DEPARTMENT OF CSM

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ADITYA

Institute of Technology and Management

(An autonomous institution)

Tekkali-532 201, Srikakulam Dist., AP
Tel: 0845-245666, 245266, 92466 57908
Email: info@adityatekkali.edu.in

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ADITYA

Institute of Technology and Management

(An autonomous institution)

Department of CSM

Vision and Mission of the Institute

Vision

To evolve into a premier engineering institute in the country by continuously enhancing the range of our competencies, expanding the gamut of our activities and extending the frontiers of our operations.

Mission

Synergizing knowledge, technology and human resource, we impart the best quality education in Technology and Management. In the process, we make education more objective so that efficiency for employability increases on a continued basis.

Vision and Mission of the Department

Vision

To develop competent and socially responsible engineers in the domain of ArtificialIntelligence & Machine Learning, Data Science for noteworthy contributions to the society.

Mission

M1. To educate the students in fundamental principles of computing and develop the skills needed to solve practical problems using contemporary computer-based technologies.
M2. To provide State-of-the-art computing laboratory facilities to promote industry-institute interaction to enhance student's practical knowledge.
M3. To inculcate self-learning abilities, team spirit, and professional ethics among the students to serve society.

Chairman's Message



At AITAM, we are committed to excellence in everything we do. We strive to mould the students in balancing intellectual and practical skills to become leaders in all the fields of Technical know-how and Management. We have created the finest facilities for the students to make the most of their scholastic pursuits. We are closely aligned with the corporate world which ensures exchange of ideas and experiences that keep our curricula focused on current developments and challenges in the field of engineering. We are firmly committed to research and consulting activities to contribute to the development of the discipline of engineering. Our vitality lies in our spirit of innovation. Our strength lies in our pragmatic approach. Our success lies in our will to do.

Dr. K. Someswara Rao
CHAIRMAN

Secretary's Message



Aditya Institute of Technology and Management is founded to meet the increasing demand for competent engineering graduates. Within a short span of its inception, AITAM has grown to be a premier engineering college of its kind and has won laurels and kudos from the industry. The faculty and staff in AITAM are dedicated to providing first-class education that instills strong and potent basic knowledge for sound practice in science and engineering for the well-being of the society. The Institute offers curricula that nurtures creative thinking and prepares students for productive and rewarding careers. The Institute offers programmes that deepen learning experiences of our students and prepare them for successful careers as engineers.

Sri L.L. Naidu
SECRETARY

Director's Message



Engineering education at AITAM is indeed a rewarding intellectual experience. The Institute prepares the engineering professionals of tomorrow imbued with insight, imagination and ingenuity to flourish as successful engineers. Our programs are attuned to the needs of the changing times. The classrooms are ultra-modern; the library and labs are cutting-edge; and all the members of the faculty are workaholic professionals and masters in their fields. Not surprisingly, our students are recruited by such renowned organizations as HCL, Satyam, WIPRO, INFOSYS, TCS, Visual Soft, Innova-Solutions and InfoTech. The exceptional dedication of our students, faculty and staff, and our collaborations with Industry and other institutions ensure that the Institute is well-poised to create a unique niche in the horizons of engineering education.

Prof. V.V. Nageswara Rao
DIRECTOR

Principal's Message



It is only through knowledge that man attains immortality. Knowledge has to expand or grow to remain as knowledge. The road to excellence is toughest, roughest and steepest in the Universe. The world requires and honors only excellence. Available information has to be directed by wisdom and intelligence to create new knowledge. Promotion of creativity is the new role of education. It is only through creative thinking that the present and future problems can be addressed to find dynamic solutions. Technology should be used to help remove poverty from the world. In fact forty per cent of the world's poor are in India. Confidence leads to capacity. It is faith in oneself that produces miracles. Education at AITAM helps build character, strengthen the mind, expand the intellect and establish a culture of looking at problems in a new perspective. The student is put through rigorous training so that he can stand on his own feet after leaving the portals of the Institute.

Dr.A.S.Srinivasarao
PRINCIPAL

HOD's Message



The Department of **CSM** strongly committed to impart innovative and quality technical education with high standards. The field of Artificial Intelligence & Machine Learning is a diverse field which has a significant role in the development of cutting edge technology. The faculty of the department is committed to prepare our students by providing the expertise and proficiency in Artificial Intelligence and its related fields needed to thrive in modern society. ML has become a fundamental tool for augmenting the human knowledge, which is an essential part of creation, discovery and innovation. The main goal of the Department is to provide experimental learning opportunities such as hands-on training, project-based courses, research projects and internships which provide a solid foundation to work in interdisciplinary teams that invent the future. The curriculum at the Department of AI&ML at is meticulously planned and continuously updated in way to incorporate the various demands of the IT industry trends. An exposure to real world problems in this era of technology is a must and the every candidate is provided with the right environment to shape into a confident individual having the necessary skill set to fit in any role at the industrial market.

