CHENNAI INSTITUTE OF TECHNOLOGY
(Autonomous)

SUSTAINABLE DEVELOPMENT GOALS – 3

Good Health and Well Being

Back to Main

The Health Centre here at Chennai Institute of Technology is well equipped. It has separate inpatient facility for male and female students The health centre provides quality health care in a comfortable and confidential environment. The health centre is manned by a medical officer and a healthcare assistant to provide excellent medical care to all the students. The Medical Officer Dr. Balachander. M.B,B.S manages the various aspects of the facility.

1. Chennai Institute of Technology provides health services with support for the entire academic and surrounding community.
2. Ambulance services available for emergency purpose.
3. First aid, an emergency room, and medical oxygen cylinders are available at Chennai Institute of Technology.

Health Centre (Chennai Institute of Technology)

Ambulance (Chennai Institute of Technology)

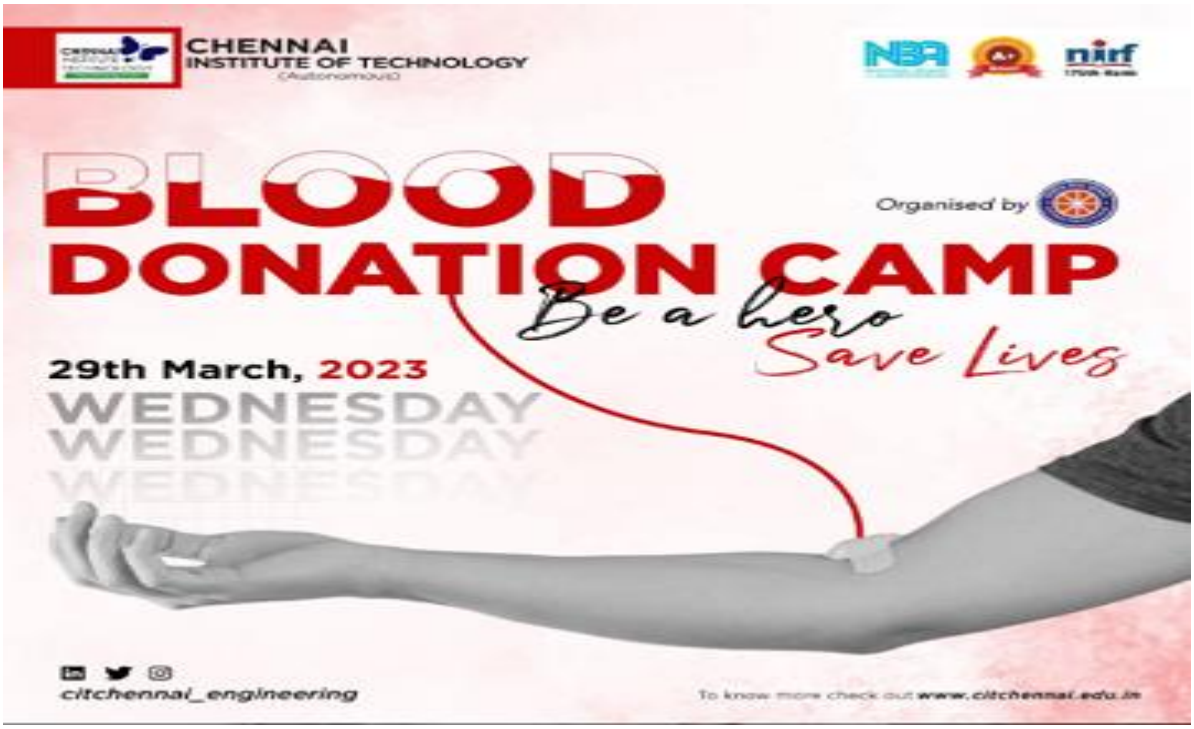
First aid, Emergency room and Medical oxygen cylinder


Blood Donation Camp

The Chennai Institute of Technology (CIT) organizing a blood donation camp is a meaningful and impactful event. Blood donation camps like these can save countless lives, providing a critical supply of blood for hospitals and patients in need. CIT often collaborates with local hospitals or blood banks to ensure the blood is safely collected, stored, and distributed to those in urgent need.

