymous, which poses challenges for identifying malicious actors involved in illegal activities such as money laundering, fraud, and terrorism financing. This project aims to address these challenges by leveraging machine learning techniques to de-anonymize Bitcoin transactions based on their behavioral patterns and feature data.The core of the system relies on various supervised learning models including Decision Tree, Logistic Regression, AdaBoost, Gradient Boosting, K-Nearest Neighbors (KNN), and Random Forest Classifier. The project uses a dataset, which contains multiple transaction records with various attributes and corresponding class labels. Each algorithm is trained and evaluated using standard metrics such as accuracy, precision, recall, and F1-score. The system also allows the admin to upload new transaction datasets and predict their class labels (i.e., de-anonymize them) using the trained Random Forest model. Further, the application includes user-friendly interfaces for admin login, dataset upload, training, testing, and viewing results, all powered by Django templates. This project also provides a powerful proof-of-concept for combining data science and web development to build practical tools for blockchain analytics. It serves as an effective framework for authorities and researchers to detect patterns and identify entities behind anonymous transactions, thus promoting transparency and accountability in the crypto-financial ecosystem.

Keywords: Blockchain technology, Bitcoin, Illegal transactions, Behavioural patterns,Proof-of-work, Machine learning.

Privilege Escalation Attack Detection and Mitigation in Cloud Using Machine Learning

Ambati Naga Abhigna, Boddu Amrutha, Alajingi Anusha, Boina Suma, Mr. Sk.Asiff

Department of Computer Science and Engineering (AI&ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

abhignareddyambati@gmail.com, amruthaboddu01@gmail.com, alajingianusha@gmail.com, boinasuma2003@gmail.com ,asiff@gist.edu.in

Abstract

The aim of this project is to identify the insider threats-people within an organization who misuse their access to harm the system and implement several ensemble learning techniques to identify the inside attacker. Cloud computing has revolutionized modern IT infrastructure by providing scalable and on- demand resources. Traditional security mechanisms, such as rule-based intrusion detection systems (IDS) and static access control policies, struggle to detect sophisticated privilege escalation attempts, particularly zero- day exploits and advanced persistent threats (APTs). To address these challenges, this study proposes a machine learning-based framework using the CatBoost algorithm for detecting and mitigating privilege escalation attacks in cloud environments. CatBoost, a gradient boosting algorithm, is chosen for its superior handling of categorical features, high predictive accuracy, and resistance to overfitting. The proposed model leverages behavioural analysis and anomaly detection to identify suspicious privilege escalation attempts in real time. Through extensive experiments, the framework demonstrates improved detection rates and reduced false positives compared to traditional security mechanisms.

Keywords: Cloud Security, Privilege Escalation Attacks, CatBoost Algorithm, Machine Learning, Intrusion Detection, Access Control, Zero-Day Exploits, Advanced Persistent Threats (APTs), Anomaly Detection, Threat Mitigation.

Hybrid Deep Learning for Embryo Classification from Microscopic Images

A. Anu Deepthi, A. Naga Manogna, K. Jahnavi, K. Madhuri Dr. P. Nagendra kumar

Department of Computer science & Engineering (AI&ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

anuatmakuru007@gmail.com, manognareddyambati@gmail.com, jahnavikandepi@gmail.com, kanuboinamadhuri@gmail.com, nagendra@gist.edu.in

Abstract

Embryo classification from microscopic images is a critical task in assisted reproductive technology (ART) that determines embryo viability for implantation, directly influencing the success rate of in-vitro fertilization (IVF). Traditionally, embryologists rely on manual morphological assessment, a subjective and time-consuming process prone to inter-observer variability. In addition, traditional image processing methods using handcrafted features lack generalizability, To address these limitations, a hybrid deep learning model integrating CNNs with ensemble techniques is proposed. The hybrid model extracts deep hierarchical features using CNNs and enhances classification performance by integrating them with CatBoost classifier model. This approach improves feature representation, mitigates over fitting, and enhances the model's ability to generalize across different datasets. The proposed system provides a robust, automated solution for embryo classification, reducing human bias and improving decision-making in ART. Its significance lies in enhancing IVF success rates by offering a standardized, reproducible, and accurate embryo selection process. The integration of hybrid learning techniques ensures adaptability to diverse datasets, making it a valuable tool for clinical applications. Future work will focus on refining model architectures and expanding datasets to achieve even greater accuracy and generalizability.

Keywords: Embryo classification, Convolution Neural Network (CNN), Cat Boost, Assistive Reproductive Technology

Liver Disease Detection Using Social Spider Optimization and Random Forest Classifier

Kaipu Sai Likith, Kasthuri Yaswanth Kumar, Komari Avinash, Konjeti Tanmay

Dr. P. Nagendra Kumar

Department of Computer Science & Engineering (AI&ML),
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.
sailikithreddy143@gmail.com,yashu33456@gmail.com, avinashavii131@gmail.com,
tanmaykonjeti03@gmail.com nagendra@gist.edu.in.com

Abstract

The aim of this project is to develop an AI-driven liver disease detection framework leveraging deep learning and optimization techniques to enhance classification accuracy and computational efficiency. The proposed method utilizes CT scan images as the primary dataset for liver disease classification. To improve performance, the Social Spider Algorithm (SSA) is employed for feature selection, reducing computational complexity while retaining essential diagnostic features. After feature extraction and reduction using SSA, three pre-trained Convolutional Neural Networks (CNN) are fine tuned for liver disease classification. The optimized feature set obtained through SSA enhances the training process, leading to improved model accuracy and efficiency. A publicly available liver CT scan dataset is used to evaluate the classification performance of these models based on various assessment metrics. The experimental results demonstrate that integrating SSA with CNN architectures significantly improves liver disease detection, offering a robust AI-driven solution for medical imaging applications.

Keywords: Artificial Intelligence, Liver Disease Detection, Convolutional Neural Networks (CNN), Social Spider Algorithm (SSA), Medical Imaging, Feature Optimization.

AI-Driven Automated Trash Classification for Efficient Waste Sorting

Challa Balaji, Maruboina Pavan Kumar, Devarapalli Mokshagna Teja, Arugolanu Nehemiah

Mr. U. Satya Narayana

Department of Computer Science & Engineering (AI&ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

challabala58@gmail.com, kpavan36668@gmail.com, devarapallimokshagna@gmail.com, linnulinnu89@gmail.com, satyanarayanau@gmail.com

Abstract

In India, effective waste management is crucial for environmental sustainability and public health. Rapid urbanization and population growth have led to a significant increase in waste generation, posing challenges to existing disposal systems and resulting in pollution, ecosystem disruption, and health hazards. Traditional waste disposal methods, such as manual sorting, rule-based systems, and exporting waste to other countries, have been the cornerstone of waste management practices for decades. Manual sorting is labour-intensive and prone to human error, making it inefficient for large-scale operations. Rule-based systems, which rely on predefined criteria for waste categorization, often lack adaptability to diverse and evolving waste streams. To overcome these problems, this research utilizes a comprehensive dataset comprising millions of images of waste items, providing a robust resource for training and evaluating waste classification models. The study employs a hybrid approach, using MobileNetV2—a lightweight convolutional neural network—for feature extraction, followed by a Random Forest classifier to categorize waste items. The proposed system can be integrated into smart waste bins and recycling facilities to automate the sorting process, enhancing recycling rates and reducing environmental impact.

Keywords: Waste Management, Waste Classification, MobileNetV2, Random Forest, Deep Learning, Machine Learning, Feature Extraction, Smart Waste Bins.

A Collaborative Detection Mechanism of Botnets using Explainable AI

Asam Jahnavi, Chaluvadhi Sri Lakshmi, Kolakalam Harika, Ms. B. Poojitha

Department of Computer Science Engineering (Artificial Intelligence & Machine Learning)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

asamjahnavi2003@gmail.com, srich2568@gmail.comharikakolakalam@gmail.com, poojitha@gist.edu.in

Abstract

Cyber attacks have become a major concern in today's digital landscape, with botnets being a significant threat to data security. These large networks of compromised electronic devices are used for malicious activities such as data theft, disrupting services in real-time, and launching large-scale cyber attacks. Traditional network defense systems rely on static rule-based approaches, methods such as the OSI layer framework, encryption, and decryption techniques to safeguard communications. So, to overcome above problems, this work implemented the explainable artificial intelligence (XAI) based bot detection. Initially, the dataset used for XAI-based botnet detection comprises the Botnet DGA dataset, which serves as the primary training source. The dataset undergoes preprocessing, including duplicate removal, irrelevant traffic filtering, handling missing values, and feature normalization, ensuring high data quality. SHAP-based feature extraction is then performed to identify key network traffic characteristics, improving interpretability. During testing, real-time network traffic undergoes the same preprocessing and feature extraction steps before being classified by the trained XGBoost model. The classifier categorizes network traffic as either "Normal" or "Botnet," using XAI techniques to provide human-interpretable decision insights. Performance analysis evaluates metrics such as accuracy, precision, and recall, ensuring the effectiveness of detection. Additionally, collaborative intelligence sharing refines detection models, strengthening cyber security defenses against evolving botnet threats.

Keywords: Botnets, Explainable AI(XAI), Cybersecurity, XGBoost Classifier, SHAP-based feature Extraction.

Detecting and Classifying Malicious Uniform Resource Locations Using Advanced Machine Learning

Kommuru Harshini, Gurram Varshini, Bandi Meghana, Devarapalli Chandana,

Ms. Vudduru Bharathi

Department of Computer Science and Engineering (AIML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

harshinikommuru28@gmail.com ,vvarshi33@gmail.com, meghanabandi024@gmail.com ,

chandanareddy0128@gmail.com, bharathi@gist.edu.in

Abstract

The increasing prevalence of malicious Uniform Resource Locators (URLs) poses significant cyber security risks, including phishing attacks, malware distribution, and fraudulent activities. Traditional methods such as blacklisting and rule-based systems are reactive and struggle to detect novel malicious URLs in real time. To address these limitations, this project proposes an advanced machine learning-based approach to detect and classify malicious URLs using the Phish Tank dataset. Feature selection and Min-Max scaling techniques are employed to enhance model performance. The proposed system dynamically adapts to evolving threats, reducing false positives while maintaining high detection accuracy. Implemented in a scalable architecture, the system is evaluated using standard performance metrics, including accuracy, precision, recall, and F1-score. Experimental results demonstrate that the proposed model significantly outperforms traditional approaches in identifying malicious URLs with minimal computational overhead. The integration of machine learning enhances proactive cyber security measures, making the system suitable for deployment in enterprise security frameworks, financial institutions, and cloud-based security solutions.