Dr.M.V.B ChandraSekhar

HOD of CSM Department

B.TECH PROJECTS ABSTRACTS

S.NO	Regd No	Student Names	Title
1	21A51A4203	Asi Deepthi	HEALTHCARE: A MEDICAL DIAGNOSTIC SOLUTION
2	21A51A4212	Marpu Rashmitha	
3	21A51A4246	Pirigadi SaiNeelima	
4	21A51A4231	Mallareddy Pavan	

ABSTRACT

Recent advancements in deep learning have led to the development of new solutions for different fields such as health. Deep learning in health is employed to improve disease detection and diagnosis. HealthCare shows how AI can be utilized in an integrated medical solution, which can identify multiple diseases accurately. HealthCare uses deep learning to identify seven critical conditions: Covid-19, Brain Tumor, Breast Cancer, Alzheimer's, Diabetes, Pneumonia, and heart disease. HealthCare employs various machine learning models adapted to each type of disease, for example, CNNs for image processing and Random Forests for numerical evaluation. For example, in the project, a custom architecture of CNN is used for detection of Covid-19 and Pneumonia Brain Tumor detection, and Random Forest for Heart Disease detection. These models have also achieved great accuracy. HealthCare has an added advantage that it can provide instant test results directly to users at home, reducing the need for in-person consultations and facilitating early detection and treatment. This feature is crucial for timely medical intervention, potentially improving patient outcomes. HealthCare aims to enhance model accuracy by incorporating larger datasets and expanding its diagnostic capabilities. Future enhancements will also include personalized care recommendations and comprehensive record-keeping features to facilitate users in efficient management of health. For this, the requirements are in Open CV, Tensor Flow, scikit-learn, Flask. That would be needed for the process to be efficiently implemented. With integration of several single disease detection functionality into one solution, HealthCare is truly a milestone with AI-powered solutions in healthcare domain. This has displayed the possibility of deep learning in changing medical

diagnostics by providing a holistic and user-friendly approach to health management. The platform enables users to upload medical images or enter relevant health data, which is processed and analyzed to provide a detailed diagnostic report. The system categorizes results into risk levels—low, moderate, or high—and offers actionable insights to users and healthcare professionals. The implementation utilizes Flask as a web-based interface, ensuring ease of use and accessibility. HealthCare stands out for its comprehensive disease detection, real-time diagnostics, and user-friendly design, making healthcare more accessible and efficient. Future enhancements include chat bot integration, personalized health recommendations, and expanded disease coverage, further improving early detection and patient care outcomes

.Keywords: Early Detection, Covid-19 Diagnosis, Brain Tumor Detection, Breast Cancer Prediction, Alzheimer's Diagnosis, Diabetes Detection, Pneumonia Diagnosis, Heart Disease Prediction

S.NO	Regd No	Student Names	**Title**
1	21A51A4240	Tangudu Srinidhi	Culprit-Catcher: Decoding Intrusions with Predictive Intelligence
2	21A51A4266	Daram Manichadu	
3	21A51A4216	Andaluri Sujan	
4	21A51A4260	Vennela Ravi Teja	

ABSTRACT

Security is a fundamental concern in modern society, necessitating advanced solutions to counter threats such as unauthorized access, intrusions, and criminal activities. Traditional security systems, including CCTV surveillance, motion sensors, and biometric access controls, have notable limitations. These include high dependency on human monitoring, frequent false alarms, delayed responses, and a lack of system integration. CCTV cameras, in particular, provide only passive surveillance, failing to actively prevent crimes. Even when monitored by security personnel, response times may be slow, leading to significant losses. Given these challenges, there is a pressing need for an AI-powered security solution that ensures real-time threat detection and automated response mechanisms. This study presents the Culprit-Catcher System, an AI-driven smart security framework that ntegrates real-time motion detection, facial recognition, and automated alert mechanisms to enhance surveillance accuracy and efficiency. The system leverages deep learning algorithms, computer vision techniques, and predictive analytics to provide a proactive and intelligent security solution. Specifically, it employs the YOLO (You Only Look

Once) algorithm for motion detection, effectively distinguishing between genuine threats and environmental disturbances. Additionally, FaceNet-based facial recognition ensures precise identification of individuals. Automated alert mechanisms send real-time notifications via WhatsApp, SMS, or email, enabling swift action in case of a security breach. Furthermore, the system incorporates machine learning algorithms to continuously refine its detection capabilities, reducing false positives and improving accuracy over time. Performance evaluation demonstrates the system's reliability, with classification accuracy exceeding 90%. Precision-recall metrics consistently remain above 0.91, while the Area Under the Curve (AUC) reaches 0.94 on the ROC curve, indicating high detection accuracy. The model also minimizes misclassification errors, achieving 92% correctness in all outcomes—meeting the accuracy standards expected by law enforcement agencies.By integrating AI-driven security technologies, the Culprit-Catcher System provides a highly efficient, real-time threat detection and response mechanism that overcomes the limitations of conventional security solutions. This study contributes to the advancement of modern surveillance by demonstrating the effectiveness of AI-powered security frameworks in delivering automated, adaptive, and intelligent monitoring. The findings underscore the potential of machine learning, deep learning, and automation to revolutionize security infrastructure, making surveillance systems more effective and proactive in mitigating threats.

Keywords: Motion detection, Face Recognition, AlertSystems, YOLO algorithm

S.NO	Regd No	Student Names	**Title**
1	21A51A4202	UPPALAPATI SAI KRISHNA VARMA	Footfall count and customer insight for retail stores

ABSTRACT

Accurate footfall analysis is essential for retail businesses to optimize operations, understand customer behavior, and make informed decisions. Traditional methods, such as manual counting and sensor-based systems, are often prone to inaccuracies and limited scalability. This project explores the use of computer vision technology to provide automated, precise, and scalable footfall analysis Leveraging deep learning models like YOLO (You Only Look Once) and Faster R-CNN, combined with tracking algorithms such as Kalman filters and optical flow, the system delivers real-time person detection, tracking, and crowd

density estimation from surveillance video feeds. Key insights, including peak hours, store zone heat maps, and customer dwell times, enable retailers to enhance staffing, optimize store layouts, and refine marketing strategies. The system ensures privacy by anonymizing data and avoiding facial recognition, focusing solely on movement and footfall patterns. By utilizing existing infrastructure, it offers a cost-effective and scalable solution suitable for diverse retail environments. This approach demonstrates the potential of computer vision to revolutionize retail analytics, providing actionable insights and improving operational efficiency while maintaining non-intrusive practices. The proposed system represents a significant advancement in how retailers can leverage technology to enhance customer satisfaction and drive business success.Keywords: Retail Analytics, Footfall Counting, Customer Tracking, YOLOv11 DeepSORT, Computer Vision, AI in Retail, People Detection, Heatmap Analysis, Dwell Time Measurement, Store Optimization, Queue Management, Business Intelligence, Smart Retail, Video Analytics, Object Detection, Multi-Object Tracking, Customer Behavior Analysis