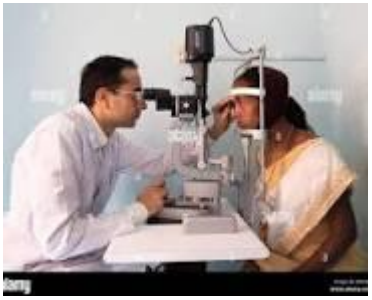
Donors will undergo a preliminary health check-up to ensure they're eligible to donate. This typically includes checking hemoglobin levels, blood pressure, and general fitness. Once cleared, donors are guided through the donation process, which usually takes around 10-15

minutes per person. The blood is collected in sterile, sealed bags, and donors are closely monitored. After donating, participants are provided with refreshments and encouraged to rest briefly to regain energy. There may also be a waiting area with water, snacks, and sometimes fruits to help boost blood sugar levels. Many blood camps give donors a certificate or small token of appreciation, acknowledging their contribution.



Eye Check-Up

The Chennai Institute of Technology (CIT) occasionally organizes eye check-up camps for students and faculty as part of its health and wellness initiatives. These check-ups often include basic screenings for vision clarity, eye strain, and potential eye health issues.



Student Project:

Title: DESIGN AND DEVELOPMENT OF WEARABLE ANTENNA FOR PROACTIVE TUMOR DETECTION

Abstract:

In recent years, wearable electronics have gained opportunities and the past decade has become evidence of this growth in Wireless Body Area Network (WBAN). They fulfil the

requirements of personalizing healthcare, communication, patient monitoring, tracking, and rescue operations. The major challenge for the WBAN is to handle the coupling of the radiator with the human body. To increase the performance of a microstrip patch antenna, it has been blended and truncated on the diagonal sides to make up the suggested antenna design. Flexible electronics have paved the way for Wireless Body Area Networks (WBAN). This allows for optimal performance. The square patch, measuring 50 × 50 mm, resonates at the 2.4 GHz ISM band, which is frequently utilized in wireless communication applications. The FR-4 substrate, which has a relative permittivity of 4.3, was selected for the antenna. It is a lossy material with a thickness of 1.6 mm and dimensions that match those of the ground plane (50 x 50 mm). Perfect Electric Conductor (PEC) is the material used for the patch. Its dimensions are 30 × 30 mm, or half the wavelength at the resonance frequency to further improves performance, a slot is added to the patch's center. A secondary ground plane measuring 90 x 90 mm and 2 mm thick is placed beneath the primary ground plane in addition to the main ground plane to improve radiation efficiency and antenna stability. In order to maximize signal strength and coverage, the coaxial feed in the design is carefully calibrated to improve gain. The design seeks to improve impedance matching, radiation pattern, and overall antenna performance by truncating and blending the square patch antenna in addition to adding a slot and an extra ground plane. In order to maximize efficiency and reliability and satisfy the criteria of the 2.4 GHz ISM band, much consideration is given to the choice of materials and dimensions. The proposed antenna is designed and simulated using CST Microwave Studio software. The proposed antenna is an efficient antenna with realized gain of 2.88dBi, low VSWR and wide bandwidth.

Title: AUGMENTATION OF EMOTIONS - A RESERVOIR COMPUTING BASED EEG ANALYSIS

Abstract:

Emotion classification based on Electroencephalogram (EEG) signals holds significant potential for enhancing affective computing applications. The proposed work developed an effective emotion classification system utilizing EEG signals and addressed the need for robust methods capable of accurately capturing temporal aspects of EEG data to discern distinct emotional states. Leveraging the capabilities of GRU reservoir computing, the machine learning model was trained and evaluated to classify EEG signals into distinct emotional categories. Through rigorous experimentation and evaluation, the performance of the proposed methodology was assessed using standard metrics such as accuracy, precision, recall, and F1-score. The findings demonstrate a higher classification accuracy of 97.344% with the effectiveness in addressing the challenges associated with the temporal dynamics and non- stationary of EEG data.

Title: DETECTION OF LUNG DISEASE USING BREATHE RATE ANALYSIS

Abstract:

This work presented a new approach for the early detection of lung diseases using respiratory rate. The real-time monitoring system is developed using a comprehensive sensor system that includes GSR and heart rate sensors, Node MCU and Internet of Things (IoT) technology. The GSR sensor records physiological changes in skin conductance, while the heart rate sensor measures heart rate variability, providing valuable information about breathing patterns. This data is seamlessly integrated and transmitted in real time via the Node MCU, enabling remote monitoring. The proposed system provides a non-invasive, real-time monitoring, cost-effective and efficient way for early detection, facilitating timely treatment. IoT integration ensures accessibility and immediate response with a help of Machine learning model to get an accuracy of 94%, And also, the detection of lung diseases using X-ray images, CT scan images, and CNN technology is a much costlier and time-consuming complex procedure. To avoid these methods, we use a novel and multisensory approach to detect lung diseases easily and cost-effectively. This method helps increase the potential to develop preventive health strategies in the field of various lung diseases such as asthma, pneumonia, chronic obstructive pulmonary disease, and pulmonary fibrosis.