Keywords: Malicious URL Detection, Machine Learning, Phish Tank Dataset, XGBoost, Cyber security, Phishing Prevention.

Jute Leaf Disease Classification with ResNet 50 – KNN

Chenthati Vinod, Aggi Vamsi Chaithanya, Mohammed Haseeb Ahamed Siddiqui,

Eragadindla Vishnu Sai, Ms. B. Poojitha

Department of Computer Science and Engineering (AIML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

chenthativinod@gmail.com, vamsiaggi2003@gmail.com, haseebmd3367@gmail.com,

vishnusaieragadindla@gmail.com, poojitha@gist.edu.in

Abstract

Jute is an important cash crop in India, supporting millions of farmers and contributing to the economy. Maintaining its health is essential for sustainable agriculture. However, fungal and bacterial diseases often affect jute leaves, reducing yield and causing financial losses. Traditional methods, like manual inspection, are time-consuming and prone to errors, while excessive use of chemicals harms the environment and increases costs. To address these issues, deep learning (DL) offers an effective solution by accurately classifying diseases through jute leaf images. Models like ResNet and Efficient Net analyse these images and identify diseases with high accuracy. This system helps farmers by providing real-time disease detection, reducing yield loss, and optimizing pesticide use. By adopting AI-driven technologies, Indian agriculture can become more efficient and sustainable, ensuring better productivity and economic stability for farmers.

Keywords: Jute Leaf Images, Deep Learning (DL), ResNet 50, Real-time Disease Detection.

An Optimized Deep Learning Model for Early Detection of Retinal Diseases

B. Navitha, Ch. Latha Sri, M. Venkata Padma Praneetha, N. Sukanya Reddy, U. Satyanarayana

Department of Computer Science Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

guruharsha0620@gmail.com ,lathasrichenga@gmail.com, mvpranee04@gmail.com ,

nagireddysukanya520@gmail.com, satyanarayanau@gist.edu.in

Abstract

The aim of this project is to design and implement an optimized deep learning framework with advanced padding strategies for effective retinal disease detection and classification, focusing on conditions such as diabetic retinopathy, macular degeneration, and glaucoma. The proposed framework leverages a Deep Learning Convolutional Neural Network (DLCNN) architecture enhanced with Adaptive Moment Estimation (ADAM) optimization, ensuring critical edge features and spatial details are preserved for improved diagnostic accuracy. By integrating transfer learning and data augmentation techniques, the model achieves robust generalization across diverse datasets, facilitating early and reliable disease identification. The design is evaluated on metrics like accuracy, sensitivity, and specificity, demonstrating substantial improvements in diagnostic performance while minimizing false negatives. The proposed system offers a scalable solution for real-time retinal disease screening, reducing reliance on manual diagnosis and paving the way for deployment in telemedicine and mobile healthcare. This advancement marks a significant step in addressing the global burden of retinal diseases, ensuring early intervention and better patient outcomes.

Key Words: Adaptive Moment Estimation (ADAM) Valid Padding (VP), Deep Learning Convolutional Neural Network (DLCNN), Improved diagnostic accuracy.

AI- Enhanced Health Management Application for Patients

Korada Poojitha, Devarapalli Geethanjali, Lingaladina Harshini, Dr. Babu. P

Department of Computer Science and Engineering (AI&ML)

Geethanjali Institute of Science & Technology, kovur , Nellore, Andhra Pradesh, AP.

koradapoojitha744@gmail.com ,lharshini1356@gmail.com, geethanjalireddyd@gmail.com

babup@gist.edu.in

Abstract

The research aims to revolutionize traditional healthcare systems by integrating AI technologies into patient management and disease prediction. Traditionally, patient records were managed manually or through basic electronic health record (EHR) systems, with limited or no predictive capabilities. The objective of this project is to streamline patient-doctor interactions, improve diagnosis accuracy, and provide instant predictive insights using AI, particularly in brain MRI analysis. The problem statement revolves around the inefficiencies of traditional systems, such as delays in diagnosis and lack of predictive tools. The research motivation lies in the growing need to improve healthcare outcomes by leveraging AI's potential to provide accurate, real-time predictions. The proposed system utilizes Convolutional Neural Networks (CNNs) and Support Vector Machines (SVM) to analyze patient MRI data, enabling doctors to make instant, data-driven decisions regarding patient treatment. In this proposed system, CNN and SVM are the primary machine learning algorithms applied to achieve the desired outcomes. CNNs are used for image analysis, particularly in processing and interpreting brain MRI scans to predict potential health issues. SVMs complement this by providing robust classification capabilities, helping to refine the predictive models and ensure high accuracy in the diagnosis. Together, these algorithms form the core of the AI modules that empower doctors to make quick, informed decisions, ultimately improving patient care and outcomes.

Keywords: Electronic Health Record (EHR) system, Convolutional Neural Networks (CNN), Support Vector Machine (SVM).

Automated Star Type Classification with Machine Learning Using NASA Data

A.V.M.N.S.S. Ajay, A.V.S. Abhilash, B. Sumanth, D. Pranai, Dr. K. Sundeep Kumar

Department of Computer Science and Engineering (AI&ML),
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.
ajayakkaraju@gmail.com, abhiabhilash3307@gmail.com, coolsuman983@gmail.com,
pranaidoniparthy@gmail.com, sundeepkumarkk@gmail.com

Abstract

The aim of this project is to develop an automated machine learning-based star classification system using NASA-sourced spectroscopic data to enhance speed, consistency, and scalability while minimizing errors and human dependency. Traditional manual classification methods are subjective, inefficient, and struggle to scale with the vast data generated by modern telescopes. To address these challenges, the proposed system employs the Random Forest Classifier, leveraging multiple decision trees for robust performance and high accuracy. This approach improves efficiency, eliminates human bias, and scales to large datasets, facilitating rapid star categorization, aiding exoplanet detection, mapping stellar nurseries, and advancing cosmic studies.

Keywords: Automated Star Classification, Machine Learning, NASA dataset, Spectroscopic Data, Random Forest Classifier, Stellar Categorization.

Ensuring Resilient and Confidential Data Transmission with Artificial Intelligence In Ad-Hoc Networks

M. Reethika, K. Thanvi, A. Abhinaya, C. Manasa, Ms. V. Bharathi

Department of Computer Science and Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

reethu3361@gmail.com, thanvi5566@gmail.com, abhinayaannam27@gmail.com,

manasacheerla980@gmail.com, bharathi@gist.edu.in

Abstract

Ad-hoc networks, characterized by their decentralized and dynamic nature, face significant challenges in ensuring resilient and confidential data transmission, particularly in military and critical applications. Conventional methods for protecting adhoc networks include internet protocol security, a set of protocols used to secure internet communications by encrypting and authenticating each data packet, and transport layer security, which is widely used for online transactions and communication. However, these systems frequently had some inefficiencies, such as time-consuming processes, lack of easy notifications, and inadequate prediction capabilities, leading to wasted resources and suboptimal performance. To address these issues, the integration of Artificial Intelligence (AI) and Machine Learning (ML) algorithms, along with other and AI-enhanced ad-hoc networks, enable accurate predictions, real-time decision-making, and adaptive routing, ensuring resilience even in unpredictable environments. This approach is particularly vital in military operations, where secure and resilient communication is critical for mission success. The integration of AI and ML into ad-hoc networks addresses the limitations of traditional systems, providing a scalable, efficient, and secure framework for data transmission in dynamic and resource-constrained environments.

Keywords: Artificial Intelligence (AI), Machine Learning (ML), AD-HOC networks, Internet Protocol Security, Transport Layer Security.

Machine Learning Approach for Prediction of Obesity Levels Based on Eating Habits

Balam Revanth, Biyyapu Reshwanth, Duduku Praneeth Kumar, Karnati Vishnu Vardhan Babu

Mr. Sk. Asiff

Department of Computer Science & Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

balamrevanth2004@gmail.com ,reshwanthbiyyapu@gmail.com,

dudukupraneethkumar402@gmail.com, vishnu.1615386@gmail.com, asiff@gist.edu.in

Abstract

Obesity is a global health concern linked to chronic diseases such as diabetes, cardiovascular disorders, and hypertension. Accurate prediction of obesity levels is crucial for early intervention and personalized healthcare planning. Traditional assessment methods rely on body mass index calculations and clinical evaluations, which may not fully capture the influence of lifestyle factors such as dietary habits, physical activity, and genetic predisposition. Conventional statistical models struggle with complex, nonlinear relationships between eating behaviors and obesity, leading to suboptimal predictive performance. To address these limitations, this study explores machine learning approaches for predicting obesity levels based on eating habits and lifestyle data. The proposed system employs the Extra Trees Classifier, also known as the Extremely Randomized Tree Classifier, to enhance prediction accuracy. This model efficiently handles high-dimensional data and reduces over fitting by introducing randomness in both feature selection and decision tree splitting. By analyzing dietary patterns and related factors, the system provides reliable obesity level predictions, which can help individuals and healthcare professionals make informed decisions for better health management.

Keywords: Machine Learning, Obesity Prediction, Eating Habits, Extra Trees Classifier, Healthcare Management.

Deep Learning Approach for Anemia Classification from Automated Blood Image Analysis

Budam Sathya Rohith, Allatupalli Sai Srujan Kumar, Gali Ram Sai Aravind, Dasari Karthikeya

Dr. P. Nagendra Kumar

Department of Computer Science and Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

sathyarohith67@gmail.com ,aravindgali10@gmail.com, karthikeyad1417@gmail.com ,

srujan7879@gmail.com, nagendra@gist.edu.in

Abstract

The aim of this project is to design and implement a Deep Learning-based system for Anaemia Classification using Automated Blood Image Analysis to optimize accuracy, efficiency, and computational cost while maintaining reliable diagnostic performance. The proposed model leverages Inception-V3 Convolution Neural Network model to extract features from blood smear images and then classification is performed using Light Gradient Boosting Machine (LGBM) method. By integrating deep learning techniques, the system aims to achieve superior sensitivity and specificity compared to traditional diagnostic methods. The deep learning methodology dynamically adapts feature extraction and classification based on image conditions, leading to more robust and precise anaemia detection. Experimental results demonstrate that the system achieves high classification accuracy with reduced manual intervention, making it ideal for real-time and automated diagnostic applications.

