Chaitanya Bharathi Institute of Technology (Autonomous)

Gandipet, Hyderabad – 500075

Department of Computer Science and Engineering

Projects for the Year 2023-2024

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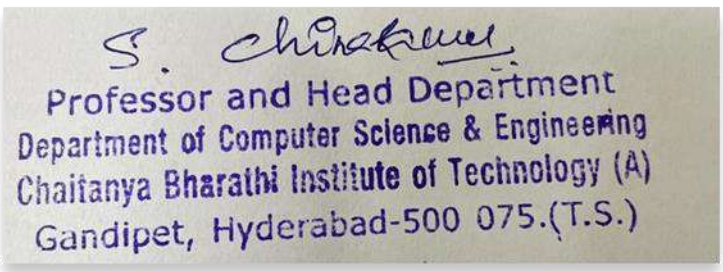

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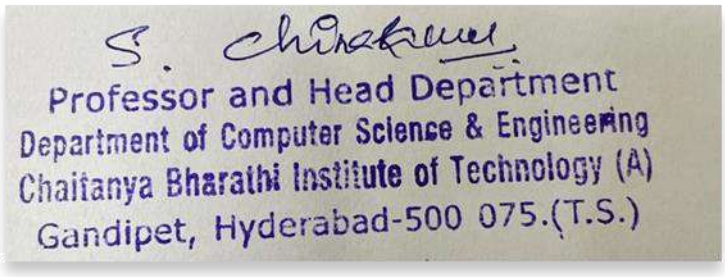

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ABSTRACT

The primary function of law enforcement is to locate missing persons or suspects using a variety of sophisticated techniques such as fingerprint and DNA analysis, geographic profiling, and, particularly, facial sketches. Among these methods, facial sketches have proven to be an extremely effective means of speeding up the identification process. Using facial sketches when combined with forensic analysis methods significantly improves the search for potential suspects in mugshot databases. It can also help the general public visualize the accused. The addition of Artificial Intelligence (AI) now stands out as a promising avenue for speeding up and improving this critical process.

A model based on Generative Adversarial Networks (GANs) is proposed as a solution to the problem of converting facial sketches into realistic images. This model is intended to recognize and extract key facial features from sketches, resulting in a coherent and detailed image that closely resembles reality. Textual input (processed using Contrastive Language Image Pretraining) is used to guide the generation of such images, providing specific details such as the individual's race and hair colour. The provided sketch and text embeddings are passed into an encoder that maps the input into a latent space vector. This vector is provided into a styleGAN generator, which creates a lifelike, realistic image. This encoder needs to be trained on a dataset of diverse faces in order to create an encoder that is capable of pointing to the appropriate vector in the latent space. During evaluation, assessing the quality of the generated image is achieved by leveraging several established metrics commonly used in the field of generative models. These metrics include the Structure Similarity Index measure (SSIM) and L2 norm.

Keywords: *Generative Adversarial Networks, StyleGAN, Contrastive Language Image Pretraining, Structure Similarity Index measure, L2 norm*

CERTIFICATE

This is to certify that the project titled **"Forensic Text-prompted Sketch to Image using GAN"**, is the bonafide work carried out by **Jahnavi Manoj (160120733003) and Jahnavi Reddy Malreddy (160120733004)**, students of **Bachelor of Engineering (Computer Science and Engineering)** of **Chaitanya Bharathi Institute of Technology(A)**, Hyderabad, affiliated to **Osmania University**, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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26/4.
Project External Examiner

A PROJECT

REPORT ON

Concealing Information in Images: An MLP-Driven Approach

Major project submitted in partial fulfillment of the requirements for the Award of the Degree of

BACHELOR OF

ENGINEERING IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Abstract

In the rapidly evolving landscape of information technology, the imperative to safeguard sensitive data has reached unprecedented levels. As a response to this growing need, researchers have directed their focus towards data-hiding technologies, with a particular emphasis on reversible data hiding (RDH) methods. This project, titled "Concealing Information in Images: An MLP-Driven Approach," stands at the forefront of RDH advancements by introducing a novel methodology centered around refining pixel value prediction. At its core, the proposed "prediction-error expansion (PEE)" approach harnesses the power of a multi-layer perceptron neural network to intricately predict pixel values, exploiting correlations with neighboring pixels for heightened accuracy.