Title: DESIGN AND DEVELOPMENT OF AN E-NOSE FOR THE DIAGNOSIS OF PULMONARY DISEASES

Abstract:

The Electronic Nose model introduced a new machine for the diagnosis of lung diseases that changed the field with its approach. The model used artificial intelligence technology, machine learning technology, and the integration of unique medical data to provide a solution to the real and counterintuitive lung problem. By combining the nasal cavity with standard measurements, biochemical markers, and patient-specific clinical parameters, the model provided a comprehensive assessment of lung health, helping to support early diagnosis and self-treatment strategies. Rigorous clinical studies and quality control ensured the reliability and validity of the models in real-world clinical settings, promising to increase accuracy and improve patient outcomes. The integration of the system with existing treatments and its focus on personalized treatments further increased the effectiveness and efficiency of the treatment. The e-nose service represented a significant advance in lung diagnostics and revolutionized the challenges faced by doctors and patients. The model had the ability to increase the accuracy of diagnosis, improve treatment strategies, and improve overall patient care, making it a useful tool in the fight against lung diseases. Through continued research, implementation, and effort, the e-nose program had the potential to revolutionize the field of pulmonary medicine and make a positive impact on the lives of countless people affected by these diseases.

Title: SPEAK-EASY CLOUD BASED STAMMERING ASSISTANT WITH FREQUENCY MATCHING

Abstract:

Stuttering, also known as stammering or childhood-onset fluency disorder, presents significant challenges to individuals, affecting the fluency and flow of speech. While it is common among young children as they develop their language skills, it can persist into adulthood for some individuals, impacting their self-esteem and social interactions. This project focuses on the development of a speech therapy device tailored specifically for individuals who stutter. The device aims to improve fluency and communication skills by providing real-time feedback and assistance during speech. By utilizing innovative technologies, including speech recognition and artificial intelligence, the device detects instances of stuttering and offers interventions such as delayed auditory feedback or visual cues to help individuals overcome speech disruptions. Moreover, the device incorporates personalized learning algorithms to adapt to the user's unique speech patterns, maximizing effectiveness. Through rigorous testing and refinement, this speech therapy device holds promise in alleviating the challenges associated with stuttering, empowering individuals to communicate confidently and effectively.

Title: NEURAL NEXUS: PROGNOSTICATION OF ANESTHESIA THROUGH MACHINE LEARNING MASTERY

Abstract:

This proposed work explored the application of machine learning to personalize and optimize anaesthesia administration, addressing the challenge of patient variability in response to anaesthesia. Machine learning algorithms were employed to analyse extensive datasets encompassing patient information, medical history, and surgical details. These analyses were used to develop personalized anaesthesia prediction models, tailoring medication regimens to individual patient characteristics. The work aimed to minimize risks associated with unpredictable patient responses. By understanding individual nuances through trained algorithms, safer and more effective anaesthesia regimens could be achieved, potentially leading to improved patient outcomes and recovery. Systems continuously analysed data during surgery, adjusting predictions based on evolving conditions. This enhanced patient safety and provided dynamic decision support for healthcare professionals throughout the procedure. Seamless integration with existing healthcare Information systems and electronic health records was crucial. User-friendly interfaces facilitated widespread adoption among healthcare professionals. Integrating machine learning in anaesthesia prediction had the potential to revolutionize patient care. Personalized predictions, improved response to variability, real-time adaptation, and interoperability all contributed to safer procedures, potentially reduced healthcare costs, and an overall higher quality of care.

Title: DRIVER DROWSINESS DETECTION SYSTEM

Abstract:

The Driver Drowsiness Monitoring System (DDMS) is an essential automotive safety innovation designed to combat drowsy driving accidents. It utilizes a combination of sensors

and advanced algorithms to continuously monitor the driver's condition, detecting signs of drowsiness in real-time. Key components include infrared cameras, facial recognition technology, steering angle sensors, and biometric sensors like heart rate monitors. These sensors provide a comprehensive view of the driver's behavior and physiological state. The DDMS software analyzes data from these sensors, assessing parameters like eye movement, blink frequency, facial expressions, and steering behavior. When signs of drowsiness are detected, the system issues audible and visual alerts, preventing accidents caused by driver fatigue. This system is adaptable to various vehicles and driving conditions, making it a vital tool for enhancing road safety by reducing drowsy driving-related accidents.