Keywords: Deep Learning, Anaemia Classification, Automated Blood Image Analysis, Convolutional Neural Networks (CNNs), Inception-V3, Light Gradient Boosting Machine (LGBM) classifier.

Enhanced Security for Banking Transactions using Image Based Steganography

Manne Sivani, Matti Praharsha, Mohammed Azmath, Ms B. Poojitha

Department of Computer Science and Engineering (AIML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh, AP.

sivanikondareddy428@gmail.com , mattipraharsha@gmail.com ,

azmathm555@gmail.com, poojitha@gist.edu.in

Abstract

Banking institutions worldwide handle financial transactions through multiple forms like passbooks, cheques, and demand drafts, which are scanned and stored digitally on bank servers, making sensitive financial data vulnerable to cyber threats, including data breaches, identity theft, and unauthorized access. As banking shifts to digital platforms, ensuring transaction security has become crucial, but traditional security measures like encryption and password protection are prone to brute-force attacks, phishing, and key theft, while conventional steganographic techniques are susceptible to detection and extraction. To address these challenges, this project proposes an enhanced security system using image-based steganography, developing a robust method for multiple image steganography that securely hides sensitive files within a set of images. The method employs Discrete Cosine Transform (DCT) and multi-level pixel decomposition to securely embed transaction data across multiple images, strengthening security and protecting financial transactions from evolving cyber threats, and integrating this system into banking frameworks will provide institutions with a robust and reliable method for securing transaction data, preventing fraud, and improving customer confidence in digital banking services, ultimately providing a secure and efficient approach to safeguard banking transactions with advanced technology solutions daily.

Keywords: Image-based steganography, Multiple Image steganography, Discrete Cosine Transform (DCT), Multi-level pixel decomposition, Encryption.

Detection of Deep Fakes on Social Media Using Deep Learning and Fast Text Embeddings

A. Sruthi, D. Sumanvitha, J. Jashmitha, Dr. P. Babu

Department of Computer Science and Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

appisettysruthi@gmail.com, jashmithajampani@@gmail.com,

Sumanvithadevalaraju@gmail.com,babup@gist.edu.in

Abstract

Deep fakes have emerged as a major concern on social media, enabling the spread of misinformation, privacy violations, and security threats. These AI-generated manipulations, often created using Generative Adversarial Networks (GANs), produce highly realistic fake images, videos, and audio, making detection increasingly challenging. To address this issue, this study proposes a deep learning-based approach that integrates Fast Text embeddings to enhance deepfake detection. Fast Text, a word representation technique, captures semantic relationships in textual content, aiding in the identification of fake news, misleading captions, and other deceptive text accompanying manipulated media. The proposed model employs Convolutional Neural Networks (CNNs) for analyzing visual features and fast text embeddings for processing textual data, ensuring a comprehensive detection mechanism. Experimental results demonstrate that this approach significantly improves accuracy compared to traditional detection techniques. By leveraging deep learning and fast text embeddings this method provides a robust and scalable solution to combat deepfake proliferation on social media, thereby enhancing digital security and information integrity.

Keywords: Deep fake Detection, Deep Learning, Fast Text Embeddings, Social Media, Fake News, Convolutional Neural Networks (CNNs).

Ensemble Learning-Based Prediction of Dissolved Oxygen Levels In Aqua Environment

B. Praneetha Sree, B. Ahalya, B. Thrishitha, D. Tanishka, Dr. Babu. P

Department of CSE (Artificial Intelligence & Machine Learning),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

praneethasree0908@gmail.com ,boddepalliahlaya4@gmail.com, thrishithareddybiradavolu@gmail.com

tanishkachowdary0809@gmail.com babup@gist.edu.in

Abstract

Aquatic ecosystems rely on adequate dissolved oxygen (DO) levels to sustain marine life and maintain ecological balance, but traditional DO measurement methods are labor-intensive and lack real-time insights. To address this, our research proposes an ensemble learning-based approach for DO prediction, leveraging key water quality parameters like temperature, pH, turbidity, and biochemical oxygen demand (BOD). While existing models like KNN Regressor and Logistic Regressor face limitations in accuracy, our proposed system utilizes a Random Forest Regressor to enhance predictive performance by integrating multiple decision trees, reducing errors, and improving robustness. This machine learning-driven solution enables automated, real-time water quality monitoring, providing a cost-effective and scalable alternative to conventional methods, ensuring timely interventions and the sustainability of aquatic ecosystems.

Keywords: Dissolved Oxygen Prediction, Machine Learning, Water Quality Monitoring, Regression Analysis, Environmental Management.

AI Tool for Modelling Satellite Expected Lifetime for ISRO's Space Missions

Kolla Lakshmi Nandan, Koppolu Vishnu Vardhan, Mohammed Hameeduddin Ahamed, Nalam Venkata Sai Praneeth Ramana, Dampuru Ramesh
Department of Computer Science and Engineering (Artificial Intelligence and Machine Learning)
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh, AP.
lakshminandan110@gmail.com , koppoluvishuvardhan@gmail.com, hameed9430@gmail.com , nalampraneethramana@gmail.com

Abstract

This project enhances satellite lifetime estimation by advancing beyond traditional physics-based and empirical methods, as well as existing regression-based approaches. Conventional methods rely on orbital mechanics and degradation models but require extensive calibration. Empirical models, though practical, lack adaptability to diverse missions. Existing approaches, such as Linear Regression and Ridge Regression, analyze historical satellite data to predict longevity. However, these models struggle with complex dependencies and dynamic degradation patterns, limiting their accuracy. To address these challenges, this project employs Long Short-Term Memory (LSTM) networks, which effectively capture temporal dependencies in sequential satellite data. LSTM outperforms traditional methods by dynamically adapting to real-time telemetry data, improving prediction accuracy. Among evaluated models, LSTM demonstrated superior performance with an R^2 score of 0.9994. Metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE) and Root Mean Squared Error (RMSE) confirm its precision. This AI-driven approach enhances mission planning, resource optimization, and space sustainability, enabling accurate satellite lifespan estimations for improved decision-making in space operations.

Keywords: Predictive Analytics, Satellite Lifetime Estimation, Physics and empirical methods, Regression Modeling, Deep Learning, Long Short Term Memory (LSTM), AI-Driven Space Mission Optimization.

ML-Enabled Intelligent Bot Detection in Internet Communication

D.V. Suresh Kumar, B. Yaswanth, B. Pradeep, B. Rajesh, B. Surya Pavan, Mr. D. Ramesh
Department of CSE (Artificial Intelligence and Machine Learning),
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh, AP.
D.V.suresh3333@gmail.com, bhojanapuyaswanth@gmail.com, pradeepbarigala2003@gmail.com,
bezawadarajesh66@gmail.com, pavanbhuma10@gmail.com, dramesh@gist.edu.in

Abstract

This research focuses on the development of an ML-enabled intelligent bot detection system designed to enhance internet communication by identifying malicious bots. Traditional systems use rule-based approaches to detect these bots, relying heavily on predefined patterns. However, they are prone to evasion techniques such as bot imitation, making detection increasingly difficult. The limitations of traditional systems include their inability to adapt to new bot behaviors, false positives, and high resource consumption. The proposed system overcomes these issues by using machine learning algorithms, allowing it to continuously learn from new data and effectively differentiate between legitimate users and bots. The system utilizes a combination of supervised learning algorithms, including decision trees, support vector machines (SVM), and deep learning networks, to analyze user behaviors, IP address patterns, and interaction rates. These features are continuously updated to detect new bot strategies. By integrating multiple layers of detection, the system ensures more accurate bot identification and minimizes the impact of false positives. The main advantages of the ML-enabled detection system include increased detection accuracy, adaptability to evolving bot strategies, and reduced resource consumption. This approach offers better scalability and performance in real-world internet communication scenarios.

Keywords: Linear Discriminant Analysis (LDA), RIDGE Classifier, K-Nearest Neighbor (KNN) Classifier, Support Vector Machine (SVM), Decision Tree Classifier.

AI Driven Epileptic Seizure Detection from EEG Signals

Padavala Akhila, Shaik Masiha Tayyaba, Syed Sameera, Shaik Sofiya, Mr.Sk.Asiff

Department of CSE (Artificial Intelligence and Machine Learning)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

padavalaakhila9@gmail.com masihatayyaba511@gmail.com sofiyashaik139@gmail.com

sameerasyed1126@gmail.com, asiff@gist.edu.in

Abstract

Epilepsy is a chronic neurological disorder affecting millions worldwide, characterized by recurrent seizures due to abnormal electrical activity in the brain. Early and accurate seizure detection is crucial for effective treatment. Electroencephalography (EEG) is a widely used diagnostic tool that records brain activity, providing valuable insights for epilepsy detection. Traditional machine learning (ML) approaches relied on manual feature extraction, which was time-consuming and limited by human expertise. Recent advancements in deep learning (DL) have automated feature extraction and classification, significantly improving diagnostic accuracy. AI models such as XGBoost, 1D-CNN, and LSTM have shown promising results in epilepsy detection. These models can be integrated into real-time monitoring systems, enabling faster and more accurate diagnosis, ultimately aiding healthcare professionals in better managing epilepsy.

Key Words: XGBoost, LSTM, Deep learning (DL), Machine learning (ML), Epileptic seizures, 1D CNN.

AI Revolution in Stroke Diagnosis: A Machine Learning Approach to Neuro Image-Based Detection

Shaik Hiba Aayesha, Paritala Swathi, Turaka Sushma, Dr. K. Sundeep Kumar

Department of Computer Science & Engineering (AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

hibaaayesha2312@gmail.com, paritalaswathi2003@gmail.com, turakasushma2003@gmail.com

sundeepkumarkk@gmail.com

Abstract

Cerebro vascular diseases, such as stroke, are leading causes of mortality and disability worldwide. Early detection plays a crucial role in improving clinical outcomes. This study proposes a machine learning-based stroke detection system integrating genetic algorithms and BiLSTM models to analyze CT brain images. Our system optimizes feature selection using genetic algorithms and employs deep learning models to classify stroke presence with high accuracy. This automated approach enhances early detection, accuracy, and medical decision-making, ultimately contributing to better patient outcomes. Traditional stroke detection relies on clinical assessments and medical imaging techniques like CT and MRI scans, which can be time-consuming and dependent on human expertise. To address these challenges, our model leverages artificial intelligence and deep learning algorithms to analyze neuro images with high precision and efficiency. The research evaluates multiple machine learning architectures, including Convolutional Neural Networks (CNNs), Support Vector Machines (SVMs), and Random Forest classifiers, comparing their performance against our proposed "BiLSTM-based model". The results indicate that our model achieves superior accuracy in detecting early-stage strokes, enabling timely intervention and revolutionizing stroke diagnosis for improved patient care.