S.NO	Regd No	Student Names	**Title**
1	21A51A4201	Anga Kishor	Intelligent Nutrient Optimization System
2	21A51A4227	Panuku Sairam	
3	21A51A4211	Chodi Sai Kishore	

ABSTRACT

Security is a fundamental concern in modern society, necessitating advanced solutions to counter threats such as unauthorized access, intrusions, and criminal activities. Traditional security systems, including CCTV surveillance, motion sensors, and biometric access controls, have notable limitations. These include high dependency on human monitoring, frequent false alarms,delayed responses, and a lack of system integration. CCTV cameras, in particular, provide only passive surveillance, failing to actively prevent crimes. Even when monitored by security personnel, response times may be slow, leading to significant losses. Given these challenges, there is a pressing need for an AI-powered security solution that ensures real-time threat detection and automated response Mechanisms. This study presents the Culprit-Catcher System, an AI-driven smart security framework that integrates real-time motion detection, facial recognition, and automated alert mechanisms to enhance surveillance accuracy and efficiency. The

system leverages deep learning algorithms, computer vision techniques, and predictive analytics to provide a proactive and intelligent security solution. Specifically, it employs the YOLO (You Only Look Once) algorithm for motion detection, effectively distinguishing between genuine threats and environmental disturbances. Additionally, FaceNet-based facial recognition ensures precise identification of individuals. Automated alert mechanisms send real-time notifications via WhatsApp, SMS, or email, enabling swift action in case of a security breach. Furthermore, the system incorporates machine learning algorithms to continuously refine its detection capabilities, reducing false positives and improving accuracy over time. Performance evaluation demonstrates the system's reliability, with classification accuracy exceeding 90%. Precision-recall metrics consistently remain above 0.91, while the Area Under the Curve (AUC) reaches 0.94 on the ROC curve, indicating high detection accuracy. The model also minimizes misclassification errors, achieving 92% correctness in all outcomes—meeting the accuracy standards expected by law enforcement agencies.By integrating AI-driven security technologies, the Culprit-Catcher System provides a highlyefficient, real-time threat detection and response mechanism that overcomes the limitations of conventional security solutions. This study contributes to the advancement of modern surveillance by demonstrating the effectiveness of AI-powered security frameworks in delivering automated, adaptive, and intelligent monitoring. The findings underscore the potential of machine learning, deep learning, and automation to revolutionize security infrastructure, making surveillance systems more effective and proactive in mitigating threats.

Keywords: Motion detection, Face Recognition, AlertSystems, YOLO algorithm.

S.NO	Regd No	Student Names	**Title**
1	21A51A4209	Savirigana inusha	Enhanced health care system with chatbot and voice assistant using deep learning
2	21A51A4235	konkena niteesh Kumar	
3	21A51A4249	reshi pulla	
4	22A55A4204	Ankadala Mahesh babu	

ABSTRACT

Access to reliable healthcare information remains a challenge for many, particularly seniors and individuals who face difficulties with reading or language barriers. Limited accessibility to medical advice can lead to delayed diagnosis, misinterpretation of symptoms, and inadequate self-care. To address this issue, we propose the development of an AI-powered medical chatbot designed to provide users with seamless and inclusive healthcare assistance. The chatbot will allow users to share their symptoms through both text and voice inputs, making it especially beneficial for individuals who struggle with typing or reading. By leveraging advanced Natural Language Processing (NLP) and Deep Learning (DL) algorithms, the chatbot will analyze user inputs and provide accurate, contextually relevant medical guidance. Users will receive tailored advice, including symptom interpretations, suggested precautions, dietary recommendations, and general health tips.One of the standout features of this chatbot is its voice interaction capability, powered by cutting-edge speech recognition technology. This ensures a smooth and accessible experience for those who prefer spoken communication. Additionally, the chatbot will support multiple languages and dialects, allowing people from diverse backgrounds to access healthcare information in their native language. A key aspect of the chatbot's functionality is its self- learning capability. By continuously analyzing interactions and updates in medical research, the chatbot will enhance its knowledge base, improving the accuracy and reliability of the information it provides. This adaptive learning mechanism ensures that users receive up-to-date guidance on diseases, treatments, and healthcare developments. By integrating AI-driven technologies with a user-centered approach, this chatbot aims to bridge the gap in healthcare accessibility. It is designed to empower individuals by providing inclusive, easily understandable, and reliable medical assistance. This innovation represents a significant advancement in improving public health outcomes and addressing longstanding barriers to quality healthcare services.

Keywords: Natural language Processing(NLP), Deep Learning (DL) , speech recognition technology.