Title: IMPLEMENTING IOT MONITORING SYSTEM FOR NEONATAL CARE: COMBATING RETERM BIRTH CHALLENGES

Abstract:

Premature infants face significant challenges in regulating their body temperature, often leading to serious health complications. In developing countries, where medical resources are limited, addressing this issue effectively while keeping costs low is crucial. This proposed work approach to incubator design aimed at providing essential monitoring and control functions for premature infants at an affordable price point. The proposed system incorporates various sensors such as temperature, humidity, light intensity, CO2 levels, galvanic skin response (GSR), heart rate, and oxygen saturation (SPO2), allowing for comprehensive monitoring of the infant's environment and vital signs. Reducing infant mortality rates associated with prematurity-related complications, which currently account for a significant portion of global infant deaths. The proposed infant incubator system integrates various sensors to monitor vital parameters such as temperature, humidity, oxygen saturation, and skin conductance. These sensors, coupled with an Arduino microcontroller, facilitate real-time monitoring and control of the incubator environment. Additionally, the inclusion of a Bluetooth module enables seamless communication with caregivers, providing timely alerts in case of any abnormalities. This proposed work prioritizes usability and cost-effectiveness without compromising on the quality of care provided to premature infants. By harnessing the power of innovation and collaboration, we aim to make life-saving medical equipment accessible to all, regardless of economic constraints.

Title: SKIN CANCER CLASSIFICATION AND SEGMENTATION USING ARTIFICIAL INTELLIGENCE TECHNIQUES

Abstract:

Skin cancer is one of the most prevalent types of cancer worldwide, and early detection plays a crucial role in improving patient outcomes. Artificial intelligence (AI) techniques have shown promising results in skin cancer classification and segmentation tasks, providing automated and accurate solutions. This proposed work presents an overview of skin cancer classification and segmentation using AI techniques. The classification aspect focuses on

distinguishing between benign and malignant skin lesions. Various AI algorithms, including machine learning and deep learning models, are explored for this task. The segmentation aspect addresses the precise delineation of skin lesions from surrounding healthy tissue. AI techniques such as convolutional neural networks (CNNs) and image processing algorithms are utilized for accurate lesion segmentation. The integration of classification and segmentation techniques is explored, and it allowed for a comprehensive analysis of skin cancer. Combined approaches enable accurate identification of cancerous regions within an image, aiding in precise diagnosis and treatment decisions. This paper provides an overview of skin cancer classification and segmentation using AI techniques. It highlighted the potential of AI in improving skin cancer diagnosis and treatment, and discusses the challenges and future directions in the field. Convolutional Neural Networks (CNNs) excel in extracting features from raw data like images, enabling automated learning of hierarchical representations. Their spatial hierarchy and shared weights make them powerful for tasks such as image classification, object detection, and even natural language processing tasks involving sequential data. With the help like semantic segmentation or instance segmentation, CNNs can accurately partition and identify specific areas of interest within complex visual data. CNNs sometimes referred to as convnets use principles from linear algebra, particularly convolution operations, to extract features and identify patterns within images.

Title: DIABETES PREDICTION WITH MICROVASCULAR IMAGING AND MULTIMODAL BIOMARKERS

Abstract:

Addressing the global health challenge of diabetes necessitated overcoming limitations in conventional blood tests, which often deterred regular testing due to their invasive nature and discomfort. To enhance diabetes detection accuracy, this study proposed a two-stage Machine Learning (ML) system. In the initial stage, various ML models, including Logistic Regression, Random Forest, Decision Tree, and K-Nearest Neighbors, analyzed user-provided health data such as pregnancies and glucose levels. These models discerned patterns and relationships to predict diabetes risk, achieving notable accuracy rates ranging from 74.25% to 99%. However, further investigation was warranted to tackle potential overfitting observed in the KNN model. Subsequently, Stage 2 offered a non-invasive confirmation process. Users flagged at high risk in Stage 1 could opt for retinal image capture, processed using OpenCV to classify diabetic retinopathy features. Integrating both stages furnished a holistic risk assessment, promising earlier and more accurate diabetes detection. By capturing a broader array of relevant features beyond blood tests, this approach enabled improved preventative strategies and personalized treatment, ultimately alleviating the burden of diabetes on individuals and healthcare systems alike.