Keywords: Stroke detection, Machine learning, BiLSTM, Genetic algorithm, Deep learning, Neuroimaging, Convolutional Neural Networks (CNNs), Support Vector Machines (SVMs), Random Forest classifiers.

Exploring E-Commerce Product Experience Based on Fusion Sentiment Analysis Method Chaining

Y. Swetcha , P. Bhavana, Dr. P. Babu

Department of Computer Science Engineering (AI & ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh, AP.

bhavanapalapathi@gmail.com,yswetchareddy@gmail.com,babup@gist.edu.in

Abstract

Now a day's with the rapid growth of e-commerce, online reviews have become a valuable resource for understanding consumer perceptions and improving products. However, extracting meaningful insights from vast amounts of unstructured text remains a challenge. To address this, we propose a fusion sentiment analysis method that combines textual analysis techniques with machine learning algorithms to mine product experiences from online reviews. Our approach begins with sentiment feature extraction using a dictionary-based method, followed by sentiment polarity classification using a Support Vector Machine (SVM). Additionally, we apply the Latent Dirichlet Allocation (LDA) model to identify key sentiment-based topics. To enhance accuracy, we expand the sentiment dictionary using semantic similarity techniques and introduce a weighting mechanism that accounts for the varying emotional impact of words—an aspect often overlooked in previous studies. This approach effectively captures emotional tendencies and identifies factors influencing user satisfaction. By providing a structured way to analyze consumer sentiments, this research offers valuable insights for businesses to refine their products and optimize marketing strategies. our method presents a practical solution for tracking customer preferences and improving the overall ecommerce experience.

Keywords: Sentiment analysis, Support vector machine, Linear Dirichlet Allocation

Smart Rainfall Forecasting: Leveraging Machine Learning for Improved Insights

V. Sai Rohith Chandra Singh, P. Bharath Kumar, CH. Vasu, Ms. Vudduru Bharathi

Department of Computer Science and Engineering (AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

vsrcs2004@gmail.com, bharathkumarpichuka@gmail.com, challavasu06@gmail.com, bharathi@gist.edu.in

Abstract

Rainfall prediction is vital for safety and awareness, addressing risks from scarce or extreme rain in rural and urban areas. This study uses machine learning to improve rainfall forecasting, tackling its complexity due to atmospheric, oceanic, and geographical influences. Methods include data preprocessing, outlier analysis, correlation analysis, feature selection, and algorithms like Naive Bayes, Decision Tree, Support Vector Machine, Random Forest, and Logistic Regression. The goal is to create an accurate rainfall prediction model using machine learning and feature selection. Artificial Neural Network (ANN) achieves 90% accuracy before feature selection and 91% after. K-means clustering and Principal Component Analysis (PCA) are used to analyze regional rainfall patterns in Australia. A Flask-based web application is developed to make the model user-friendly for the general public. The research highlights the effectiveness of machine learning techniques for rainfall prediction using Australian weather data.

Keywords: Rainfall Prediction, Naïve Bayes Classification, Support Vector Machine (SVM), Random Forest, Artificial Neural Network (ANN).

Intelligent Fabric Defect Detection Using Deep Learning and Real-Time Vision Systems Application

P Charmy, SK Vasiha Thapsum, SK, Md Sana Gousebee, P Sana Nawaz , U Satyanarayana

Department of CSE (Artificial Intelligence and Machine Learning),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

ponakacharmy@gmail.com ,shaikvasihathapsum15@gmail.com,sanagousebee9@gmail.com, sananawaz8176@gmail.com, satyanarayanau@gist.edu.in

Abstract

Fabric defect detection plays a vital role in quality control within the textile industry. Computer vision-based inspection has become a key technology for enabling intelligent manufacturing. This study reviews advancements in intelligent fabric defect detection, focusing on algorithms, datasets, and detection systems. Detection methods are categorized into traditional and learning-based approaches. Traditional methods include model-based, spectral, statistical, and structural techniques, while learning-based methods are divided into classical machine learning and deep learning techniques. The study compares deep learning models based on their principles, accuracy, real-time performance, and practical applicability. Additionally, it examines commonly used fabric defect datasets and deep learning frameworks, organizing public datasets and widely adopted models. To improve real-time defect detection, the YOLOV8 algorithm is utilized, offering high speed and accuracy in identifying irregularities. YOLO's efficiency in processing entire images in a single pass makes it well-suited for rapid textile inspection.

Keywords: Computer Vision Inspection, Deep Learning, Fabric Defect Detection, Machine Learning.

Performance Evaluation of Deep Learning Models Used For Remote Sense Image Classification

Philix Mahima, Thumma Nirmitha, Thummala Sushmitha, Yantrapati Dakshayani

Dr. P. Nagendra Kumar

Department of Computer Science Engineering (AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

Philixmahima175@gmail.com ,nirmitha.t04@gmail.com , sushmithanaidu2003@gmail.com , yantrapatidakshayani@gmail.com, nagendra@gist.edu.in

Abstract

Remote sensing is the technology used for extracting information about the earth surface with the help of sensors installed on the satellites. It is mainly used in the production of Land Cover and land use (LCLU) maps that helps to classify the land cover types like forests, urban areas, water bodies and more. The major problems that occur while analyzing the remote sensing images are atmospheric effects, geometric errors, weather conditions. These problems are essential for environmental monitoring, agricultural decision-making, and urban planning and can be overcome by using deep learning models. We proposed evaluating and comparing the deep learning models convolutional neural network feature extractor (CNN-FE) by developing it from scratch, transfer learning, and fine tuning it for the LCLU classification system using remote sensed images. We used UCM (University of california, merced)public dataset to train the deep learning models and compared their performances using the performance measurement metrics like accuracy, f1-score, and confusion matrix. The proposed deep learning algorithms can adapt and learn the features of the remote sensing images, and the TL and fine-tuning classification performances are significantly improved. As a result the fine tuning deep learning model achieved more accuracy in the UCM dataset.

Keywords: LCLU Classification System, Convolutional Neural Network Feature Extractor (CNN-FE), Transfer Learning, Fine-tuning, UCM(University of california, merced) public dataset.

Detection of Insurance Frauds Using Machine Learning on Class Imbalance Datasets with Missing Values

N. Mourya, P. Chandu, P. Chandhu, Y. Mahidhar, Mr. D. Ramesh,

Department of Computer Science & Engineering (AI&ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

neelapareddymourya@gmail.com , ponnuboinachandu@gmail.com

penumallichandhu@gmail.com , mahidharyadlapalli@gmail.com ramesh@gist.edu.in

Abstract

This project aims to develop machine learning-based methods for insurance fraud detection while addressing challenges posed by imbalanced datasets and missing values. The proposed approach leverages data pre-processing techniques, such as imputation and resampling, to handle missing values and class imbalance, ensuring robust model performance. Various supervised and ensemble learning techniques, including Random Forest, Gradient Boosting, and Deep Learning, are employed to enhance fraud detection accuracy. Feature selection and engineering strategies are integrated to improve model interpretability and efficiency. Performance is evaluated using precision, recall, F1-score, and AUC-ROC, demonstrating significant improvements in fraud detection rates while minimizing false positives. The results highlight the effectiveness of the proposed methodology in identifying fraudulent claims, making it suitable for real-world insurance fraud detection systems.

Keywords: Machine Learning, Fraud Detection, Imbalanced Data, Missing Values, Supervised Learning, Ensemble Methods, Random Forest, Gradient Boosting, and Deep Learning

Image Denoising Using Resofocus & Fragmentum Zoom Auto Encoders

Ulava Nandha Kishore, Valikala Subhash, Paturu Yaswanth Kumar, Pothula Harshith Sai,

Pathi Venkata Rajesh Srinivasa Kumar, Ms. B. Poojitha

Department of Computer Science and Engineering(AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

unkishore2003@gmail.com, subbu993.nlr@gmail.com ,paturuyaswanthkumar@gmail.com , buddusaiharshith@gmail.com, pathisrinivas07@gmail.com, poojitha@gist.edu.in

Abstract

Image denoising is the process of removing noise from images to make them clearer and more useful. Auto encoders, a type of Neural Network, are widely used for this task because they can learn to compress and reconstruct images effectively. Recent innovations in Auto Encoder architectures, such as adding attention mechanisms or multi-scale processing, have made denoising even better. These advancements help preserve important details while removing unwanted noise, making them useful in fields like Medical Imaging, Photography, and Satellite Imaging. This work explores how auto encoders can be improved to achieve high-quality image denoising in a simple and efficient way and here using the efficient algorithms like ResoFocus auto encoder and Fragmentum Zoom Architectures.

Keywords: Auto encoders, Data Reconstruction, Noise Reduction, Loss function, ResoFocus, Fragmentum Zoom

Deep Learning-Based Time Series Forecasting for Food Demand in Supply Chains

P. Phani, S. Aadhitya Reddy, Sk. Hyder Ali, P. Jagannath, Dr. P. Nagendra Kumar

Department of Computer Science & Engineering (AI&ML),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

officialphani.cse@gmail.com, seelamaadhityareddy@gmail.com , hyderalisk777@gmail.com , jagannathprudhviraj@gmail.com , nagendra@gist.edu.in

Abstract

The objective of this project is to develop a time series forecasting and modeling framework for predicting food demand in a supply chain, utilizing regressor analysis. Accurate demand forecasting is critical for optimizing food supply chain operations, minimizing waste, and ensuring adequate supply. This study applies advanced time series techniques, such as ARIMA, Exponential Smoothing, Random Forest, XG Boost, Long Short Term Memory (LSTM) and Bi Long Short Term Memory (Bi-LSTM) to predict future food demand based on historical data. Key features such as seasonal trends, promotional effects, and external factors (e.g., holidays, weather conditions) are incorporated into the model through regressors analysis. The project also compares the performance of different forecasting models and evaluates their accuracy through metrics such as Mean Absolute Error (MAE) and Root Mean Square Error (RMSE). The resulting model provides a data-driven approach for food supply chain managers to make informed decisions on inventory management, procurement, and distribution, ultimately improving efficiency and reducing costs in the food industry.

