

Book of
Abstracts

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Abstract of Accepted Papers

Harnessing the Power of Large Language Models for Education: A Comprehensive Analysis of Their Impact on Teaching and Learning

Yash Chittora, Yashi Singh Chouhan, Rakshit Kothari

The rapid growth in the development of Large Language Models (LLMs) signals a paradigm shift in teaching and learning methodologies. Since their introduction, LLMs have demonstrated high capabilities, gaining the attention of the educational community. One such LLM, OpenAI's ChatGPT became one of the most adapted and popular LLM since it is release by gaining more than one million subscribers within a week. This research paper is a comprehensive analysis of the LLMs and their impact on teaching and learning. LLMs are not limited to just proprietary LLMs such as ChatGPT, but there are Open-Source LLMs available too such as Mistral 7B by Mistral AI and Llama-2 by Meta. This makes the language models a lot more accessible to the users with diverse requirements and computing hardware. The open source LLMs can be used locally on consumer computers, making them highly favourable for educators and learners as they can access these language models offline without relying on the online alternatives. In this research paper we will look closely at how Large Language Models (LLMs) work, exploring their potential benefits and drawbacks in educational settings. There are many benefits to using LLMs in education. LLMs can help to create an interactive learning experience that adjusts to the learner's needs. One of the best uses of these models is to generate assessments, which provide ongoing feedback to improve teaching and learning. However there are also challenges associated with this high potential. We need to consider the possibility of LLMs generating inaccurate information, wrong answers and biased responses. The introduction of bias is during the training on dataset. One of these challenges also includes the unethical use of these models in the education system. Taking inspiration from these insights this study presents suggestions and use cases, for responsibly integrating LLMs into the education system. The goal is to ensure that these evolving generative AI tools contribute towards enhancing education and supporting students learning rather than making learners lazy and degrading the education system. As education enters an era influenced by LLMs this research aims to provide information regarding the opportunities and considerations for the usage of these tools in the education industry.

Generative Artificial Intelligence for Business Fraud Detection and Anomaly Recognition

Harsh Dudhat, Mrugendrasinh Rahevar, Martin Parmar

Complex business fakes have become more common in the digital age, so security measures must be tighter. This article looks into how Generative AI might detect and prevent businesses fraud. More investigations into scam schemes show the importance of reliable detection systems, like Generative AI's autonomous anomaly detection. This study talks about fraud, how to spot it using machine learning models, and some uses of generative AI. Ethical concerns include getting rid of discrimination and keeping personal information safe. This article examines abundant AI trends like blockchain integration, federated learning, and reinforcement learning. It also makes predictions about AI scam detection trends. To protect digital security, the study suggests that companies use AI technologies that are smart and flexible.

Smart Shoe-Attachment for the Visually Impaired

Cifert Jacques, Dhananjay Shringare, Harsh Desai, Jonathan Sequeira, Flasio Colaco, Saeesh Verenkar

This research introduces a smart shoe attachment designed to empower individuals with visual impairments by providing real-time environmental awareness and navigational assistance. Addressing the challenges faced by the blind in mobility, the system integrates ultrasonic sensors, vibrating motors, and emergency alert features to create a comprehensive solution. The study involves the development and implementation of a prototype smart shoe attachment, incorporating sensors on the shoe module as well as a knee module. The sensors utilize ultrasonic technology to detect obstacles, walls, stairs, and changes in floor elevation. An Arduino Uno and optimized code streamlines the system's functionality. The emergency system includes a GPS module, GSM module, and a buzzer for immediate user alert and location-sharing in emergencies. The results demonstrate the effectiveness of the smart shoe attachment in enhancing the user's mobility and safety. The obstacle detection sensor covers a range of 10 cm to 50 cm, while the wall and elevation detection sensor, positioned at a 60-degree angle, extends awareness within a range of 25 cm to 50 cm. The depression detection sensor, set at an optimal angle of 45 to 60 degrees, activates the

vibrating motor within a 50 cm range, alerting the user to potential drops. This research contributes a novel approach to assistive technology for the visually impaired, integrating multiple sensors, advanced hardware, and optimized code for efficient obstacle detection. The knee module sensor's unique activation mechanism enhances the user's awareness of changes in floor elevation, offering a comprehensive and innovative solution. The smart shoe attachment holds promising applications in aiding the mobility of individuals with visual impairments, both indoors and outdoors. Beyond obstacle detection, the emergency alert system ensures timely assistance, while the system's compact design and energy efficiency make it a practical and versatile tool for enhancing the independence and safety of the visually impaired. Further research and development are needed to optimize the design and functionality, but the potential benefits are significant and could have a profound impact on the lives of visually impaired individuals.