Through the integration of adaptive histogram bin shifting, this approach seamlessly embeds data into the pixels of the cover image, significantly increasing the embedding capacity without introducing any compromise to the quality of the image. This synthesis of neural network technology with fundamental data-hiding concepts signifies a substantial leap forward in the realm of secure communication. The outcomes of this project not only fortify the foundations of RDH but also offer robust support for confidential data transmission in applications where privacy and multimedia recovery are paramount. In essence, this research propels the field into a new era, where the synergy between advanced neural networks and secure data concealment techniques becomes instrumental in ensuring the integrity and privacy of digital communication.

Keywords: Reversible Data Hiding (RDH), Pixel Value Prediction, Multi-Layer Perceptron Neural Network, Secure Communication, Confidential Data Transmis- sion.

A PROJECT REPORT ON

SENTIMENT BASED RECOMMENDATION SYSTEM FOR YOUTUBE COMMENTS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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ABSTRACT

With the exponential growth of online video content on platforms like YouTube,the need for effective recommendation systems has become paramount. Traditional recommendation algorithms often rely solely on user engagement metrics such as views, likes, and watch time, neglecting the rich source of information embedded within user comments. In this paper, we propose a novel sentiment-based recommendation system for YouTube leveraging Convolutional Neural Network (CNN) models for sentiment analysis of user comments. Our approach begins by collecting user comments associated with YouTube videos, extracting textual data, and preprocessing it for sentiment analysis. We employ a CNN architecture optimized for text classification to accurately detect sentiment polarity within comments. The trained CNN model effectively captures nuanced sentiments expressed by users, enabling us to classify comments into positive, negative, or neutral categories.Utilizing the sentiment-labeled comments, we construct a sentiment-aware representation of each video in the recommendation dataset. This representation combines the video's inherent features with the aggregated sentiment information from its associated comments. We employ collaborative filtering techniques to generate personalized recommendations for users based on their historical interactions and sentiment preferences.Experimental results on a real-world YouTube dataset demonstrate the effectiveness of our sentiment-based recommendation system. Compared to traditional recommendation methods, our approach significantly improves recommendation accuracy and user satisfaction by incorporating sentiment signals from user comments.The proposed system holds promise for enhancing user engagement and promoting content discovery on YouTube by leveraging the valuable insights embedded within the vast corpus of user-generated comments.

Keywords: *Convolutional Neural Network (CNN), personalized recommendations , recommendation system , sentiment analysis, sentiment polarity , text classification, user comments, user engagement, YouTube.,*

A PROJECT REPORT ON

Weed Detection and Classification in cotton fields using Resnet152V2 and Inception V3

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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Abstract

Agriculture,the main pillar of our nation's economy, is experiencing many difficulties, which is forcing many farmers to look for other sources of income owing to the increased hazards. India has long relied heavily on cotton as a revenue crop, but one of the biggest risks it faces is weed infestations, which prevent plants from growing. The existence of multiple weed species complicates the procedure of weed detection. In this paper, we focus mainly on cotton crop. This survey explores weed detection and classification methodologies across many models of Machine Learning and Deep learning namely— SVM,KNN, CNN, YOLOv8, Inception V3, and Resnet 152 V2—to identify weed infestations by classifying plants as weeds or not, identifying the type of weed, and recommending appropriate growth-controlling strategies. The traditional template matching procedure is replaced by these methods.We believe that the Weed detection system, by utilising the capabilities of DL models like Resnet and Inception, can significantly enhance safety of cotton crop. This hybrid model of Inception V3 and Resnet 152 V2, which deviates from the conventional template matching method, is used to process the images. With its improved accuracy, versatility, and potential for real-time weed detection, this upgraded technology will revolutionise weed management in cotton farming and support India's agricultural sustainability.

Keywords: CNN,Inception V3, Resnet 152 V2, YOLOv8

A PROJECT REPORT ON

ELIMINATION OF THERMAL REFLECTION IN THERMAL IMAGES USING DEEP LEARNING

Major project submitted in partial fulfillment of the re for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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ABSTRACT

Thermal imaging plays a crucial role in surveillance and monitoring systems, especially in low-light settings. However, the presence of thermal reflections often complicates accurate object detection and recognition in thermal images. These reflections, resembling shadows or mirror images, can either be connected to objects or occur on nearby structures and floors, posing challenges in distinguishing them. Moreover, the overlapping patterns and similar pixel values of thermal reflections and objects further exacerbate this differentiation process. Existing methods have struggled to adequately address the diverse challenges posed by thermal reflections across varying environmental conditions.