Keywords: Time Series Forecasting, Food Demand Prediction, Supply Chain Optimization, LSTM, BiLSTM, Deep Learning, Regressor Analysis, ARIMA

Signature Authentication Verification Using Siamese Network

Paidi Pranitha, Panga Chandana, Tanneru Venkata Kavitha Tejaswini, Venati Heshma,
Ms. V. Bharathi
Department of Computer Science and Engineering (AI&ML)
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh
pranithapaidi1404@gmail.com , chandanapanga591@gmail.com, t.kavitha8686@gmail.com,
heshmavenati4114@gmail.com,bharathi@gist.edu.in

Abstract

The Handwritten signature verification is a critical biometric technique for authenticating individuals based on their unique signing patterns. Traditional methods often struggle with the variability inherent in human signatures and the scarcity of labeled data for training robust models. To address these challenges, this study proposes a writer-independent offline signature verification system utilizing Siamese Neural Network (SNN) architecture. The SNN is designed to learn a similarity metric between pairs of signatures, effectively distinguishing between genuine and forged samples. By employing a one-shot learning approach, the system requires minimal labeled data, enhancing its practicality in real-world scenarios. Experimental results demonstrate that the proposed method achieves high verification accuracy, outperforming traditional techniques and showcasing the efficacy of SNNs in capturing the subtle nuances of individual signing behaviors.

Keywords: Deep Learning, Self-supervised learning, Computer Vision, Siamese Neural Networks.

Entity Recognition in Indian Legal Judgements

Syed Sohail, Rehan Shaik, Shaik Zaheer, Shaik Kaif, Dr. P. Babu

Department of CSE (Artificial Intelligence and Machine Learning)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

sohailnlr9502@gmail.com rehanshaik191141@gmail.com zaheersk0100@gmail.com

skr7apr@gmail.com babup@gist.edu.in

Abstract

For developing legal AI applications, it is essential to have access to judicial data and open-source foundational AI building blocks like Named Entity Recognition. Named Entity Recognition (NER) in Indian court judgments is a crucial task in legal text processing, enabling structured extraction of key entities such as case names, judges, laws, locations, and legal provisions. Due to the complex linguistic structure, domain-specific terminology, and varying formats of judicial documents, traditional NER models struggle to achieve high accuracy. This project aims to develop an advanced NER system tailored for Indian court judgments by leveraging machine learning and natural language processing (NLP) techniques. The system will be trained on annotated legal texts, utilizing deep learning architectures such as Transformer-based models (e.g., BERT, Legal-BERT) for improved entity recognition. Challenges such as entity ambiguity, multilingual content, and unstructured text formats will be addressed using domain adaptation and contextual embeddings. The resulting model is expected to enhance legal document analysis, aiding in information retrieval, case summarization, and legal research.

Keywords: Named Entity Recognition (NER), Indian Court Judgements, Natural Language Processing (NLP), Legal Text Analysis, Information Extraction, Machine Learning for Legal Applications

Analyzing Emotions from EEG Responses Elicited by Videos Using Machine Learning Techniques

Nandam Revanth, Nandimandalam Rakesh, Pamujula Geetheswar, Punamalli Ganesh,

Dr. P. Nagendra Kumar

Department of Computer Science Engineering (AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

nandamrevanth7071@gmail.com , raki9701460493@gmail.com ,punamalliganesh2@gmail.com , pamujulageetheswar@gmail.com

Abstract

Recent advancements in EEG-based emotion recognition have primarily relied on deep learning models, which, despite their accuracy, are resource-intensive and complex to implement. In this work, we propose a more efficient and lightweight approach to emotion classification using simpler machine learning techniques, K-Nearest Neighbors, Support Vector Machine, MLP-v1 (100, 50, Dropout=0.1), MLP-v2 (500, 300, Dropout=0.2) Experiments are conducted using two widely used EEG datasets: SEED and DEAP. The EEG signals from both datasets are segmented into 1-second epochs, and further decomposed into distinct brain rhythms. Feature extraction is performed in two ways directly from the segmented epochs and from the decomposed brain rhythms. Various feature combinations are evaluated using different classifiers.

Keywords: EEG-based Emotion Recognition, Deep Learning Models, Machine Learning techniques, Emotion Classification, SEED dataset, DEAP dataset, EEG signals, Brain Rhythms, Feature Extraction, Classifiers.

Legal Document Similarity Matching Based on Ensemble Learning

Pole Pavithra, Peyyala HariPriya, Suram Sathwika, Pasupuleti Divya, U SatyaNarayana

Department of CSE (Artificial Intelligence and Machine Learning),

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

pavithrapavi5840@gmail.com ,peyyalahariipriya321@gmail.com, sathureddy4@gmail.com ,

pasupuletidivya@gmail.com, satyanarayanau@gist.edu.in

Abstract

Artificial intelligence has significantly advanced legal document analysis, particularly in case similarity matching, which plays a crucial role in legal research, case retrieval, and decision-making. However, existing methods often fail to fully leverage both representation-based and interaction-based text matching, limiting their effectiveness in capturing the complex semantics of legal documents. To address this challenge, this paper proposes an ensemble learning-based approach that integrates multiple models to enhance legal document similarity prediction. The framework consists of two sub-networks: a similarity representation sub-network trained using contrastive learning to refine semantic similarity and a binary classification judgment sub-network that facilitates feature interaction between text pairs. By combining diverse optimization strategies, our approach effectively captures both lexical and contextual relationships in legal texts. Experimental evaluations on the CAIL2019-SCM dataset demonstrate that our method achieves an accuracy of 74.53%, outperforming existing approaches. This research provides a robust and scalable solution for legal document retrieval, contributing to the advancement of AI-driven legal analytics.

Keywords: Similarity document matching, ensemble learning, contrastive learning, binary classification.

Liver Disease Prediction Using Multilayer Perceptron Neural Network and Voting Classifier

Shaik Shamriya Banu,Vydyula Srilakshmi Harshitha Sana Susmitha ,Sandra Nikitha

Ms. V. Bharathi

Department of Computer Science and Engineering (Artificial Intelligence & Machine Learning)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

shaikshamriyabanu@gmail.com, lakshmiharshitha40@gmail.com, sanareddy2904@gmail.com

sandranikitha44@gmail.com, bharathi@gist.edu.in

Abstract

The liver is one of the most significant organs in the human body. In India around 38% of people are estimated to suffer from non-alcoholic fatty liver disease (NAFLD), nearly 35% of children in India also show signs of fatty liver. NAFLD is often asymptomatic in early stages but can progress to severe liver disease if left untreated. Here this study proposes an ensemble approach combining Multi-layer perceptron neural networks and voting classifiers for liver disease diagnosis. We can predict liver disease in a patient at early stage based on previously predicted values using data from patients with abnormal liver functions, which helps the doctors to make a diagnosis. Patient information is processed using different machine learning models, including Support Vector Machine, K-Nearest Neighbor, Hard Voting Classifier, and Deep Neural Network Multi-layer Perceptron. To find the best model, different evaluation methods are used, such as Confusion Matrix, Precision Score, Recall, Accuracy, Specificity, and F-score. The study analyzes data from 583 patients with liver disease and finds that the Hard Voting Classifier gives the best results. This prediction model is highly accurate and can help in diagnosing liver disease effectively.

Keywords: Feed forward Network, Perceptron algorithm, Support Vector Machine, Voting Classifier.

Intelligent Plant Disease Recognition and Classification Using AI Techniques

Shaik Sohel, Syed Sohail, Shaik Mohammad Juned, Syed Khadeer, Mr. Sk. Asiff

Department of CSE (Artificial Intelligence and Machine Learning)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

shaiksohel8688@gmail.com sohailahmed1752@gmail.com junedcsma7@gmail.com

khadeersyed551@gmail.com asiff@gist.edu.in

Abstract

Smart farming is transforming modern agriculture by integrating advanced technologies to address sustainability challenges and improve crop management. Machine learning and deep learning are at the forefront of this transformation, providing enhanced accuracy and efficiency in plant disease detection and classification. It explores the role of these technologies in identifying plant diseases, focusing on both disease classification and object detection methodologies. A novel classification framework is introduced to organize existing research into distinct categories. Key datasets for plant disease identification, such as the PlantDoc dataset, are also presented as essential resources for advancing future research and development in this field. The Machine Learning model is designed to classify plant images and detect diseased regions with high precision, utilizing state-of-the-art object detection algorithms. By leveraging these models, we aim to provide timely and accurate identification of plant diseases, enabling early interventions to reduce crop losses and improve overall farm productivity. The potential of AI-driven technologies in building a more sustainable and technologically advanced agricultural ecosystem, paving the way for widespread adoption of intelligent farming solutions

Key Words: Smart Farming, Machine Learning, Deep Learning, Plant Disease Detection, Object Detection, Computer Vision.

Hybrid Deep Learning System for Predicting Students Performance in Online Education

S. Rupasree, S. Aasritha, T. Suharika, P. Lakshmi Prasanna, Ms. P. Poojitha

Department of Computer Science & Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

rupasreesarvepalli@gmail.com ,aasrithaammu098@gmail.com, suharikatalluri@gmail.com ,

podamekalaprasanna9@gmail.com, poojitha@gis.edu.in@gmail.com

Abstract

Virtual learning has grown rapidly with the help of the internet and modern technology. Many students are taking online courses that allow them to study from anywhere in their own space. Virtual Learning Environments (VLEs) provide high-quality resources and flexibility, but they also have some problems. Many students struggle with staying engaged, managing their own learning, and completing their courses, leading to high dropout rates. Predicting which students are likely to fail can help teachers and schools provide better support and improve teaching methods. This study introduces a new Hybrid Deep Learning (HDL) model to predict student performance. It uses advanced AI techniques, including Enhanced Convolution Neural Networks (ECNN) and the ResNet model, to analyze student data.

Keywords: Butterfly Optimization, ECNN, ResNet.