Advancements in Cyberbullying Detection Techniques on social media: A Comprehensive Review

M Satya Srinivas, J Harshavardhan, M Anusha, P Niharika, M Yamini Devi, MVSS Nagendranath

The internet has seamlessly woven its way into every facet of human existence, serving as a global conduit for effortless connections and instant access to a vast repository of knowledge. However, this digital progress has unwittingly ushered in a dark underbelly of cyber offenses. Among these challenges, cyberbullying stands out a form of electronic communication capable of tarnishing an individual's character, violating their privacy, or subjecting them to threats and harassment, often culminating in profound emotional upheaval. While cyberbullying has lingered as a concern for some time, it's particularly pernicious impact on the younger generation has only recently garnered the attention it deserves. Machine learning has emerged as a potent weapon in the ongoing battle against cyberbullying. By scrutinizing the intricate language patterns employed by both bullies and their victims, machine learning algorithms can be trained to autonomously sift through content and identify instances of cyberbullying. This paper embarks on a thorough investigation into cyberbullying prediction models that reveals the intricate details involved in their creation.

DetectWave - Scenario recognition from Image

Mannat Doultani, Gautam Dinga, Harsh Loya, Viraj Joshi, Harsh Patil

DetectWave, a groundbreaking system designed for scenario recognition from images, holds significant potential for diverse applications within our society. Particularly, it offers a promising solution for individuals with visual impairments, enabling them to interpret the contents of images with ease. Through the utilization of Deep Learning models and NLP algorithms, DetectWave analyzes depicted scenarios and converts them into accessible audio formats, enhancing accessibility for visually impaired individuals. This sophisticated system seamlessly integrates image processing, natural language processing, and speech synthesis functionalities. Developed in Python, it leverages powerful libraries such as transformers, langchain_openai, and various machine learning models to achieve its objectives. Upon image upload, users are provided with descriptive captions, while the system generates detailed narratives converted into speech for enhanced understanding. Key components of DetectWave include blip-image-captioning-base for image-to-text conversion, OpenAI GPT-3.5-turbo-instruct for text elaboration, and espnet/kanbayashi_ljspeech_vits for text-to-speech synthesis. Its user-friendly interface, crafted with Streamlit, exemplifies the potential of AI in facilitating immersive scenario comprehension and storytelling experiences.

Voice-Controlled Car Prototype: Advancing Human-Machine Interface with NLP and Wireless Communication

Abhishek Kumar Shukla, Pakhi Kansal, Jyoti Sharma

Our project presents a Voice-Controlled Car prototype aimed at filling the gap in systematic evaluations of voice-controlled systems. The prototype utilizes Natural Language Processing (NLP) techniques and an Arduino UNO-interfaced Bluetooth module for wireless communication with the "AMR Voice Control" Android app. Through algorithmic processes, the system extracts and executes multiple voice commands sequentially. Extensive testing with multiple phrases demonstrates strong performance in the Bluetooth range (8.5-12 meters) and response accuracy. The prototype is capable of extracting commands like forward, backward, stop, left and right form

sentences. It follows all these commands one-by-one in a sequence. Additional features include live streaming via an ESP32-CAM module and obstacle recognition using an ultrasonic sensor, enhancing its practicality in real-world scenarios. This project offers an effective and practical voice-activated solution for Human-Machine Interface (HMI) applications, prioritizing usability and practicality.

Leveraging Transformer: A Web-Based Vision Tool for Potato Disease Detection

Shaurya Jain, Amol Satsangi

Motivation: The development in agriculture is a cornerstone strategy to eradicate extreme poverty and provide sustenance for the projected 10 billion people by 2050. Potatoes, a staple food for two-thirds of the global population, offer significant economic opportunities for farmers. At the same time, the financial losses incurred by the farmers each year due to diseases underscore the critical need for timely detection and effective treatment.

Objective: Detecting diseases in potato plants is essential for sustainable farming. We aim to create a web-based vision tool using advanced technology, enabling farmers to quickly identify diseases from images of potato leaves. This innovation promises to boost crop yield, increase profits, and benefit the global economy.

Methodology: We employ vision transformers to detect potato leaf diseases, utilizing a subset of Plant Disease Expert dataset containing potato classes. Our Experimentation involved varying image sizes and patch sizes to optimize performance and achieve the best results. Furthermore, this detection model with a farmer-friendly web-based vision tool, facilitating easy access and utilization.