Title: APPLYING DEEP LEARNING TO ACCESS HEART ARRYTHMIA BY ANALYZING ECG

Abstract:

Arrhythmia classification plays a pivotal role in the early detection and management of heart disease, a leading cause of mortality worldwide. Electrocardiogram (ECG) data, being a widely adopted physiological measurement, serves as the cornerstone for classification endeavors in this domain. Deep learning models have emerged as powerful tools for categorizing arrhythmia classes, exhibiting promising results in automated diagnosis. However, the efficacy of these models is often gauged solely based on performance metrics, which may not fully account for the intricacies of real-world data distributions. The distribution of records within each dataset category profoundly influences the validation of these metrics, especially in scenarios where imbalanced data is prevalent. The disparity between balanced and imbalanced data can significantly impact the assessment of deep learning model performance, potentially leading to skewed outcomes. In light of these challenges, it gives a thorough analysis of various architectures of deep learning models for arrhythmia classification, with a keen focus on elucidating pre-processing methods tailored to mitigate the effects of imbalanced data. By delving into the intricacies of Convolutional Neural Networks (CNN), Artificial Neura Networks (ANN), Deep Neural Networks (DNN), AlexNet, ResNet, k-Fold Cross-Validation, VGG-16, Long Short-Term Memory (LSTM), and LeNet, this aims to provide insights into optimizing model performance and assist data imbalances.

Title: ENHANCED PATIENT HEALTHCARE SOLUTION

Abstract:

This proposed work aimed to revolutionize healthcare delivery, particularly catering to elderly individuals and those with mobility impairments. The work integrated both software and hardware components to provide a seamless and efficient healthcare experience. On the software front, the work utilized a modern web stack comprising HTML, CSS, and React for frontend development, Firebase for robust database management, and Node.js for flexible backend operations. This software infrastructure powered a user- friendly website, “Unified Surgical Telehealth”, which served as the central hub for all healthcare interactions. The hardware aspect of the work involved the creation of a wearable device utilizing advanced components such as microcontroller, AD8232, MLX90614, and MAX30102. These components enabled the device to monitor vital physiological parameters, including heart rate and body temperature, essential for comprehensive health assessment. Central to the work's functionality is its ability to facilitate remote consultations between patients and healthcare providers. Through live video consultations, patients could connect with their doctors in real-time, eliminating the need for physical travel and ensuring timely access to medical assistance. This feature is particularly beneficial for individuals with limited mobility or those undergoing post-operative care. During remote check-ups, the wearable device can collect crucial health data from the patient, which is securely stored in the

Firebase database. Healthcare providers could access this data through the website, enabling them to monitor patient's health status remotely and make informed medical decisions.

Title: MACHINE LEARNING ENABLED CARDIAC STROKE ALERT

Abstract:

The Heart Stroke Alert System emerges as a revolutionary advancement in healthcare technology, poised to redefine the landscape of cardiac care with its proactive approach. Through the seamless integration of Internet of Things (IoT) technology, healthcare providers gain unprecedented insights into patient health statuses, facilitating rapid response to critical alerts. Central to this system are wearable sensors that continuously monitor temperature and heart rate fluctuations, providing vital streams of data for analysis. These data undergo meticulous scrutiny by machine learning models, trained extensively on relevant datasets, to not only identify cardiac events but also to delve into patient-specific attributes such as age, gender, medical history, and physiological markers. By synthesizing this multifaceted information, the system offers personalized care strategies tailored to individual cardiovascular health profiles. The primary objective of this innovative approach is to optimize patient outcomes through early detection and preemptive intervention, transcending traditional reactive models in favor of proactive patient management. Moreover, the Heart Stroke Alert System extends its utility beyond acute event detection, offering a comprehensive solution for continuous remote patient monitoring. Through the integration of sensor technologies, machine learning algorithms, and IoT connectivity, it establishes a robust framework for delivering holistic cardiac care.

Title: REAL TIME ANALYSIS OF PARKINSON TREMOR USING DATA DRIVEN TECHNIQUES

Abstract:

Parkinson's disease (PD) is characterized by motor symptoms such as tremors, rigidity, and gait difficulty, which can significantly impact patients' quality of life. Traditional methods of evaluating these symptoms rely heavily on subjective patient self-assessment, often resulting in incomplete or inaccurate data. To address this limitation, we proposed a novel approach utilizing wearable accelerometers integrated into a watch for continuous monitoring of PD motor symptoms. This project proposes a monitoring system for Parkinson's disease (PD) that integrates accelerometers and machine learning. Machine learning algorithms, particularly Support Vector Machine (SVM), analyze this data to classify symptom severity accurately. It provides a more objective and quantitative assessment of PD symptoms, improving diagnostic accuracy and treatment planning.