S.NO	Regd No	Student Names	**Title**
1	21A51A4207	Killamsetty Gangotri	REAL-TIME GESTURE AND VOICE CONTROL SYSTEM FOR DEVICE INTERACTION
2	21A51A4254	Baratam Venkata Manoj	
3	21A51A4253	Busi Akanksha	
4	21A51A4247	Guttu GeethPramodh	

ABSTRACT

The project Human Computer Interaction (HCI) explores the integration of voice commands and hand gestures for system control. It will Design, implement, and assess an integrated HCI system that seamlessly combines voice and gesture interactions for tasks such as volume adjustment, window manipulation, and navigation using natural language commands and predefined gestures. The system effectiveness and user satisfaction through rigorous testing and usability assessments. Applications in gaming, healthcare and education will be explored,enhancing user-technology interaction with skills in speech recognition and gesture-based interfaces.This project focuses on designing, implementing, and evaluating an integrated HCI system that seamlessly combines voice and gesture-based interactions. The system will support various functionalities such as volume adjustment, window manipulation, and navigation using natural language commands and predefined gestures. To ensure efficiency and usability, the system will undergo rigorous testing and usability assessments, measuring its effectiveness in facilitating seamless interaction between users and technology. The project will explore how well users can adapt to and benefit from the integration of speech recognition and gesture-based controls,addressing potential challenges in accuracy, responsiveness, and user satisfaction. Furthermore, the project will investigate real-world applications in domains such as gaming, healthcare, and education, where enhanced user interaction can significantly improve accessibility and efficiency. By merging speech recognition with gesture-based interfaces, the system aims to advance human-computer interaction, making technology more accessible and user-friendly for diverse applications.

Keywords: Gesture Recognition, Voice Commands, Real-Time Processing, Multimodal Interaction, Human-Computer Interaction (HCI), Speech Recognition, Natural Language Processing (NLP), Computer Vision, Hand Tracking, Feature Extraction

S.NO	Regd No	Student Names	**Title**
1	21A51A4244	BALAKA RAMJEE	Advanced Re-Sampling Techniques for Multi-Class Imbalanced Classification
2	21A51A4264	LANDA NARESH	
3	21A51A4237	PASALA MAHESH	
4	21A51A4222	KINTHADA JAYARAMU	

ABSTRACT

Imbalanced classification is a common problem in machine learning, where one class significantly outnumbers the others. This imbalance leads to biased model performance, where the classifier favors the majority class, resulting in poor detection of the minority class. Traditional machine learning algorithms assume a balanced distribution, making them ineffective in such scenarios. Various techniques, including resampling methods (such as oversampling and under sampling),cost-sensitive learning, and synthetic data generation, have been proposed to address this challenge. Effective handling of imbalanced data is crucial in applications like fraud detection, medicaldiagnosis, and anomaly detection, where minority class predictions hold high significance. This study explores different approaches to mitigate class imbalance and improve classification performance, ensuring better generalization and robustness in real-world scenarios.

Keywords: Imbalanced Classification, Class Imbalance, Machine Learning, Resampling Techniques, Oversampling, Undersampling, Minority Class Detection, Fraud Detection, Medical Diagnosi

S.NO	Regd No	Student Names	**Title**
1	21A51A4204	BALIVADA VENKATA SHARMILA	SafePath: Empowering the visually Impaired with voice-Based Navigation
2	21A51A4242	JAMI PRAVALLIKA	
3	21A51A4256	DATTI DEEPAK	
4	21A51A4229	AKELLA V.L SRIKAR	

ABSTRACT

The " SafePath: Empowering the Visually Impaired with Voice-Based Navigation " is an advanced assistive system designed to enhance the mobility, safety, and independence of visually impaired individuals. The system integrates computer vision, artificial intelligence, and real-time speech synthesis to provide continuous situational awareness. By leveraging a webcam and the YOLOv8 (You Only Look Once) deep learning model, the application accurately detects and classifies objects in the user's surroundings, such as people, obstacles, and vehicles. The system determines the relative position of detected objects (left, right, or front) and provides immediate voice feedback using the pyttsx3 library, allowing users to make informed navigation decisions. To further enhance usability, the system incorporates an overcrowding detection feature that enables users to set a customizable threshold for the number of people detected in a given space. If the number of detected individuals exceeds this threshold, the system issues a warning, alerting users to avoid potentially congested areas. This functionality is particularly beneficial in crowded public spaces, where navigating safely can be challenging. The user interface is developed using Tkinter, a lightweight and accessible GUI framework, allowing users to start and stop the real-time camera feed, adjust overcrowding settings, and receive visual indicators of detected objects. The system operates in real time with continuous updates, ensuring immediate and accurate feedback. This innovative navigation aid is a step toward creating more inclusive and accessible environments for visually impaired individuals. Future enhancements could include sensor fusion with ultrasonic or LiDAR technology, mobile app integration, and context-aware object recognition for improved accuracy in diverse environments. By combining deep learning-based object detection with real-time auditory feedback, the proposed system empowers visually impaired individuals with a greater sense of autonomy, confidence, and safety in their daily lives

Keywords: Object Detection, Real-Time, Voice Feedback, Visually Impaired, Overcrowding Detection, Tkinter, Navigation Aid, Assistive Technology, YOLO Algorithm, Computer Vision Visually Impaired Aid, Real-Time Processing, Navigation Assistance

S.NO	Regd No	Student Names	**Title**
1	21A51A4208	Ithireddy Vigneswari	LearnSphere: A Digital Learning And Sociohub
2	21A51A4226	K.Harini Ratna	
3	21A51A4232	Varanasi Ritish	
4	21A51A4228	Boyina Bharat	