Results: Experimentation yielded an optimal configuration with an image size of 192 and a patch size of 12, achieving impressive accuracies of 99.89%, 99.78%, and 99.81% on testing, validation, and training sets, respectively.

Conclusion: Our vision transformer model enables early detection and prediction of potato leaf diseases, potentially saving 32% of annual potato losses. This web-based vision tool provides real-time disease predictions and valuable insights for farmers, revolutionizing agricultural technology.

Cognitive Companion: Designing an AI-ML-IoMT Assistive Device for Alzheimer's Patients

Snigdha Gupta, Divyanshi Shrimali, Rakshit Kothari

Alzheimer's disease, often known as dementia (Disease of Forgetfulness), is one of the most common disorders in the world. According to a recent World Health Organization (WHO) research, around 55 million people worldwide suffer from Alzheimer's disease, with 10 million new cases diagnosed each year. According to the same study, variables such as age, high blood pressure (hypertension), high blood sugar (diabetes), obesity, smoking and drinking, being physically inactive, being socially isolated, depression, and so on might exacerbate the Alzheimer's disease population. In this paper, we offer a solution that combines cutting-edge technology like artificial intelligence, machine learning, and IoMT to create an assistive air for those suffering from Alzheimer's disease until the experts find a cure. We can make a difference by combining the advantages of AI, ML, and IoMT into a wearable gadget that acts as a cognitive companion for Alzheimer's patients. With one straightforward, patient-friendly gadget, we may get capabilities like voice reminders, voice bots, anti-fall detection, GPS tracking, health monitoring, and more. The AI model will fill the void of loneliness by acting as a speech bot capable of interacting with the patient in their local language. It will also play a critical function as an Identity Reminder and GPS tracking. This aid's novel "Identity Reminder" feature uses particular keywords to trigger an AI model that will identify the patient if he gets misplaced. The Machine learning algorithms will track mental and physical wellness and identify falls. Whereas IoMT will enable hardware-software connection. It will overlook sensor-related operations and voice reminders and alarms. This aid's primary goal is to employ cutting-edge technology to support those with Alzheimer's disease. But it can also be used by the elderly, the paralyzed, the mentally ill, and others to improve their quality of life and overcome their challenges.

Speech Emotion Recognition

Mannat Doultani, Ritika Hotwani, Vivek Balani, Yash Pahlani, Prabha Pamula

Our most innate means of self-expression as humans is through speaking. A key technological advancement in speech recognition is speech emotion recognition (SER), which detects and interprets emotions in speech by examining and interpreting vocal expressions. Our system for recognising emotions is characterized by a group of mechanisms that analyze voice signals, eliminate noise, and categorize the results to identify different emotions. We use the machine learning algorithm to extract emotions from voice cues, such as pitch, tone, and intensity. Our SER system is specifically trained to identify and comprehend emotions expressed in Hindi language. The model is trained on our self-generated dataset from Hindi TV entertainment shows and platforms, including YouTube. This focus on Hindi makes the system particularly useful in India, where it is widely spoken and can be used in a variety of applications. The system takes the input as speech and analyzes it to get the vocal attributes. The predicted emotions are shown on the graph as a spread of different emotions such as angry, sad, happy, neutral, which helps the user to understand the emotions that are expressed in the speech. The dominating emotion is shown as the final emotion tag.

Deep Dive: Comparative Analysis of Deep Learning Techniques for Disease Classification

Amol Satsangi, Shaurya Jain

Artificial intelligence (AI) has seamlessly woven itself into the fabric of our daily routines, becoming an indispensable companion from dawn till dusk. It has infiltrated every sector, revolutionising every operation, optimising efficiency, and unlocking new possibilities. One such domain is healthcare, in which the AI market is anticipated to reach a value of \$187 billion by 2030. With its potential, it has emerged as a focal point for researchers, innovators, and practitioners. As data forms the bedrock upon which such robust AI models are built, subtle differences can have significant implications for diagnosis and treatment. But in such a domain, obtaining a balanced dataset for training poses significant challenges and this leads to a notable impact on the results. Our research commenced by applying deep learning techniques namely, transfer learning, ensemble learning and computer vision-based transformers on the ChestXRay2017 dataset, focusing on pneumonia detection. Considering the inherent imbalance in the dataset, our objective is to ascertain the most effective state-of-the-art model capable of delivering superior performance. The optimal algorithm ensures that resources are allocated optimally, saving time and effort in the development and implementation of solutions. Overall, the insights gained through this comparison and findings can regulate the development of future AI algorithms and best practices, fostering advancements in medical image analysis.