Machine learning enables personalized treatment strategies tailored to individual patients' symptom profiles, optimizing therapeutic outcomes.

Title: CYPHER FEEL A SENTIMENTAL COMPANION

Abstract:

The pervasive integration of technology into our daily lives has led to an unprecedented surge in the generation and storage of personal data, exposing individuals to risks of unauthorized access and breaches. To address this concern, this project introduces "Cipher Feel," a web application designed not only to provide robust data storage through end-to-end encryption but also to understand user's current emotional states. Unlike conventional diary applications, Cipher Feel integrates sentimental analysis to comprehend users' emotions, offering personalized suggestions based on their previous inputs for enhancing well-being. Sentiment analysis refers to identifying as well as classifying the sentiments that are expressed in the text source. The user's previous text data are useful in generating a vast amount of sentiment data upon the analysis. These data are used to understand the current user's emotional state and helps to provide the better suggestions for the user. This project report outlines Cipher Feel's development process, features, security considerations, and the integration of emotional analysis, emphasizing the importance of secure data storage practices in today's digital landscape. Readers will gain a comprehensive understanding of Cipher Feel and its role in promoting secure data storage practices in our technologically advanced era.

Title: SKIN DISEASE PREDICTON USING IMAGE PROCESSING

Abstract:

Skin diseases are most common among the globe, as people get skin disease due to inheritance, environmental factors. In many cases people ignore the impact of skin disease at the early stage. In the existing system, the skin disease is identified using biopsy process which is analyzed and medicinal prescribed manually by the physicians. To overcome this manual inspection and provide promising results in short period of time, we propose a machine learning technique. For this the input images would be microscopic images i.e., histopathological from which features like color, shape and texture are extracted and given to convolutional neural network (CNN) for classification and disease identification. Our objective of the project is to detect the type of skin disease easily with accuracy and recommend the best and global medical suggestions. This paper proposes a skin disease detection method based on image processing and machine learning techniques. In existing approach, the increased skin diseases identified at the later stage using biopsy only. Thus, this process is performed manually which can lead to human errors and takes 1-2 days for

the results. Also, the physician finds it difficult to identify the type of skin disease andthe stage of disease at the analysis stage. Thus, making the medicine prescription difficult. This concern can be addressed by usage of machine learning and deep learning techniques by analyzing the microscope image. This approach can provide a promising result by combining computer vision and machine learning techniques. The proposed methodology system is highly beneficial in rural areas where access to dermatologists is limited. For this system, we use PyCharm based python script for experimental results. These results suggest that the proposed system can help effectively diagnose the type of skin disease, thereby reducing further complications. The HAM10000 dataset is used and the proposed method has outperformed other methods with more than 85% accuracy.

Title: HEALTHCARE AND MEDICINE RECOMMENDATION SYSTEM USING NLP

Abstract:

In the era of data-driven healthcare, the demand for personalized medical recommendations is paramount. Since corona virus has shown up, inaccessibility of legitimate clinical resources is at its peak, like the shortage of specialists and healthcare workers, lack of proper equipment and medicines etc. The entire medical fraternity is in distress, which results in numerous individual's demise. Due to unavailability, individuals started taking medication independently without appropriate consultation, making the health condition worse than usual. As of late, machine learning has been valuable in numerous applications, and there is an increase in innovative work for automation. This paper intends to present a drug recommender system that can drastically reduce specialist heap. In this research, we build a medicine recommendation system that uses patient reviews to predict the sentiment using various vectorization processes like Bow, TF-IDF, Word2Vec, and Manual Feature Analysis, which can help recommend the top drug for a given disease by different classification algorithms. The predicted sentiments were evaluated by precision, recall, accuracy and AUC score. The results show that classifier Linear SVC using TF-IDF vectorization outperforms all other models with 93% accuracy. Through extensive experimentation and evaluation, our system demonstrates significant improvements in patient outcomes, fostering a more efficient and effective healthcare delivery model.