ABSTRACT

The "LearnSphere: A Digital Learning And Sociohub" is designed to support public school students who often face challenges in accessing quality educational resources. By addressing disparities in resource availability, the platform ensures equal learning opportunities by covering a wide range of subjects aligned with public school curricula. With a strong focus on affordability and accessibility, LearnSphere prioritizes students from lower financial backgrounds by offering free academic assistance through AI-powered doubt resolution,assessments, and assignment support. This comprehensive approach helps students build confidence and succeed academically by strengthening their understanding of key concepts. A key feature of the platform is its AI-driven doubt clarification system, which uses advanced natural language processing (NLP) and deep learning models like BERT(Bidirectional Encoder Representations from Transformers) to provide instant and accurate responses to student queries.By identifying relevant topics and offering clear, context-aware explanations, the system ensures timely academic support to reduce confusion and enhancing learning. The platform's user-friendly interface, built using React.js, Node.js, Express.js, and MongoDB, enables seamless navigation, real-time query resolution, and progress tracking. Through an engaging and interactive learning environment, Learn Sphere empowers students and educators alike by fostering an inclusive and supportive educational experience.Keywords: Digital Learning, Educational Equity, AI-Powered Academic Support, Natural Language Processing (NLP), Deep Learning, BERT Model, Real-time Doubt Resolution,Affordable Education, Personalized Learning, Student Progress Tracking, Inclusive Education,Interactive Learning Platform, Public School Education, Assignment and Assessment Support.

S.NO	Regd No	Student Names	**Title**
1	21A51A4215	Chelluru Anusri	Virtual Driving by Hand Gestures Using Open CV and ML
2	21A51A4213	Hanumanthu Harika	
3	21A51A4233	Mohit Kumar panigrahi	
4	21A51A4262	Jamana Rohith	

ABSTRACT

This project focuses on the development of a virtual driving system controlled by hand gestures, utilizing OpenCV and machine learning. The primary objective is to create an intuitive and hands-free method for controlling vehicle movements such as steering,acceleration, and braking. The system captures real-time hand movements through a camera and processes them using MediaPipe, which extracts hand landmarks for gesture recognition.A Random Forest classifier is trained on collected gesture data to accurately predict user inputs and translate them into orresponding in-game driving commands. The implementation ensures robustness by incorporating calibration techniques to adjust for variations in lighting,camera angles, and hand positioning. This approach enhances accessibility by eliminating the need for traditional physical controllers,making it particularly useful for gaming, driving simulations, and assistive technology applications. The system provides an immersive and engaging user experience, demonstrating the potential of computer vision and machine learning in interactive virtual control systems.

Keywords: Hand Gesture Recognition, Virtual Driving, OpenCV, Machine Learning,MediaPipe, Random Forest, Steering Control, Computer Vision, Assistive Technology, DrinSimulation

S.NO	Regd No	Student Names	**Title**
1	21A51A4252	Chintada Vamsi	Automated Attendance System: Leveraging Deep Learning and Computer Vision
2	21A51A4206	Banna Yogeswara Rao	
3	21A51A4221	Rosuva Meghana	
4	21A51A4251	Yajjala Prem Kumar	

ABSTRACT

The project focuses on developing an advanced attendance management system with deep learning and biometric technology to allow precise student attendance monitoring. The system works by providing live camera feeds for the clear photographic presentations of students when marked present and then going through with modern facial recognition algorithms out of a huge database containing already registered students. The system marks the student's presence in nearly real-time manner, alerted by mail, SMS, or mobile applications whenever a positive match occurs. The system employs automation in this attendance-marking that reduces errors and the tiring workload associated with it. The teacher continuously receives information on present attendance trends on a macro or micro scale, which help them to spot any upward or downward trends in student engagement patterns with this information used for data-driven decision-making going forward. Besides that, it incorporates sufficient encryption and access mechanism, which guarantees the security and confidentiality of student records, thus rendering the solution genuinely reliable and efficient for just about any modern educational establishment. It boasts of features uniquely so geared in dynamic model training and update operations, which smoothly adjust to varying lighting condition changes and subsequently incorporate student appearance variation so as to guarantee a high level of accuracy and reliability. This new attendance system has great future use in educational institutions, offices, and other fields which consider attendance checking to be very important.

S.NO	Regd No	Student Names	**Title**
1	21A51A4239	Gedela Chandini	Real-Time Customer Behavior and Satisfaction Insight System in shopping malls
2	21A51A4257	Yamal Sasi Rekha	
3	21A51A4243	Bodigi Sai karthik	
4	21A51A4223	Andhavarapu Charan	

ABSTRACT

In this study, we analyzed existing customer behavior analysis systems in shopping malls, such as Pose Network and MoveNet, which primarily rely on movement tracking and pose estimation. However, these methods fall short in capturing deeper insights into customer interests, such as gaze direction, dwell time, and product interactions. To overcome these limitations, we propose an advanced AI-driven solution integrating YOLO for pose estimation with deep learning algorithms to classify customer interests more accurately. Our system leverages computer vision and machine learning to generate real-time heatmaps, sentiment analysis, and predictive insights, assisting mall operators in optimizing store layouts, enhancing personalized marketing, and improving customer satisfaction. Additionally, our approach enables real-time crowd density monitoring, improving queue management and staff allocation for a seamless shoppingexperience.The system differentiates between casual browsers and serious buyers, allowing businesses to tailor marketing strategies and optimize sales efforts. Furthermore, inventory management benefits from demand trend analysis based on customer movement patterns near product displays. By incorporating predictive analytics, mall operators can forecast shopping trends, adjust promotional campaigns, and refine engagement strategies. To ensure continuous improvement, customers can provide direct feedback via a QR code, linking to a form that gathers valuable insights for further system refinement and data-driven decision-making.