To tackle these issues, our project proposes a novel method for detecting and eliminating thermal reflections using a pruned fully convolutional network (PFCN) based on deep learning. Our approach involves image transformation within the object region, leveraging surrounding information for effective reflection removal. Through experiments conducted on self-collected databases (Dongguk thermal image database - DTh-DB, and Dongguk items and vehicles database - DIV-DB) as well as open databases, our method has demonstrated superior performance compared to state-of-the-art approaches. Not only does our method address the challenges associated with thermal reflections, but it also contributes to enhancing the accuracy of object detection and recognition in thermal imagery across diverse environmental conditions.

Keywords: *Thermal image, image transformation, thermal reflection removal, pruned fully convolutional network.*

A

Project Report

on

Resume Optimisation and Suggestions using Large Language Models

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted by

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2023 - 2024

Abstract

In today's dynamic job market, aligning a candidate's resume effectively with specific job descriptions is crucial for successful applications. Traditional resume optimization methods often rely on basic keyword matching, which falls short in understanding linguistic nuances and contextual meaning, resulting in mismatches between applicant profiles and job requirements. This study introduces a novel application utilizing Bidirectional Encoder Representations from Transformers (BERT) to generate language embeddings from both job descriptions and resumes, bridging this gap. By calculating similarity scores between these embeddings, the project provides a context-aware and nuanced evaluation of how well a candidate's qualifications match a job's requirements. Moreover, the integration of Generative Pre-trained Transformer (GPT) models offers personalized suggestions for resume optimization, highlighting areas for improvement identified by the BERT analysis. The application also includes a job search tool allowing users to browse LinkedIn for relevant job postings and apply directly, streamlining the job application process.

The superiority of BERT over conventional keyword-based matching techniques is explored in this study, emphasizing its ability to comprehend contextual relationships between words and phrases, resulting in more relevant and accurate matches. This proposed approach significantly enhances candidates' prospects of securing desired positions by enabling them to refine their resumes effectively and facilitating a more efficient job application experience. The integration of BERT's deep learning capabilities with GPT's generative recommendations represents a substantial advancement in career development technologies, offering both theoretical insights and practical solutions for improving job search and application strategies.

Keywords: Embeddings, Generative Pre-trained Transformers, Bidirectional Encoder Representations from Transformers, Keyword Matching.

A Project Report on

Mobile Application Based Collision Detection and Alerting System for Motor Vehicles

Major project report submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Engineering

in

Computer Science and Engineering

(2020 – 2024)

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Abstract

Accidents involving motor vehicles are a big problem on a global scale, and they frequently result in terrible deaths. Responding to emergencies in a timely manner is absolutely necessary in order to improve survival rates in instances like these. Alternatively, this reaction time is dependent upon the presence of automatic in-vehicle crash detection and reporting approaches, which are commonly seen in high-end or luxury automobiles. Due of this, there is a gap in safety, particularly in low-end automobiles, which are widespread in developing nations. Original equipment manufacturers (OEMs) do not often install such devices in their vehicles.

This research provides a unique way to solve this important issue, which is an autonomous collision detection system which uses smartphones. Our method makes use of the sensor capabilities of cellphones, such as Accelerometer, Gyroscope,GPS and GSM , in order to correctly detect collisions. This is accomplished despite the limits of the sensors, which includes range and sensitivity. As a result of this, this system presents an option that is more cost-effective than the expensive collision detection systems that are combined with the premium automobiles. In addition, this method eliminates the cost barrier, which enables it to be compatible with Android devices whereas it was previously only compatible with iPhones. The focus of this approach is mainly placed on the significance of minimising reaction times in the event of traffic accidents. It highlights the disparity between different car categories in terms of safety features and provides the solution that is based on smartphones.

Keywords: Crash Detection, GSM, Accelerometer, Gyroscope, GPS, Speed Monitoring, Android Application.