An Enhanced Deep Sentiment Analysis Model Using a Decision-Based Recurrent Neural Network (D-RNN)

Kasukurthi Vincy Kumar, Palepu Yaswanth, Sada Hari Kamal, Kuthingal Chakri Charan

Mr. D. Ramesh

Department of Computer Science & Engineering (AI & ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

vincykumar@gmail.com , yaswanth2604@gmail.com

Sadakamal999@gmail.com , johnsonchakri8124@gmail.com, dramesh@gist.edu.in

Abstract

Sentiment analysis, a key area in opinion mining, focuses on extracting user sentiments from text-based opinions found on e-commerce platforms, blogs, social media, and other online sources. This paper introduces an advanced sentiment analysis model designed to enhance sentiment prediction accuracy, thereby improving product quality and sales. The proposed model integrates multiple techniques, including the pre-trained BERT-large-cased (BLC) model, which features 24 layers, 1024 hidden units, 16 attention heads, and 340 million parameters. To optimize the model, Stochastic Gradient Descent (SGD) is employed for fine-tuning, enabling effective sentiment analysis on specific datasets.. A novel Deep Sentiment Analysis (DSA) classification framework is introduced, combining Aspect and Priority-based Sentiment Analysis with a Decision-based Recurrent Neural Network (D-RNN) to achieve superior results. The model is evaluated using publicly available datasets from Twitter, Restaurant, and Laptop reviews on Kaggle, with performance assessed through a confusion matrix

Keywords: Sentiment Analysis, Opinion Mining, Natural Language Processing, BERT-Large-cased (BLC), Feature Extraction, Stochastic Gradient Descent(SGD), Tokenization, Stop Word Removal, Text Classification, Deep Sentiment Analysis, Machine Learning, Social Media Analysis, Reviews, Model Optimization.

Enhancing Image Captioning With Clip as A Prefix Model

M Medha, N Vishnu Vardhan, SK Idris Mohiddin, V Vishnu Vardhan

Department of Computer Science and Engineering (AI&ML)

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh.

medhagist@gmail.com ,vishnuvikkyygmail.com , skidrismohiddin6303@gmail.com , vishnuvardhan.vangipurapu@gmail.com

Abstract

Image captioning is a challenging task in generative AI that involves generating meaningful textual descriptions for given images. This project explores the use of CLIP (Contrastive Language-Image Pretraining) as a prefix model to enhance the performance of image captioning systems. Traditional image captioning models rely on CNNs for feature extraction, followed by sequence generation using transformer-based models like GPT or LSTMs. However, these models often struggle with generating contextually rich and diverse captions. Make this study; we demonstrate that integrating CLIP as a prefix encoder significantly improves caption diversity, coherence, and relevance, making it a promising direction for future AI-driven multimodal systems.

Keywords: Image Captioning, Generative AI, CLIP, Prefix Model, Feature Extraction, CNNs, Transformers, GPT, LSTMs, Caption Diversity, Coherence, Relevance, Multimodal Systems.

AI-Driven Glioma Classification and Prognosis: Integrating Machine Learning, Deep Learning, and Explainable AI

Poondla MadhaviLatha, Puduchari Nanrutha, Syed Asma, Ponnavolu Pavithra,

Mr. K. Chiranjeevi

Department of Computer Science & Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

syedasma239@gmail.com ,snanruthapuducheri2003@gmail.com,madhavilathapoondla2003@gmail.com , pavithrareddy0802@gmail.com,

Abstract

This study aims to create a reliable method for diagnosing glioma, a type of brain tumor, using machine learning (ML), deep learning (DL), and explainable AI (XAI). By analyzing medical records and genetic data, ML models can predict how patients respond to treatments. XAI ensures that AI decisions are understandable and trustworthy for doctors.We use ML techniques like XGBoost, Random Forest, SVM, and Decision Trees, along with DL models like ANN and CNN. To explain predictions, we apply SHAP, LIME, Eli5, and QLattice. The XGBoost model achieved 88% accuracy, with key factors like IDH1 mutation, age, and genetic markers (PIK3CA, ATRX, PTEN, EGFR, etc.) playing a major role. This approach helps doctors make better decisions, personalize treatments, and improve patient care.

Keywords: Brain Tumor Classification, Machine Learning (ML), Deep Learning (DL), Medical Data Analysis, Predictive Modeling, XGBoost, Neural Networks (ANN, CNN)

Block Chain-Based Secure and Transparent System for Online Exam Result Management

Palla Haritha, Thummala Lahari, Palicharla Hamsitha, Shaik Soofia Tarannum,

Mr. D V H Venu Kumar,

Department of Computer Science and Engineering

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

harithapalla7@gmail.com, laharithummala2004@gmail.com, palicharlahamsitha@gmail.com, Sk.soofi.18@gmail.com, venukumar@gist.edu.in

Abstract

The rise of online education during COVID-19 has created a need for a secure exam management system. This project utilizes blockchain technology to manage online exams and results, ensuring data integrity and preventing tampering through decentralized storage and cryptographic hashing. Smart contracts in Solidity enable secure transactions, reducing the risk of unauthorized data changes compared to traditional databases. However, the initial system lacks student authentication, leading to security risks. To address this issue, biometric authentication will be integrated to restrict access to registered students. Additionally, a lossless compression algorithm will be implemented to minimize blockchain storage costs. This approach enhances the security, efficiency, and trustworthiness of online exams, making them more reliable and cost-effective.

Keywords: Blockchain, Online Exam Management, Smart Contracts, Cryptographic Hashing, Decentralized Storage, Biometric Authentication, Data Integrity, Lossless Compression.

Blockchain - Based Decentralized Supply Chain Management for Enhanced Transparency and Efficiency

Shaik Masrath Sulthana, Vaddiboyina Sravani, Pallam Deepika, Nukala Vaishnavi, Mr. E. Chitti Babu,
Department of Computer Science and Engineering,
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh
masrathsultanask@gmail.com,sravani67768@gmail.com,crazybirds.dd@gmail.com,
nuukalavayshnavi@gmail.com,

Abstract

Supply chain as an industry has gone through four-fold changes in the last century. Born as a bare-bones structure in 1.0, it grew to incorporate some form of record preservation in 2.0 and then integrated communication between two entities in 3.0. Supply chain 4.0, the current one, has total global integration of multiple entities with records digitized. However, the increasing number of entities and pipelines leads to growing complexities, overhead, and vulnerabilities. The integration of blockchain technology into supply chain management enhances transparency, traceability, and security among various stakeholders. By replacing centralized servers with a decentralized ledger, the system effectively mitigates issues related to data tampering and unauthorized access. Blockchain's cryptographic features ensure that supply chain data is tamper- proof and accessible only to authorized users. Enhancements include a "SUPER ADMIN" module for comprehensive user management and location tracking to monitor products' journeys through all stages of the supply chain. Utilizing Ethereum blockchain and smart contracts implemented in Solidity facilitates efficient transaction management and interactions among supply chain participants, fostering a more robust and trustworthy environment.

Keywords: Supply Chain 4.0, Blockchain Technology, Transparency, Traceability, Smart Contracts, Decentralized Ledger, Unauthorized Access, Cryptographic Features, Data Tampering.

Trustworthy Data Sharing via Multi-Attribute Based Authentication Mechanism

Ponaka Kundana, Pappu Sowmya, Shaik Roshni, Shaik Sofia, Ms. Ch.Vasavi,

Department of Computer Science & Engineering,

Geethanjali Institute of Science &Technology, Kovur, Nellore, Andhra Pradesh

ponakakundana@gmail.com,pappusowmya19@gmail.com,roshnishaik271@gmail.com,

sofiyasimthiya@gmail.com,

Abstract

In today's digital world, governments need to share citizen data securely across different departments. Traditional systems rely on centralized storage and third-party authentication, which can be hacked or misused. To solve this, we use IPFS and Blockchain for decentralized and tamper- proof security. In this system, requesters encrypt their details using a private key and store them in IPFS, which then generates a hash code. This hash code is stored in Blockchain for verification. Data owners check this hash to confirm the requester's identity, ensuring data integrity. To improve efficiency, Elliptic Curve Cryptography (ECC) is used for encryption, while CHACHA20, a lightweight encryption method, reduces processing costs. Address proof uploads add extra security, and smart contracts in Solidity automate secure data management. This system eliminates third-party risks, prevents tampering, and ensures efficient government data sharing while keeping sensitive information safe.

Keywords: Secure Government Data Sharing, Blockchain, IPFS (Inter Planetary File System), Identity Authentication, Decentralized Storage, Elliptic Curve Cryptography (ECC), CHACHA20 Encryption, Smart Contracts, Tamper-Proof Integrity.

Edge Blockchain- Based Secure Data Sharing Scheme for IoT Environments

Tata Sri Sai Harshini, Thallapalem Navya Durga, Shaik Reehashad, Sriram Lakshmi Sri Modhini,

Ms. N. Sivanagamani,

Department of Computer Science & Engineering

GeethanjaliInstituteofScience&Technology,Kovur,Nellore,Andhra Pradesh

harshinitata25@gmail.comnavyadurga2006@gmail.comreehashads@gmail.com

srirammodhini@gmail.com

Abstract

This project introduces a secure and efficient way to share data between IoT devices, edge servers, and cloud servers using an Edge-Based Blockchain Secure Data Sharing Scheme (EB-SDSS). Traditional cloud-based systems often suffer from slow data transfer and security risks. To fix this, we use edge servers to process data closer to where it is generated, reducing delays. Blockchain technology ensures data integrity and prevents tampering through hash-based transactions. For security, AES encryption protects the data, while Local Sensitive Hashing (LSH) speeds up searching for stored IoT data. To verify devices and secure data sharing, we use a certificateless signature scheme and Shamir's secret sharing for better encryption key security.

Two improvements are added:

1. Elliptic Curve Cryptography (ECC) for stronger, more efficient encryption.
2. Cache memory to speed up searches and reduce unnecessary queries.

This approach makes IoT data sharing faster, safer, and more reliable, benefiting industries like smart cities, healthcare, and industrial automation.

Keywords: Edge Computing, Blockchain Technology, IoT Data Security, Local Sensitive Hashing (LSH), Elliptic Curve Cryptography (ECC), Secure Data Sharing.