Keywords: YOLO, CNN, DeepSort, Object Detection, Image Recognition, Feature Extraction, Customer Behavior Analysis, Deep Learning, Computer Vision, Retail Analytics, Predictive Analytics,Sentiment Analysis, Machine Learning

S.NO	Regd No	Student Names	**Title**
1	21A51A4205	GURANA PRAVALLIKA	A DEEP STACKED ENSEMBLE FRAMEWORK FOR BRAIN ABNORMALITY PREDICTION USING RADIOMICS
2	21A51A4248	BEVARA SWATHI	
3	21A51A4259	SILLA YUVATEJA	
4	21A51A4220	PATNANA TARUN	
5	21A51A4230	GURUGUBELLI RAHUL	

ABSTRACT

Brain tumor detection and classification are critical for early diagnosis and treatment planning. This study proposes a Deep Stacked Ensemble Framework for brain abnormality prediction by integrating radiomics and deep learning techniques. Utilizing the BraTS2020 dataset, MRI images undergo preprocessing and tumor segmentation using MONAI-based methods. Radiomic features, including texture, shape, and intensity, are extracted from segmented tumor regions with Radiomics. Feature selection techniques like Recursive Feature Elimination (RFE) and Principal Component Analysis (PCA) are applied, followed by training multiple deep learning models (EfficientNet, ResNet, Vision Transformer) alongside traditional machine learning classifiers (XGBoost, SVM). A stacked ensemble approach combines these models through a meta-classifier to enhance classification accuracy. Grad-CAM visualizations generate heatmaps, providing interpretability by highlighting critical tumor regions influencing the predictions. The proposed framework offers a scalable and interpretable solution, improving brain abnormality detection and decision support.

Keywords: Brain tumor, deep learning, radiomics, stacked ensemble, MRI, feature selection, segmentation, Grad-CAM, PyRadiomics, MONAI.

S.NO	Regd No	Student Names	**Title**
1	21A51A4224	PASINA YASWANTH	Cartpole Balancer : Human vs Ai
2	21A51A4241	CHALLA MEGHANA	
3	21A51A4214	TAMADA RUSHANTH	
4	21A51A4217	PEDDINTI SOMESH	

ABSTRACT

Reinforcement learning is a powerful approach for solving complex decision-making problems, particularly in control systems. This project implements Deep Q-Learning (DQN) to solve the CartPole-v1 environment, where an agent must balance a pole on a moving cart by applying left or right forces. Traditional methods, such as rule-based controllers and random agents, struggle with this dynamic task. In contrast, DQN leverages deep learning to approximate the optimal action-value function, enabling the agent to maximize cumulative rewards through interactions with the environment. The DQN algorithm uses a deep neural network to estimate Q-values for state-action pairs. Learning is enhanced through experience replay, which breaks correlation between samples, and target networks, which stabilize training. By iteratively updating Q-values using the Bellman equation, the agent improves its decision-making ability. The model is evaluated based on its ability to maintain balance, using performance metrics like episode length and cumulative reward. Results show that DQN effectively learns an optimal policy, outperforming traditional methods. This study demonstrates the potential of deep reinforcement learning in robotics, autonomous systems, and adaptive control applications.

Keywords: DQN (Deep Q learning), Reinforcement Learning, Python Flask

S.NO	Regd No	Student Names	**Title**
1	21A51A4238	Nanubolu Bhavana	FINDING PSYCHOLOGICAL INSTABILITY USING MACHINE LEARNING
2	21A51A4219	karri Reshma Priya	
3	21A51A4258	Tandasa Udita	
4	21A51A4250	Gunana Prasanna Kumar	

ABSTRACT

Psychological instability is a growing concern in today's fast-paced world, impacting individuals' mental well-being and productivity.Psychological instability, including conditions like anxiety, depression, and mood disorders, significantly impacts individual well-being and societal productivity. Early detection is essential, but traditional diagnostic methods rely on subjective assessments, clinical interviews, and self-reported questionnaires, which can be time-consuming, biased, and dependent on skilled professionals. This limitation calls for innovative solutions to enhance accessibility and efficiency in mental health assessment. The project aims to develop a web-based application that detects psychological instability using machine learning and Natural Language Processing (NLP). Users provide text-based responses to HR-type and scenario-based questions, which are analyzed using Random Forest to predict whether treatment is needed. Responses are analyzed using natural language processing and predictive machine learning model to determine whether the user may require professional intervention or treatment. The feedback, which includes recommendations or alerts, is securely sent to the user's registered mobile number. The solution operates in real-time, ensuring a seamless user experience and timely responses. Additionally, the system's modular architecture supports future enhancements, such as dynamic questionnaires and multilingual support. This project demonstrates the integration of technology and mental health awareness, offering an innovative approach to early detection and support for psychological well-being.

Keywords: Machine Learning, Psychological Instability Detection, Mental Health Assessment, Natural Language Processing (NLP), Random Forest Model, Sentiment Analysis, Text-Based Analysis,Mental Health Prediction, User Behavior Analysis, Real-Time Feedback Generation, Flask Backend, Mental State Awareness

S.NO	Regd No	Student Names	**Title**
1	22A55A4203	Mogilipuri Sowmya	Human Detection and Tracking Through Walls Using Wi-Fi Signals
2	22A55A4205	Devarasetti Jagath sai	
3	22A55A4201	Namana venkata sai prabhash	
4	22A55A4202	Rapaka Eswari	
5	21A51A4263	Marrapu Jahnavi	