A PROJECT REPORT ON

PYTHON SOURCE CODE ANALYSIS FOR BUG DETECTION USING TRANSFORMERS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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ABSTRACT

Bug detection is a vital aspect of software development, crucial for identifying and rectifying defects, errors, and issues within software applications or systems. In the context of Python-based programs, the conventional bug detection process often relies on the sequential detection and presentation of errors using a Python interpreter. However, this approach results in frequent interruptions in the coding workflow, as developers must address errors one at a time. As Python's popularity continues to soar, the demand for more efficient bug detection tools grows in tandem. Notably, built-in type bugs emerge as one of the most prevalent vulnerabilities in Python, capable of causing code crashes.

To address the inefficiencies of traditional bug detection methods, our proposed system introduces a paradigm shift in error detection. Instead of presenting errors sequentially, our system aims to identify and present all detected errors within the code simultaneously. This approach empowers developers to tackle multiple issues collectively, minimizing workflow interruptions and enhancing overall productivity.

Our system leverages a dataset sourced from the CodeNet project, comprising Python code submissions from online coding competitions. Specifically, we select consecutive attempts by individual users that resulted in fixing buggy submissions. By harnessing transformer models, our system can identify over 20 types of bugs, including syntax errors, type errors, and value errors.

Keywords: *Python Programming Language, Built-in Type Bugs, Bug Detection, Transformers*

A PROJECT REPORT ON

Fusion of Gait Recognition with Face Recognition for Human Authentication

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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ABSTRACT

In the rapidly evolving landscape of biometric security solutions, this project introduces an innovative approach to biometric identification by fusing gait and face recognition modalities. As the need for robust and accurate identification systems becomes increasingly prominent in our daily lives, this fusion project seeks to address the limitations of individual recognition methods, offering a more comprehensive and reliable solution. By seamlessly integrating gait and face recognition technologies, the project aims to create a versatile and secure biometric identification system with the flexibility to operate across diverse applications, from access control and surveillance to authentication and more.

The project addresses the growing demand for reliable biometric identification in our modern world. By integrating gait and face recognition technologies, It aims to overcome limitations in individual recognition methods and provide a comprehensive and versatile solution. This fusion approach enhances accuracy, security, and adaptability for various applications, including accesscontrol, surveillance, and authentication. The model training process covers data collection, preprocessing, feature extraction, fusion, dimensionality reduction, model selection, training, evaluation, saving, inference, and continuous improvement, ensuring precise and reliable multimodal biometric identification.

Keywords: *Biometric security, Gait recognition, Face recognition, Fusion approach, Comprehensive solution, Robust identification, Access control, Surveillance, Authentication, Feature extraction, Dimensionality reduction, Multimodal biometric identification.*

A PROJECT REPORT ON

SHIP DETECTION FOR IMPROVED MARITIME SAFETY AND SECURITY USING DL

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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CERTIFICATE

This is to certify that the project titled **"Ship Detection For Improved Maritime Safety And Security Using DL"**, is the bonafide work carried out by **Philip Godala (160120733036) and Sai Kishore Bandari (160120733044),** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Abstract

Maritime safety and security are paramount concerns in various domains, including marine traffic control and anti-illegal fishing. Accurate ship detection plays a critical role in ensuring the success of operations aimed at safeguarding our seas. In this study, we explore the application of deep learning (DL) techniques, specifically YOLOv5, YOLOv6, YOLOv7, and YOLOv8, to enhance ship detection accuracy and decrease errors. By leveraging the adaptability and efficiency of these DL models, we aim to address the complexities inherent in maritime environments and contribute to the advancement of maritime safety and security measures. A key component of our approach involves the acquisition and utilization of a standardized dataset for training and evaluating the DL models. We recognize the fundamental importance of a reliable dataset in developing robust ship detection systems. Through meticulous dataset curation and preprocessing, we ensure the integrity and broad applicability of our models.

By harnessing the capabilities of DL models trained on high-quality datasets, we seek to improve the precision and reliability of ship identification, thus enhancing monitoring capabilities and expediting incident response times in maritime operations.Our study yields promising results, demonstrating the effectiveness of DL-based ship detection systems in strengthening maritime safety and security. By leveraging state-of-the-art DL techniques, we achieve notable improvements in ship recognition accuracy and error reduction. These findings underscore the potential of DL-driven technologies to safeguard our seas and aquatic activities effectively. Through continuous refinement and application of advanced DL methodologies, we aim to further optimize maritime surveillance systems and contribute to the protection of marine ecosystems and resources.

Keywords: Ship detection, Maritime safety, Maritime security, Deep learning models, Monitoring capacities, sea protection.