Model of thermal power plant using MATLAB

Tanzeela Waquar

This project is intended to understand the flow of energy in powerplant. The parameters are measured at every stage of the process and monitored and all inputs to the plant (such as coal, air) are carefully controlled to achieve the steam which is then put into the turbine. Energy exchanges into the system is measured in this project. The aim of this project is to achieve better output (higher efficiency) with the help of this software.

Unveiling Lived Experiences: Data-Driven Insights into Depression across Populations

Srijan Mohan

Leveraging the rich RHMCD-20 dataset this study investigates peoples encompassing teenagers, college students, housewives, professionals, and diverse demographics from Bangladesh, this study delves into the lived experiences of depression. In interviews we delve into topics and difficulties experienced by people, from different backgrounds. Through analysis and data visualization we shed light on how factors such as quarantine, mood swings and changing habits influence health and overall functioning. Our findings aim to reveal the causes of depression and mental health

Skin Lesion Classification and Prediction - A Comparative Analysis of Machine Learning Techniques

Shemphang Ryntathiang

One of the deadliest types of skin cancer, melanoma, needs to be diagnosed as soon as possible in order to increase patient survival rates. This study explored the use of machine learning for the automated categorization of cancerous lesions in dermoscopic images. Models like Convolutional Neural Networks (CNNs), ResNet50, InceptionV3 and DenseNet121 were tested on the HAM10000 benchmark dataset with and without data augmentation. The primary measures of performance were accuracy, precision, recall, and F1 score. Out of all the models evaluated, the CNN model achieved the highest accuracy of 97% with the application of data augmentation. In general, data augmentation proved to greatly improve the accuracy of the model. Furthermore, efforts were made to further enhance performance by implementing techniques such as linear discriminant analysis (LDA) and principal component analysis (PCA) to reduce dimensionality. While PCA decreased accuracy for some models, LDA improved it in select cases. Results demonstrate machine learning, especially CNNs, can accurately distinguish benign and malignant skin lesions. Automating this screening could help dermatologists reduce late-stage diagnosis. Widespread adoption of these techniques may lower treatment costs, save lives, and pave the way for automated diagnosis in other medical imaging areas.

Business Success through Multi-Factorial Approach

M. Tharshith

In the dynamic landscape of entrepreneurship, success hinges on factors ranging from economic considerations to cultural and historical nuances. Our research explores critical decision-making aspects for aspiring business owners, emphasizing the pivotal role of location intelligence. We delve into the intricate balance between the type of business, economic surroundings, land cost, and competition, with a focus on historical and cultural factors that shape consumer behaviour. Our study addresses the exigency of providing prospective entrepreneurs with a comprehensive tool for evaluating the success rate of their business ventures. By identifying gaps in existing research, our aim is to empower individuals in making informed decisions. The analytical approach combines economic analysis, geographical mapping, and historical research to provide a holistic understanding of the chosen location's suitability for a specific business. Our research establishes a correlation between location and business success, offering insights into the intricate dynamics, including economic status, competition, and historical significance as crucial determinants. In conclusion, this study is pivotal for entrepreneurs aiming to establish successful ventures. By uncovering the nuances that impact business prosperity, individuals can strategize effectively, mitigating risks and enhancing their chances of success.

Lifestyle disease prediction using machine learning

Devansh Gupta, Ekanshu Agrawal, Sukesh Sharma

In this study, machine learning is used to predict and detect two lifestyle health issues: heart diseases and diabetes. Various smart techniques are used here to predict heart diseases. By combining different machine learning techniques, like Random Forest Classifier, K- nearest neighbours, heart disease prediction system reaches an accuracy of 88.5%. However, diabetes, a condition marked by elevated blood sugar, is also a major concern. In this work, various types of diabetes are examined, such as Type I and Type II, and machine learning algorithms, such as: K-Nearest Neighbors (KNN) and Random Forest are used to predict the presence of diabetes in individuals. Following data cleansing and the removal of extraneous information, Random Forest displays an accuracy of 82.9% for diabetes. This study demonstrates how these intelligent techniques can provide us with improved health information and assist us in identifying and managing lifestyle diseases.