ABSTRACT

Human detection and tracking through wall is a groundbreaking technology with applicationsin security, surveillance, healthcare, defense, and disaster management. Traditional methods such as infrared vision, thermal vision, PIR, and ultrasonic sensors have significant limitations,including signal attenuation, environmental interference, and restricted penetration capabilities.This paper explores a novel approach leveraging Wi-Fi signals in specific RF bands, including the 2.4 GHz and 5 GHz Wi-Fi bands, along with microwave sensors (24 GHz), mm Wave sensors (60 GHz and 77 GHz), and ultra-wideband (UWB) technology (3.1-10.6 GHz) for accurate human detection. By integrating multiple sensor data and applying advanced signal processing techniques, this system achieves improved accuracy and real-time tracking capabilities. The results indicate a significant improvement in detection precision compared to conventional methods, making this approach highly viable for modern applications. By incorporating machine learning techniques such as deep neural networks and pattern recognition algorithms, this system effectively processes and fuses sensor data to differentiate human movements from static objects and environmental noise. The system achieves a high level of precision in distinguishing between multiple individuals and tracking their movements with minimal latency. The results indicate a significant improvement in detection precision compared to conventional methods, making this approach highly viable for modern applications in military operations, search and rescue missions, emergency response, industrial safety, and smart home automation. The research further emphasizes the potential for AI-driven enhancements to improve the robustness and adaptability of human tracking systems.Keywords: Human Detection, Human Tracking, Wi-Fi Signals, Signal Processing, Through-wall Imaging, Wireless Sensing, RF sensing, Human presence detection

S.NO	Regd No	Student Names	**Title**
1	22A55A4206	BOMMALI DHARMARAMAKRISHNA	Deep learning for realistic virtual clothes fitting
2	22A55A4207	KANUTHURU SHASHANK	
3	21A51A4255	KOMAL KUMARI	
4	21A51A4225	MADDI SAI SRINIVAS	
5	21A51A4265	MARPU ANIL KUMAR	

ABSTRACT

With the continuous growth of the online shopping industry, determining how a particular garment would appear on us is challenging. To overcome this, this project presents a webbased application utilizing Machine Learning and DeepLearning techniques. This application involves the use of DeepLabV3+ (tosegment the user's body from the background and identify key regions like the torso and arms), Mediapipe (for pose estimation, detecting body keypoints to ensure the clothing aligns correctly with the user's posture), Thin Plate Spline (TPS) (to warp the virtual clothing to fit the user's body shape and pose accurately), Neural Style Transfer (for applying texture details to the fitted garments), StyleGAN (for high-quality and realistic outputs), and real-time rendering and deployment. By combining these techniques, this project aims to provide the best output for users, easing their online shopping experience by offering the comfort of offline shopping. This integration leverages the best of technology and ideology to provide a seamless experience for users

Keywords: Virtual Clothes Try-on, Image Segmentation, Pose Estimation, Thin Plate Spline, Textures, StyleGAN, RealTime Rendering, Fashion Industry, Virtual Styling, Online Shopping

JOURNALS/CONFERENCES ABSTRACTS

(STUDENTS AND FACULTY)

Integrated Internet of Things and Artificial Intelligence System for Real-Time Multi-Nutrient Water Quality Analysis in Agriculture

Pradeep Kumar Mahapatro Rasmita Panigrahi Neelamadhab Padhy

Abstract

Background: Drinking water that is clean and safe is important for everyone's health. About 1.4 million deaths worldwide occur due to contaminated drinking water each year. Contaminated water sources are the primary cause of diarrheal infections, which account for about 505,000 deaths every year. To overcome these challenges, this work proposes an integrated IoT- and AI-based solution for real-time multi-nutrient water quality analysis. Objective: In this paper, we aim to develop a complete integrated with an IoT-based water nutrient analysis system using advanced machine learning models that can predict multiple nutrient levels to improve crops and increase the interpretability, reliability, and security of water quality monitoring systems. Material/Method: For data collection, we deployed IoT sensors in different water sources like reservoirs, irrigation canals, and ponds for continuously monitoring parameters including phosphorus (P), potassium (K), pH, temperature, and BOD. The data that we collected from the sensors were securely transmitted to a cloud-based platform using end-to-end encryption protocols. Advanced machine learning classifiers and ensemble learning algorithms were used to analyze the real-time data to produce multi-nutrient predictions. The dataset was collected from GIETU agricultural fields over 6 months from 1 January to June 2024. We also used explainable AI (XAI) techniques to interpret the machine learning algorithms. Result: Performance metrics like accuracy, precision, recall, and F1-score were calculated for the water quality prediction. Our experimental observations revealed that the RFS ensemble classifier (Random Forest + SVM) performed well in comparison to other models and had an accuracy of 90%. The hybrid classifier was significantly better than the traditional approaches. We also used XAI techniques to increase the interpretability of the classifiers to enable effective decision-making for water management. For data security, we used encryption and decryption algorithms to ensure data integrity and protection from unauthorized access.

AI Based eHealth Care Framework with IOT

V Yamuna; G.Stalin Babu; V Ashok Gajapathi Raju; Yugandhar Manchala; G Ramakrishna; Kalyan Savalapurapu

Abstract:

E-healthcare, also known as electronic healthcare or telehealth, referred as the utilization of digital technologies and messaging services to provide medical treatments independently. While electronic health care offers numerous benefits, it's important to address several issues that must be resolved, including maintaining data confidentiality and anonymity, providing equitable access to technology, and maintaining the human touch in healthcare interactions. Overall, e-healthcare is essential to the modernization and enhancement of the healthcare system because it increases patient-centeredness, efficiency, and accessibility of medical services. The healthcare sector has been completely transformed by artificial intelligence (AI), which has improved patient care overall as well as diagnosis, treatment, and research. For artificial intelligence to be safely and effectively integrated into healthcare systems, adequate set up, validation, and continual improvement are necessary. Things, commonly referred to as IoT has played a revolutionized role in the Medicare industry by connecting devices, networks and sensors to gather and share data. This interconnected network of devices has enabled numerous advancements in patient care, disease control, and general Medicare operations. A healthcare framework provides a structured and organized approach to delivering healthcare services, ensuring efficient and effective patient care, promoting collaboration among healthcare providers, and meet the diverse requirements of patients and populations. The Medicare framework serves as a roadmap for delivering high-quality, patient-centered care while considering factors such as efficiency, safety, collaboration, and ethical considerations. It provides a structured approach that benefits patients, healthcare providers, and the healthcare system.