Title: CHRONIC KIDNEY DISEASE PREDICTION USING MACHINE LEARNING

Abstract:

Chronic Kidney Disease (CKD) is a severe condition affecting millions worldwide, with significant mortality rates. Early detection is crucial for effective treatment and prevention of complications. In this study, we propose a machine learning-based approach to predict CKD, aiming to improve early diagnosis and reduce mortality rates. We employ preprocessing techniques to handle missing data and compare the performance of several machine learning algorithms, including K-Nearest Neighbour, Decision Tree, Gaussian

Naïve Bayes, Logical Regression, and Artificial Neural Network. Through dataset selection, preprocessing, algorithm execution, and classification of control metrics, we aim to determine the most effective algorithm for CKD prediction. Our objective is to raise awareness, promote early diagnosis, and ultimately mitigate the impact of CKD through early prediction and proper treatment. In this study, we propose to use a dataset containing a wide range of clinical and demographic variables to train and evaluate machine learning models for CKD prediction. We will employ preprocessing techniques to handle missing data and normalize features to ensure the models' accuracy and reliability. By comparing the performance of various machine learning algorithms, including K-Nearest Neighbour, Decision Tree, Gaussian Naïve Bayes, Logical Regression, and Artificial Neural Network, we aim to determine the most effective approach for predicting CKD.

Title: MENTAL HEALTH MANAGEMENT

Abstract:

Mental health issues are a growing concern worldwide, with limited access to professional help creating a significant barrier to well-being. This project explores the potential of web app technology integrated with machine learning (ML) to address this challenge. We propose the development of a novel mental health wellbeing app, "Ally - Wellness Companion". Ally - Wellness Companion leverages ML algorithms to personalize user experience and provide targeted support. Through features like mood tracking, journaling, and interactive exercises, the app aims to promote self-awareness and equip users with coping mechanisms. The ML component analyses user data to identify patterns and suggest relevant resources, personalized recommendations for mindfulness practices, and potential early detection of mental health concerns. Ally - Wellness Companion incorporates an AI-powered chat feature that provides personalized support and insights based on the user's journal entries. Through natural language processing (NLP) techniques, the AI analyses the user's journaling patterns and emotional tone. This analysis allows the AI to tailor conversation topics and responses to the user's specific needs. For instance, if the user frequently expresses feelings of anxiety in their journal, the AI might initiate conversations about relaxation techniques or recommend relevant exercises within the app. The AI can also identify positive entries and offer encouragement, fostering a sense of accomplishment and progress. This personalized interaction fosters a safe space for users to express themselves and receive non-judgmental support, enhancing the overall user experience and potentially leading to a deeper understanding of their own emotions and thought patterns.

Title: BRAIN TUMOR DETECTION USING DEEP NETWORKS

Abstract:

Brain tumor detection plays a crucial role in early diagnosis and treatment planning, significantly impacting patient outcomes. With the advancements in deep learning techniques, automated detection systems have shown promise in enhancing the accuracy and

efficiency of tumor diagnosis. This paper proposes a novel approach for brain tumor detection utilizing deep neural networks (DNNs). The proposed system leverages convolutional neural networks (CNNs) to extract relevant features from magnetic resonance imaging (MRI) scans. Furthermore, a multi- layer perceptron (MLP) is employed to classify the extracted features into tumor and non-tumor classes. Experimental results demonstrate the effectiveness of the proposed method in accurately detecting brain tumors, showcasing competitive performance compared to existing approaches. The proposed system not only provides reliable detection but also offers potential for integration into clinical workflows to aid healthcare professionals in making informed decisions for patient care.

Title: AUTOMATIC ACCELERATION CONTROL SYSTEM

Abstract:

Car accident is the major cause of death in which around 1.3 million people die every year. Majority of these accidents are caused because of distraction or the drowsiness of driver. Construction of high-speed highway roads had diminished the margin of error for the driver. The countless number of people drives for long distance every day and night on the highway. Lack of sleep may lead to an accident. Drowsiness and Fatigue of drivers are amongst the significant causes of road accidents. Every year, they increase the amounts of deaths and fatalities injuries globally. To prevent such accidents, we propose a system which alerts the driver if the driver feels drowsy. Facial landmarks detection is used with help of image processing of images of the face captured using the camera, for detection of drowsiness. In this project, a module for Advanced Driver Assistance System is presented to reduce the number of accidents due to drivers' fatigue and hence increase the transportation safety; this system deals with automatic driver drowsiness detection based on visual information and Artificial Intelligence. This project proposes an algorithm to locate, track, and analyze both the drivers face and eyes to measure EAR (Eye Aspect Ratio), a scientifically supported measure of drowsiness associated with slow eye closure.