CNN- Based Synthetic Image Detection Using Computer Vision and Explainable AI

Muthyala Sumanika, Sreeram Lakshmi Sai Jyoshna, Pakam Swapna, Thumati Prameela,

Ms. N. Divya Sruthi,

Department of Computer Science & Engineering,

GeethanjaliInstituteofScience&Technology,Kovur,Nellore, Andhra Pradesh

sumanika05@gmail.com,saijyoshna199@gmail.com,swapnapakam665@gmail.com,

prameelathumati123@gmail.com

Abstract

The aim of this project is to develop a deep learning-based classification system to distinguish between AI-generated and real images, addressing concerns related to digital authenticity and security.A Convolutional Neural Network (CNN) model is trained using the CIFAKE dataset, which includes real images from CIFAR-10 and their synthetic versions generated via Latent Diffusion Models (LDMs).Explainable AI (XAI) techniques, specifically Gradient-weighted Class Activation Mapping (Grad-CAM), are incorporated to highlight key regions influencing the model's classification decisions. The system's effectiveness is measured using standard classification metrics such as accuracy, precision, recall, F1-score, and a confusion matrix.The CNN model is further improved by integrating Global Average Pooling (GAP) and Dropout layers to enhance feature extraction and mitigate overfitting, leading to better classification performance.

Keywords: CIFAKE dataset, Latent Diffusion Models (LDMs), Explainable AI (XAI) techniques, Gradient-weighted Class Activation Mapping (Grad-CAM), Global Average Pooling (GAP), Dropout layers.

Enhanced Cardiovascular Disease Prediction Using Optimized Feature Selection and Machine Learning

Shaik Meer Shahana, V keerthi, Shaik Afreen, S Sreelatha, Ms. R. Deepthi

DepartmentofComputerScienceandEngineering,

GeethanjaliInstituteofScience&Technology,Kovur,Nellore,Andhra Pradesh

shahanashamisk@gmail.com,sshaikafreen4@gmail.com,keerthi251496@gmail.com,

ssrilatha391@gmail.com,

Abstract

Cardiovascular disease (CVD) is one of the main causes of death worldwide, leading to 19.1 million deaths in 2022. Detecting it early can help save lives. This study suggests using a machine learning system that selects the best features to improve accuracy in detecting CVD. ECG signals (heart activity data) are used to gather important information. Advanced techniques like Fast Correlation-Based Filter (FCBF), Minimum Redundancy Maximum Relevance (MRMR), and Relief, along with Particle Swarm Optimization (PSO), are used to choose the most useful features. Different machine learning models, including Logistic Regression, Random Forest, ExtraTree, and Gradient Boosting, are tested. A Voting Classifier combines these models to improve results. The system was tested on two datasets (HHDD and BRFSS), and the combined model achieved an impressive accuracy of 94%. This approach can improve the early detection of heart disease, allowing faster treatment and helping reduce deaths caused by CVD.

Keywords: Electrocardiography (ECG), FCBF, MrMr, PSO optimization, Extra Tree and Random Forest classifiers.

Suicidal ideation Detection and Social media using ML and Genetic Algorithms

V. Shalini, R. Pravallika, Sk. Sana Banu, M. Lakshmi Priya, Mr. SK. Rasool,

Department of Computer Science & Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

vangarashalini@gmail.com

Abstract

Suicide is a serious problem that affects modern societies all over the world, and its prevention is critical. Suicidal ideas are influenced by a variety of risk factors, such as depression, anxiety, hopelessness, and social isolation. Early detection of these risk factors can significantly reduce or prevent suicide attempts. Online platforms, particularly social media, have become a popular outlet for young people to express suicidal ideation. However, detecting and responding to such ideation effectively poses significant challenges in natural language processing (NLP) and psychology. The framework addresses these issues by extracting meaningful and context-related features from posts that capture contextual and semantic aspects. Furthermore, a genetic algorithm is used to select the most important and relevant features that are strongly associated with the target class while excluding those that are redundant or irrelevant. To evaluate the effectiveness of the proposed framework, the following machine learning classifiers were used to determine whether a post indicates suicidal ideation or not: Random Forest (RF), Naive Bayes (NB), gradient boost classification tree (GBDT), and XGBoost. The proposed framework's results outperformed previous research, demonstrating the framework's high efficiency. The best performance in our study was achieved using the Random Forest (RF) classifier, which was applied to the features selected by the Genetic Algorithm (GA) from the linguistic feature set. When evaluated using 5-fold cross-validation, this approach yielded an impressive accuracy rate of 98.92% and an F1-score of 98.92%. These outstanding performance metrics demonstrate the framework's effectiveness in accurately detecting suicidal ideation.

Keywords: Random Forest (RF), Naive Bayes (NB), gradient boost classification tree (GBDT), and XGBoost

Comparative Analysis of AI and Human – Generated Medical Responses

S. Pravalika, Sd. Sumeera, P.V. Sai Rishitha, Mr. A. Ramesh

Department of Computer Science & Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

pravalikasingamsetty193@gmail.com,syedsumeera92@gmail.com,rishithaperuri11@gmail.com,

Abstract

Patients trust healthcare providers for accurate diagnosis and treatment, but the increasing use of AI in medical consultations has raised concerns due to its reliance on large, accurate datasets. When data is insufficient, AI-generated responses can be flawed, risking patient safety. This study proposes MEDXNET, a deep learning-based tool that classifies whether a medical response is generated by a doctor or AI. MEDXNET combines BILSTM, transformers, and CNN1D to capture local and global dependencies in medical text, utilizing TFIDF for vectorization. The model is trained on a custom dataset (MEDIC) and compared with existing algorithms such as BILSTM, GRU, and LSTM. MEDXNET achieved 95% accuracy, outperforming BILSTM (91.78%) and GRU (91.16%). Additionally, an extended CNN2D model was implemented, reaching 96.78% accuracy, the highest among all tested algorithms. This tool allows patients to verify AI-generated medical responses and take appropriate steps, ensuring safer healthcare interactions.

Keywords: Artificial Intelligence(AI), Medical Consultations, Deep Learning, Patient Safety, MEDXNET, Machine Learning Algorithms(BILSTM,GRU,LSTM,CNN1D,CNN2D)

Optimized Crop Yield Forecasting Using Advanced Machine Learning Techniques

Padala Dushyanthi, Murari Bhargavi, Pudi Sai Ayeshwarya, Ms. K. SreeLakshmi,
Department of Computer Science and Engineering,
Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh
dushyanthipadala17@gmail.com, bhargavimurari@gmail.com, pudiayeshwarya@gmail.com,

Abstract

The agricultural industry is particularly susceptible to the detrimental impacts of climate change and excessive pesticide use, presenting a substantial threat to global food security. Precisely forecasting crop yields is crucial for alleviating these risks and supplying data on sustainable farming methods. This study introduces an innovative agricultural yield forecast system that employs a year's accumulation of meteorological data, pesticide records, crop yield statistics, and machine learning methodologies. We utilized stringent methodologies to collect, sanitize, and augment data, subsequently training and assessing three machine learning models: Gradient Boosting, K-Nearest Neighbors, and Multivariate Logistic Regression. We employed the GridSearchCV technique for hyperparameter optimization to ascertain the most appropriate hyperparameters during K-Fold cross- validation, with the objective of enhancing the model's performance while mitigating overfitting. The exceptional performance of the Gradient Boosting model, evidenced by an almost perfect coefficient of determination (R^2) of 99.99%, indicates its potential for accurate yield prediction. This study analyzed the relationship between forecasted and actual crop yields and determined the optimal weather conditions. It facilitates data-driven approaches in sustainable agriculture and resource allocation, ultimately resulting in enhanced food security and resistance to climate change.

Keywords: Climate Change, Pesticide Use, Crop Yield Prediction, Machine Learning, Gradient Boosting, KNN, Logistic Regression, GridSearchCV, Cross-Validation, Hyperparameter Optimization, Sustainable Agriculture, Food Security, Meteorological Data, Resource Allocation.

Enhanced Diabetes Prediction Using KNN Imputation and Tri-Ensemble Learning

B. Bhavani, T. Afsana Begum, K. Vyshnavi, M. Jaya Lakshmi, Ms. TeesaDavis,

Department of Computer Science and Engineering,

Geethanjali Institute of Science &Technology, Kovur, Nellore, Andhra Pradesh

bokkisambhavani095@gmail.com,afsana5b3.cse@gmail.com,karakavyshnavi4@gmail.com

manchikalapatijayalakshmi@gmail.com

Abstract

Diabetes is a chronic disease that affects millions of people worldwide. Early prediction and diagnosis are crucial for effective management and treatment. This study proposes a novel approach for enhancing diabetes prediction using KNN imputation and Tri-Ensemble learning. The proposed method first utilizes K-Nearest Neighbors (KNN) imputation to handle missing values in the dataset, improving data quality and reducing bias. Then, a Tri-Ensemble learning framework is employed, combining the predictions of three diverse machine learning algorithms: Random Forest, Support Vector Machine, and Gradient Boosting. Experimental results on a benchmark diabetes dataset demonstrate that the proposed approach significantly improves prediction accuracy, achieving a highest accuracy of 97.32% and an AUC-ROC of 0.984. The results also show that KNN imputation effectively handles missing values, while Tri-Ensemble learning leverages the strengths of individual algorithms to produce more accurate and robust predictions. This study contributes to the development of more accurate and reliable diabetes prediction models, which can aid clinicians in early diagnosis and effective management of the disease.