A PROJECT REPORT ON

Conversational Agent using Voice Cloning

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

Ch Pavan Harshit	**160120733035**
Satvik Yadav Elitem	**160120733049**

Under the Esteemed Guidance of

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CERTIFICATE

This is to certify that the project titled **"Conversational Agent using Voice Cloning"**, is the bonafide work carried out by **Ch Pavan Harshit (160120733035) and Satvik Yadav Elitem (160120733049)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Signature of the Supervisor
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Project External Examiner

Abstract

Voice cloning stands at the forefront of rapidly advancing technologies, presenting a dual-edged sword with its array of potential uses that span both beneficial and potentially harmful applications. This technology is grounded in the principle of generating speech that mirrors the voice of an actual person, achieved by training a machine learning model on a dataset of the target speaker's audio recordings. The intricate process involves the model intricately capturing the unique vocal characteristics of the individual, including their pitch, timbre, and accent. This rigorous training equips the model with the ability to produce new speech segments that strikingly resemble the voice of the targeted speaker.

One of the most promising applications of voice cloning technology lies in its integration with advanced models like GPT, paving the way for the development of voice-controlled assistants. These assistants, adept at voice cloning, could revolutionize everyday tasks such as call screening, inquiring about meeting details, and scheduling appointments. The incorporation of voice cloning in such contexts is not just about imitating a human voice but also about harnessing this capability to enhance efficiency and save time. This application symbolizes a significant stride in the realm of artificial intelligence, where voice cloning transcends beyond mere replication of voice patterns to becoming a functional and efficient tool in various practical scenarios.

Keywords: Voice Cloning, GPT, VITS, Deep Learning, Speech Synthesis, Machine Learning, GANs

A PROJECT REPORT ON

Herbal Species Identification Using Deep Learning With Image Processing

Major project submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

by

Likith Reddy Irigela 160120733033
Raghu Buchala 160120733040

Under the Esteemed Guidance of

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Submitted to

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[2023-2024]

CERTIFICATE

This is to certify that the project titled "**Herbal Species Identification using Deep Learning With Image Processing**" is the bonafide work carried out by **LIKITH REDDY IRIGELA (160120733033)** and **RAGHU BUCHALA (160120733040)** a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering(Computer Science and Engineering**)and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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27/4

Project External Examiner

DECLARATION

We hereby declare that the project entitled **"Herbal Species Identification using Deep Learning With Image Processing"** submitted for the B.E (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Place: Hyderabad, Telangana

Date: 25/04/2024

Likith Reddy Irigela (160102733033)

Raghu Buchala(160120733040)

A Project Report on

Deepfake Detection in Visual Media using ViT

Major project report submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Engineering

in

Computer Science and Engineering

(2020 – 2024)

by

Gopal Matcha (160120733032)

Sai Abhiram Alluri (160120733042)

Under the esteemed guidance of

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Certificate

This is to certify that the project titled **"Deepfake Detection In Visual Media Using ViT"**, is the Bonafide work carried out by **Gopal Matcha (160120733032)** and **Sai Abhiram Alluri (160120733042)**, students of **Bachelor of Engineering (Computer Science and Engineering)** of **Chaitanya Bharathi Institute of Technology (A)**, Hyderabad, affiliated to **Osmania University**, Hyderabad, Telangana (India) during the period of 2020 - 2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship, or any other similar title.

Dr. S. China Ramu
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Project External Examiner

Abstract

In an age dominated by advanced artificial intelligence and machine learning, the proliferation of deepfakes has raised significant concerns. These hyper-realistic manipulated media threaten trust and truth in the digital world, prompting the critical need for reliable deepfake detection methods. This project employs state-of-the-art techniques, including feature engineering, structured scaling, and advanced model architectures like MARLIN, EfficientNet, and vision transformers, to address this challenge. By focusing on both images and videos, it utilizes feature extraction and structured scaling to capture relevant characteristics and maintain efficiency. The integration of Binary Cross-Entropy Loss facilitates precise binary classification, while the use of AUC-ROC as an evaluation metric ensures accurate discrimination between real and fake content. The project aims to develop a deepfake detection model that is robust, accurate, and capable of distinguishing real from fake content. This involves the integration of various techniques and extensive evaluation using error metrics to ensure its dependability. The goal is to provide a comprehensive solution for detecting and countering deepfake content, contributing to trust and truth in the digital age.