Title: DISEASE ANALYSIS AND PREDICTIONS SYSTEM USING MACHINE LEARNING

Abstract:

The Disease Analysis and Predictions System (DAPS) represents a groundbreaking solution at the intersection of data analytics and public health. By amalgamating diverse data streams, including electronic health records, environmental indicators, demographic data, and social media activity, DAPS offers a comprehensive platform for disease surveillance and analysis. Through the application of advanced machine learning algorithms, DAPS not only identifies historical trends but also predicts future disease outbreaks with remarkable accuracy. Real-time monitoring capabilities enable prompt response to emerging health threats, while intuitive visualization tools facilitate the interpretation of complex data sets. DAPS stands poised to revolutionize public health practice by empowering stakeholders with actionable

insights, facilitating proactive interventions, and ultimately contributing to the advancement of population health outcomes.

Publications:

1	Biomedical applications of terbium oxide nanoparticles by Couroupita guianensis aubl leaves extract: A greener approach
2	Synthesis and characterization of copper(II) complex derived from newly synthesized acenaphthene quinone thiosemicarbazone ligands: Computational studies, in vitro binding with DNA/BSA and anticancer studies
3	Combustion enhancement and emission reduction in RCCI engine using green synthesized CuO nanoparticles with Cymbopogon martinii methyl ester and phytol blends
4	Multifaceted exploration of acylthiourea compounds: In vitro cytotoxicity, DFT calculations, molecular docking and dynamics simulation studies
5	Biomolecular Interactions and Anticancer Mechanisms of Ru(II)-Arene Complexes of Cinnamaldehyde-Derived Thiosemicarbazone Ligands: Analysis Combining In Silico and In Vitro Approaches
6	Brain tumor classification and segmentation using deep learning approach
7	Effect of coordination mode of thiosemicarbazone on the biological activities of its Ru(II)-benzene complexes: Biomolecular interactions and anticancer activity via ROS-mediated mitochondrial apoptosis
8	Copper-mediated cyclization of thiosemicarbazones leading to 1,3,4-thiadiazoles: Structural elucidation, DFT calculations, in vitro biological evaluation and in silico evaluation studies
9	Green Synthesis of Metal-Doped ZnO Nanoparticles Using Bauhinia racemosa Lam. Extract and Evaluation of Their Photocatalysis and Biomedical Applications
10	Platinum group metal (PGM) complexes having acylthiourea ligand system as catalysts or anticancer agents
11	Deep learning aided prostate cancer detection for early diagnosis & treatment using MR with TRUS images
12	Bis(acylthiourea) compounds as enzyme inhibitors: Synthesis, characterization, crystal structures and in silico molecular docking studies

13	The Development of Inference in Healthcare System using FEFL System
14	Fog Computing Integrated with and Blockchain Technology for Accurate Disease Prediction
15	Lung Cancer Classification based on Auxiliary Classifier (WGAN) Optimised with HOA from CT Images
16	Assessment of the environmental impacts of gold mining activities at Gankombol (Adamawa-Cameroon) using Leopold matrix, Fecteau grid and remote sensing approach
17	Advanced Liver Tumor Detection: Cascaded Fully Convolutional Neural Networks for Enhanced Precision
18	Predictive Modeling for Air Quality: A Machine Learning System
19	Transforming Healthcare with MedInsight: A Guide to Intelligent Decision Support
20	Hyper Triglycerides Prognosis Using Machine Learning and Data Science
21	IoT Applications in Marine Monitoring: Protecting Ocean Health and Biodiversity
22	A Detailed Analysis of Air Pollution Monitoring System and Prediction Using Machine Learning Methods
23	Synthesis, Computational and cytotoxicity studies of aryl hydrazones of βdiketones: Selective Ni metal Responsive fluorescent chemosens
24	Investigation on SAR in Hexagonal Shape Monopole Ultra-Wideband Antenna to Identify Female Breast Cancer
25	Detection of diabetes mellitus using machine learning algorithm

Patents:

202341079508 A	A Pipeline Approach for Automatic Segmentation of Free - Text Medical Reports
202341070569 A	Touch Sheild Multi-Protection Locker for Blind People
202341070626 A	Tremor Detection for Parkinson's Patient

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202341034532 A	IOT Based Breath Analyzer for Non-Invasive Diagnosis of Diseases
Design No. 379280-001	Blood Oxygen Saturation Meter
202341002573 A	Pyrrolo Pyrimidine Amines as Complement Inhibitors

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