Keywords: Extra Tree, XGBoost, Support Vector Machine (SVM), and Naive Bayes., K-Fold Cross-Validation's, Extra Tree

Optimized Sleep Disorder Classification Using Machine Learning and Genetic Algorithm

Vasa Ramu, Palepu Kiran, Musunuru Sukumar, Vadlamudi Naveen, Udaya Sri Mahidhar,

Dr. R. Rajani,

Departmen tOf Computer Science and Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

ramuvasa13@gmail.com,palepukiran2002@gmail.com,msukumar396@gmail.com,naveennaiduv8@gmail.com,naniaff143@gmail.com,

Abstract

The categorisation of sleep disorders is essential for enhancing human quality of life. Sleep problems like apnoea may profoundly impact human health. Expert categorisation of sleep stages is a challenging endeavour and susceptible to human errorThis work presents an improved approach for the classification of sleep disorders and use the publically accessible Sleep Health and Lifestyle Dataset to assess the proposed model. The optimisations were performed with a genetic algorithm to adjust the settings of several machine learning techniques. A comparative assessment of the suggested approach relative to leading machine learning techniques for the classification of sleep disorders. The dataset has 400 rows and 13 columns, including many variables related to sleep and everyday activities. The k-nearest neighbours, support vector machine, decision tree, random forest, and artificial neural network (ANN) deep learning methods were evaluated. The experimental findings demonstrate substantial performance disparities across the assessed algorithms. The suggested methods achieved classification accuracies of 83.19%, 92.04%, 88.50%, 91.15%, and 92.92%, respectively. The ANN attained a peak classification accuracy of 92.92%, with precision, recall, and F1-score metrics on the testing data recorded at 92.01%, 93.80%, and 91.93%, respectively. The ANN algorithm demonstrated superior accuracy compared to the other algorithms examined

Keywords: Sleep disorders, machine learning, deep learning, classification, genetic algorithm, sleep apnoea, ANN, F1-score, Sleep Health and Lifestyle Dataset, k-nearest neighbours, support vector machine, decision tree, random forest.

Enhanced Fake News Detection Using Text Data Augmentation and Machine Learning

Thummalapenta Bhargav, Thupakula Chandu, Shaik Taju, Padavala Sreyanth, Sada vinay

Dr. N. Sai Sindhuri

Department of Computer Science and Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

bhargav51r12003@gmail.com, chanduthupakula001@gmail.com,

sktaju089@gmail.com,sreyanth5941@gmail.com,sadavinay22@gmail.com

Abstract

Corpora for training, since a bigger corpus enhances the understanding of semantic links. Nonetheless, a restricted corpus size may impact classification precision. The authors use text data augmentation approaches to enhance the categorisation of bogus news. Methods like Synonym Replacement (SR), Back Translation (BT), and Reduction of Function Words (FWD) are used, with the Word2Vec Skip- gram model transforming the enhanced text into numerical vectors. The classifiers used consist of Random Forest, Support Vector Machine (SVM), Logistic Regression, Bernoulli Naïve Bayes, and XGBoost. Experiments are performed on the WEL Fake News dataset. Among the methodologies, SVM and Naïve Bayes attained the maximum accuracy on BT- augmented text, Logistic Regression excelled with FWD, and Random Forest exhibited superior performance on original text. The maximum overall accuracy of 91% was attained using XGBoost with the original corpus. Performance criteria, including accuracy, precision, recall, and F1-score, were used to assess the algorithms, demonstrating that data augmentation strategies may substantially enhance classification performance in circumstances with little data.

Keywords: Corpora, Text Data Augmentation, Synonym Replacement (SR), Back Translation (BT), Function Word Reduction (FWD), Word2Vec Skip-gram

Deep Learning-Based Intelligent Proctoring for Online Exam Integrity

Tumburu Chandu, Shaik Masthan Basha, Vanamala Sandeep, Vidavaluru Ruthwik,

Mr. T. Sai Prasad Reddy

Department of Computer Science and Engineering,

Geethanjali Institute of Science &Technology, Kovur, Nellore, Andhra Pradesh

tumburuchandu@gmail.com, bashamasthan31@gmail.com,

sandeepvanamala@gmail.com,ruthwikrockz840@gmail.com,

Abstract

Online exams are becoming more popular in education and organizations due to their flexibility and cost-effectiveness. They are especially useful when in-person exams are not possible, such as during natural disasters or pandemics like COVID-19. However, online exams face challenges, including internet stability and the risk of cheating due to the lack of human supervision.This research focuses on detecting unusual behavior in online exams to prevent cheating. By analyzing video recordings, we identify four common cheating methods using motion-based frame extraction and deep learning algorithms. The study introduces various convolutional neural network (CNN) models to detect cheating by analyzing human movements in video frames. A custom dataset of cheating activities was created, and tests showed that the YOLOv5 model performed the best in identifying suspicious behavior compared to other models.

Keywords: Online Examinations, Cheating Detection, Academic Integrity, Deep Learning, YOLOv5, Convolutional Neural Networks, Video Analysis.

Enhanced Voice-Based Person Identification Using CRNN and Supervised Contrastive Learning

Pagadala Srikanth, Shaik Mansoor, Yella Jayakar, Nandimandalam Tarun,

Dr. Veguru Gayatri,

Department of Computer Science & Engineering,

Geethanjali Institute of Science &Technology, Kovur, Nellore,Andhra Pradesh

pagadala.srikanth2004@gmail.com,mansoorsk1180@gmail.com,jaykarjay100@gmail.com,

nandimandalamtarun@gmail.com,

Abstract

Person Identification (PID) is widely used in security, healthcare, and human-computer interaction. Traditional voice-based PID systems rely on speech, making them inaccessible to Nonspeaking and Minimal-speaking (NMS) individuals, who use nonverbal vocalizations for communication. This study explores NMS-PID, a system for identifying NMS individuals, and SNMSPID, an inclusive system for both speaking and non-speaking users. Using the ReCANVo dataset and a speech dataset, we evaluated multiple deep learning models, achieving 70%–92% accuracy. Our Convolutional Recurrent Neural Network (CRNN), trained with Supervised Contrastive Learning (SCL), performed on par with VGG16 and ResNet50. Mel-frequency cepstral coefficients (MFCCs) proved more effective than spectrograms for feature extraction. The S-NMS-PID system achieved over 90% accuracy with minimal misclassification. These findings highlight the potential of nonverbal vocalization-based PID for improving security, authentication, and accessibility in biometric systems.

Keywords: Person Identification (PID), Non-speaking and Minimal-speaking (NMS), S-NMS-PID, Deep Learning, Convolutional Recurrent Neural Network (CRNN), Supervised Contrastive Learning (SCL), ReCANVo dataset, Mel-frequency Cepstral Coefficients (MFCCs), Biometric Authentication, Accessibility, Security, Human-Computer Interaction.

Automated Detection of Asphalt Cracks Using Deep Learning and Optimization Techniques

N.Sukumar, P. Deepesh Kumar, R. Gunasekhar, N. Surya Prakash, Dr. Sundeep Kumar K,

Department of Computer Science and Engineering,

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

nannamsukumar001@gmail.com , pdeepesh2003@gmail.com , racharlagunasekhar@gmail.com,

Abstract

This study presents an automated system to help classify highway cracks caused by earthquakes into two categories: 'Major' and 'Minor.' This classification is crucial for prioritizing road repairs and ensuring faster recovery after a disaster. The system first uses a pre-trained deep learning model (VGG16) to extract important features from a dataset of 9,000 crack images. Then, a new feature selection method, called Combined Meta- heuristic Optimization-Relief (CMO-R), helps choose the most relevant features for accurate classification. Various machine learning models were tested, with the Medium Neural Network achieving 96.75% accuracy. The best results came from a Voting Classifier that combined multiple models, reaching 96.97% accuracy. This approach improves the accuracy of crack classification, helping authorities make quicker and better- informed repair decisions.

Keywords: Deep Learning, VGG16, Feature Extraction, Feature Selection, Combined Meta-heuristic Optimization-Relief (CMO-R), Machine Learning Models, Medium Neural Network, Voting Classifier.

Enhanced Classification of Dark Web Services Using LDA-Text CNN and Hybrid Deep Learning Models

S. G. B. Sanath Kumar, V. Sasidhar, S. Vishnu, R. Sravan Kumar, Mr. K. Chiranjeevi,

Department Of Computer Science and Engineering

Geethanjali Institute Of Science and Technology, Kour, Nellore, Andhra Pradesh

sriramsanath002@gmail.com,seelavishnu51@gmail.com,Kumarsravan6584@gmail.com

sasih2415@gmail.com,

Abstract

The Dark Web is a hidden part of the internet that allows users to stay anonymous, making it a hotspot for illegal activities and cyber threats. Tracking users is challenging and requires advanced security measures. This project uses deep learning to detect and predict threats in Dark Web services. By analyzing frequently co-occurring words, we improve prediction accuracy while overcoming TF-IDF limitations. We collect and preprocess data from a Kaggle dataset and apply Latent Dirichlet Allocation (LDA) for topic extraction. These topic weights train a Text CNN model, achieving 95% accuracy in classifying Dark Web services. To enhance performance, we develop a hybrid model combining Text CNN and CNN2D, improving accuracy to 96%. Comparisons with KNN and Random Forest validate our approach. The results demonstrate deep learning's effectiveness in detecting and classifying Dark Web threats. Our method enhances cybersecurity, showcasing AI's potential in security applications and its future use in real-time threat monitoring.

Keywords: Dark Web, Cybersecurity, Cyber threats, Threat detection, Machine learning, Text CNN, Hybrid model, Real-time monitoring

Comparative Analysis of SOC Estimation Techniques for Lithium-Ion Batteries

Machavaram Kalyan Kumar, Vibhuthi Subrahmanya Rakshith, Kannemarakala Vishnu vardhan, Lutukurthi Kiran, Dr. Sundeep Kumar K

Department of Computer Science and Engineering

Geethanjali Institute of Science & Technology, Kovur, Nellore, Andhra Pradesh

Kalyankumar58349@gmail.com,v.s.rakshith2131@gmail.com,luckyroyals012@gmail.com, kiranae012@gmail.com

Abstract

This study explores deep learning (DL) techniques for accurately predicting the state of charge (SOC) in lithium-ion batteries, a crucial factor for electric vehicle performance and safety. Traditional hyperparameter tuning methods, such as manual selection, grid search, and random search, often lead to inefficiencies and lower precision. To address this, the research proposes an automated Bayesian optimization approach for hyperparameter selection. Additionally, it incorporates average voltage and current as key input features alongside battery metrics (current, voltage, and temperature) to enhance SOC prediction. The proposed models—LSTM, GRU, and Bi-LSTM—are evaluated across four datasets with varying temperatures (-10°C, 0°C, 10°C, and 25°C). Results show that all three models achieve an SOC prediction error below 2%, with Bi-LSTM (70 hidden neurons) offering the highest accuracy. This methodology improves battery management system reliability across different environmental conditions.

Keywords: State of Charge (SOC) Prediction Deep Learning (DL), Bayesian Optimization, LSTM, GRU, Bi-LSTM, Battery Management System (BMS)

CONFERENCE PROCEEDINGS

International Conference on Latest Trends in Electronics Communication and AI Technologies (ICLTECAT - 2025)

978-93-6285-019-5