Kidney Stone Detection using Deep Learning Techniques

Dikit Paldon, Sukesh Sharma

Kidney stone disease, or nephrolithiasis, is a common and painful urological condition which affects millions of people globally. For a diagnosis and treatment plan to be effective, kidney stones must be detected timely and

accurately. In this paper, a thorough investigation is conducted for the automated kidney stone diagnosis in medical imaging using the Deep Learning techniques, such as: Convolutional Neural Network (CNN), ResNet-50 and VGG-16. The results indicate that CNN outperforms (with 100% accuracy) ResNet-50 and VGG-16, in the automated kidney stone detection domain. The comparison analysis offers practitioners and researchers in the field of medical image analysis useful knowledge about the advantages and disadvantages of each architecture. This study contributes to the continuing efforts to create scalable, accurate, and efficient kidney stone detection systems, which may help medical professionals diagnose patients more quickly and provide better care.

COVID-19 Detection using Machine Learning and Deep Learning Techniques

Dafini Rikhi, Sukesha Sharma

In this paper, deep learning technique, convolutional neural networks (CNN) is used to identify COVID-19. Performance of CNN has been compared with other techniques, such as: K-Nearest Neighbours (KNN) and Deep Neural Networks (DNN). Data set consists of images, such as CT scans and X-rays, that were obtained from both COVID-19-positive and negative cases. Using this dataset, the CNN model is trained to identify and extract specific features diagnostic of COVID-19 infection. The CNN model's performance is then compared with KNN and DNN techniques. CNN-based model is found to be more effective in correctly recognizing COVID-19 cases from medical pictures with accuracy of 95.5 % as compared to DNN with accuracy of 94.67% and KNN with accuracy of 93.5%.

Identification of Ayurvedic Formulation in Degraded Tamil Handwritten Palm Leaf Manuscript Dataset employing FAST Feature Algorithm

I. Jailingeswari, S.Gopinathan

The challenge still faced in the research community is the recognition of characters from the Degraded Handwritten Palm Leaf Manuscript. Degrading is similar to damage and deterioration that results in uneven illumination, decolorization, holes, cracks, moisture, and rodent activity. Ayurveda is one of the oldest human healthcare management systems in the world. Most of the information in Ayurveda is found in palm-leaf manuscripts. An enormous amount of research is done to discover new drugs or ways to treat modern diseases based on the Ayurvedic palm-leaf manuscripts. The handwritten documentation, translation, digitization, and analysis of the ancient palm-leaf manuscript may reveal obscure Ayurvedic knowledge that would be important to modern society. The Proposed work concentrated on Identifying the characters in the Degraded Tamil Handwritten Palm Leaf Manuscript Dataset which contains Ayurvedic details by using FAST Algorithm. Detecting corners on interest points in a selected dataset can be robustly detected. . It reduced computation time on high-dimensional data sets, and efficiently trained the model. The recognition accuracy obtained in this best result.

A Review of User Entity Behavior Analytics in the field of cybersecurity

Shreyashi Das, Mithun B N

This review paper explores the realm of User and Entity Behavior Analytics (UEBA) within the cybersecurity landscape. User Entity Behavior Analytics, an innovative approach leveraging advanced analytics and machine learning, focuses on monitoring and analyzing patterns of user and entity activities to identify anomalies and potential security vulnerabilities. This mechanism uses the statistical techniques and machine learning algorithms to draw patterns and then detect the anomalies to throw alert based on the severity of the attack. In order to shed light on UEBA's efficacy and possible areas for progress, this study presents a thorough analysis of current breakthroughs, difficulties, and trends in the field and it also talks about the benefits of integrating UEBA with System Information Event Management (SIEM) to highlight how the two technologies work in concert with one another. A review of User Entity Behavior Analytics design and approach is discussed in this paper to limit the cyber attacks.

Recommendation System for Smart Farming

Drashti Chahal, Sidhi Gupta, Sukesha Sharma

Smart farming, which uses machine learning or deep learning, can help with the efficient production of crops. Machine learning techniques suggest the right crop, so we can avoid using excessive amounts of fertilizer, pesticides, or water. Farmers can be benefitted from these types of smart applications. Farmers need to guess a lot and use their experience, but smart farming applications can help them to make better decisions. These decisions are: regarding which crop to grow based on climate conditions, soil analysis, using fewer resources (water, manure etc.). A recommendation system for farming is really helpful to farmers in many ways. In this paper, various machine learning techniques are used for smart farming and their results are compared. Logistic regression, decision tree and random forest are used for classification. Dataset regarding various crops such as: rice, maize, Banana, Mango, Coconut, Mothbeans, Papaya, Cotton is used. Random forest technique is found to be more accurate than other two techniques. Smart farming may help farmers to yield more. It does this by looking at previous data and telling farmers what kind of crops are best for their area, considering things like the soil, humidity, temperature, weather prediction etc. Smart farming is good for the environment, and it saves money for farmers.

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ABOUT SCRS

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