Keywords: AUC-ROC, Binary Cross-Entropy Loss, Deepfake Detection, EfficientNet, MARLIN, Structured Scaling, Vision Transformers.

Abstract

Nowadays, more and more news readers read news online where they have access to millions of news articles from multiple sources. In order to help users find the right and relevant content, news recommender systems (NRS) are developed to relieve the information overload problem and suggest news items that might be of interest for the news readers. News Recommendation is highly challenging due to its dynamic nature, and also users' preferences change from time to time. To address the above challenge RL algorithms plays an essential role as these algorithms help in dealing the dynamic environment and large space. Reinforcement learning (RL) is a machine learning technique that allows agents to learn how to behave in their environment through trial and error. RL employees learn by interacting with their environment and are rewarded for work that achieves desired results. The project aims to develop a reinforcement learning algorithm based news recommender system Here, In our work, Reinforcement learning algorithms that are considered namely Q-Learning, Deep Q-Learning, Proximal Policy Optimization (PPO) and Twin Delayed Deep Deterministic (TD3).These algorithms are trained and tested using Microsoft News Dataset (MIND) and compared all these algorithms based on the evaluation metrics, we have chosen the best fit algorithm and developed the news recommendation system and also mentioned the challenges faced by the recommendation system. In this study, it was found that deep-q learning is best suited to suggest the news articles.

Keywords: Reinforcement learning, Q-learning, Markov decision process, Deep-Q learning, MIND dataset, Proximal Policy Optimization, Twin Delayed Deep Deterministic.

A PROJECT REPORT

ON

NEWS RECOMMENDER SYSTEM USING REINFORCEMENT LEARNING ALGORITHMS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2023-2024)

by

GOKUL CHINTHALAPUDI 160120733031
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A PROJECT REPORT ON

Demographics and Topic Impacts on the Co-Spread of HealthCare Prediction based on X(Twitter) Data

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Assistant Professor

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ABSTRACT

In today's interconnected digital landscape, the proliferation of social media platforms, notably Twitter, has significantly altered how we perceive, consume, and disseminate information across various domains, including business, economics, society, and healthcare. With the advent of big data analytics, businesses and researchers have tapped into the vast reservoir of data generated by social media to track trends, forecast events, and gain insights into diverse phenomena. However, alongside the benefits of this data-driven approach, there exists a pressing challenge: the rampant spread of misinformation and fake news, particularly in critical sectors like healthcare, where inaccuracies can yield adverse consequences.The proposed system utilizes a novel system aimed at combating healthcare misinformation propagated on Twitter by harnessing the power of natural language processing (NLP) techniques and advanced machine learning algorithms. Unlike traditional systems that rely on rigid rule-based approaches ill-suited for the nuanced language and context of social media, our proposed system embraces the dynamic nature of Twitter data and employs sophisticated NLP techniques, including topic modeling using Latent Dirichlet Allocation (LDA).

The core of our system lies in its ability to extract relevant information from the vast Twitter dataset and discern between credible and misleading content. To achieve this, we employ a diverse array of machine learning algorithms, including Naive Bayes, Support Vector Machines (SVM), ensemble learning methods, XGBoost, passive aggressive classifier, and Convolutional Neural Networks (CNN). By training these algorithms on labeled data, our system aims to detect and flag instances of fake news and misinformation pertaining to healthcare topics on Twitter.Through comprehensive evaluation and validation, we anticipate that our approach will yield valuable insights into the landscape of healthcare-related misinformation on Twitter, enabling stakeholders to proactively address false narratives and mitigate their detrimental effects on public health and well-being. Moreover, by emphasizing the importance of trustworthy data, information, and knowledge flows in the era of the information revolution, our system underscores the critical need for enhanced fact-checking protocols and robust solutions to combat the spread of fake news in vital domains like healthcare.

Keywords:Natural Language processing, Social Media data, Topic Modeling, Text Visualisation, Text Summarization, Machine Learning.