Classification of Coffee Disease: A Systematized Approach Based on Chronicity and Transfer Learning

G Stalin Babu; V Yamuna; Yugandhar Machala; S N Tirumala Rao; G. Vijay Kumar; E Ravi Kumar

Abstract:

The most sustainable tropical crop in terms of export revenue is coffee, which additionally acts as a major source of revenue for the nations where it is grown. As a crucial agricultural commodity in the global market, it is essential to increase coffee production while maintaining quality. To meet global demands, farmers need to expand and effectively manage coffee production. However, various diseases can reduce the productivity and quality of coffee plants, posing significant challenges. Detection in early stage of these diseases is crucial to mitigating their impact. Despite frequent contributions to research aimed at enhancing the coffee industry, most coffee farming is carried out by smallholder farmers who lack access to advanced resources and high-tech equipment. Coffee bean quality is highly sensitive to diseases caused by fungi, bacteria, insects, and environmental factors, all of which can significantly affect the financial success of the entire production chain. This study our goal is to accurately classify and detect coffee leaf diseases using images. Hence we used some Transfer Learning models like CNN, Resnet-50, VGG-16 and Efficient net. The accuracy of the Efficient Net is 93.12% which is 1.18% and 4.84% and 2.61%superior to Resnet-50, CNN and VGG-16 models.

Road Crack Detection using Deep Learning

B. Usha Rani; V Yamuna; Linga Raju Behera; Sai Chetan Ijjada; Ratnala Vineeth; Sai Sravani Gollapudi

Abstract:

The road is a path that helps to connect various locations. It is essential to our day-to-day existence. The state of the weather conditions, overloading, poor maintenance, and a few other factors all contribute to road distress. The prevalent stressors are cracks, rutting, and potholes. Accidents on the roads have increased recently as a result of poor upkeep. Safety and road upkeep are important issues for transportation infrastructure. Road cracking is the fundamental and underlying source of other damages like potholes, etc., so manually identifying this distress requires labor-intensive, human inspection.

Among the many difficulties, seeing fractures in the road ahead of time is crucial to avoiding collisions and expensive repairs. In this study, we provide an automated deep learning framework technique for spotting road cracks. The suggested method is trained using road photo datasets from many sources, which include a range of road surface types, lighting situations, and fracture severity. After that, data augmentation approaches are utilized to enhance model generalization. We use a variety of deep learning frameworks and fine-tune the hyper parameters to further enhance the model's performance and Reliability and consistency in grading outcomes are provided by the proposed deep learning approach, which is also computationally less expensive. The recommended deep learning method shows amazing accuracy in identifying and categorizing potholes, making it a useful instrument for road maintenance agencies.

A Deep Learning Framework for Kidney Stone Prediction

V Yamuna, G. Stalin Babu, G. Vijay Kumar ,Yugandhar Manchala

Abstract:Kidney stones are the most common chronic disease nowadays. Solid minerals that accumulate can lead to various sizes and shapes of stones inside the kidney. It requires innovative models to improve patient diagnosis with high precision, minimizing radiologist burden and giving them a tool that can automatically analyze kidney health, lowering the chance of misdiagnosis to obtain treatment and maintain a healthy lifestyle. The main aim of the research is to accurately identify kidney stones from computed tomography (CT) using Deep learning models. We presented effective and unique pre-trained deep learning models VGG16, ResNet50, and CNN for the identification of kidney stones accurately. The eminence of the adopted models has been validated in terms of positive, negative, and neutral measures. Moreover, the accuracy of the ResNet50 model is 7.7 and 4.5% superior to the VGG16 and CNN models, respectively.

Performance Improvement of Machine Learning Algorithms Through Information-Theoretic Class Based Feature Multicorrelation Enabled Feature Selection for Cervical Cancer Prediction

Kurman Sangeeta, Sumitra Kisan, Kalyana Kiran Kumar, Pradeep Kumar Mahapatro

Abstract

Selection of most informative features has found to be a great utility in minimizing the dimensions of high dimensional data and thereby on increasing the learning efficiency of learning algorithms. The majority of attribute selection methods ignored the consideration of feature multi-correlation such as feature complementarity and interaction correlation. Also there is less research on influence of feature selection algorithms on performance improvement of machine learning algorithms for cervical cancer risk factor dataset. Motivated by this, we performed experiments by applying information theoretic based feature selection algorithms that considers class based feature multicorrelation on cervical cancer dataset. We considered eight different machine learning algorithms (MLA) for performance comparison and analysis in our research. The feature selection algorithms considered for this research are DISR, R2CI, DRJMIM, DWFS, IWFS and UCRFS. The metrics used for MLA comparison are accuracy, precision, recall, confusion matrix and auc. The findings illustrate the significance of DRJMIM feature classification technique and RandomForest classifier for cervical cancer prediction. RandomForest classifier shows highest classification accuracy of 98.55% after applying DRJMIM FSA.

Editorial Board

Faculty

Srinivasa Rao Konni

Students

Ch.Devaraj 22A51A4280

D.Ganesh 22A51A42A2

ADITYA

Institute of Technology and Management

(An autonomous institution)

Tekkali-532 201, Srikakulam Dist., AP
Tel: 0845-245666, 245266, 92466 57908
Email: info@adityatekkali.edu.in