Abstract

In today's globalized world, multilingualism is common. Many individuals and businesses interact across language barriers daily, making it essential to explore innovative solutions for effective cross-language communication. This project presents a novel approach to multilingual video dubbing through the integration of voice cloning and neural machine translation techniques. The objective is to efficiently translate and dub videos from one language to another while preserving the original speaker's voice characteristics. The proposed system employs advanced techniques in voice cloning, speech emotion recognition, synchronizing speech with lips, and neural machine translation to identify the source language, translate the content, and subsequently synthesize the speaker's voice in the target language. By utilizing neural voice cloning, the translated content is rendered with the speaker's distinct voice qualities, creating a seamless and authentic experience for the viewers. The project addresses the challenges of cross-language voice cloning and linguistic translation, exploring their collaborative capability in the context of video dubbing. The implemented solution aims to enhance the accessibility of multimedia content to a global audience, enabling viewers to enjoy videos in their preferred language without compromising the original speaker's voice identity. Experimental evaluations and comparative analysis of various algorithms will validate the effectiveness of the proposed approach in achieving high-quality, linguistically accurate, and emotionally resonant multilingual video dubbing.

Keywords: Multilingual video dubbing, voice cloning, neural machine translation, speech emotion recognition, lip-syncing, cross-language voice synthesis.

A PROJECT REPORT ON

Voice Cloning for Real-time Multilingual Video Dubbing

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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ABSTRACT

Knee osteoarthritis (KOA) poses a substantial health challenge, linked to one of the highest disability-adjusted life years and causing considerable impairment in knee joint functionality. The resulting irreversible damage often leads to the necessity of total knee replacement (TKR), a costly and temporary solution, particularly burdensome for obese individuals. The associated social isolation and diminished quality of life underscore the urgency of early and precise diagnosis for effective management.

In response to the shortcomings of current clinical practices, we introduce a groundbreaking solution—a KOA diagnosis model fine-tuned through Deep Learning, specifically utilizing Xception . This innovative model seeks to streamline diagnostics, cut costs, and slow disease progression, enhancing the overall patient experience. By enabling multi-classification of KOA severity, diffuse distribution, and vascular thickening, the model demonstrates its potential to revolutionize KOA diagnosis and progression analysis, as validated through comprehensive evaluation using the OAI dataset.

Furthermore, our model's versatility extends beyond diagnosis, offering valuable predictive analytics to anticipate disease progression and optimize treatment plans. By leveraging longitudinal data from patients, it can identify early indicators of deterioration, allowing for proactive interventions and personalized care strategies. Additionally, its integration with electronic health records facilitates seamless implementation into clinical workflows, ensuring widespread accessibility and usability.

Through ongoing refinement and adaptation, our solution aims to empower healthcare professionals with the tools needed to combat KOA effectively, ultimately improving patient outcomes and reducing the socioeconomic burden associated with this prevalent musculoskeletal condition.

Keywords: *Xception,DenseNet,KOA,RESNET50,CNN.*

A PROJECT REPORT ON

KNEE OSTEOARTHRITIS DETECTION AND PROGRESSION ANALYSIS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Abstract

The traffic system in India has been facing significant challenges due to the increasing number of vehicles on the roads and many unwanted barriers causing massive halt at many places. Right now, the usual method to make sure of this is by having traffic police officers physically monitoring the traffic situations. But due to excess traffic and limited traffic personnels, many violates the traffic rules and regulations. Thus, it is important to eliminate the human intervention and automatethe monitoring system. Our proposed system implements this by creating a web application based on deep learning and computer vision tehniques that performs traffic surveillance and detection with high accuracy and efficiency. We haveused YOLO-v8, Deep Sort to detect the vehicles and assign a unique id to each detected object. This vehice detection helps in observing the flow of vehicles across the various ways (paths) available at important junctions in the form of videos so as to track the various vehicles coming across the lanes using YOLOv8 algorithm implementation for vehicle detection and there after to count the number of vehicles entering and leaving across the region specified. The proposed system demonstrates the potential of deep learning in developing advanced traffic surveillance and detection systems, enhancing the overall traffic management system in India.

Keywords: Traffic Monitoring, YOLOv8, Deep-Sort, Computer Vision, Deep Learning, Traffic Surveillance

A PROJECT REPORT ON

TRAFFIC MONITORING AND DETECTION SYSTEM USING YOLOV8

Major project submitted in partial fulfillment of the requirements for theaward of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

By

B BOW SINGH (160120733026)
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Approved by | Recognized Research Centers | Programs Accredited by | Grade A++ in NAAC | All India Ranking 151-200 Band nirf | ISO Certifications: Quality Audit 9001 : 2015, Green Audit 14001 : 2015, Energy Audit 50001 : 2018

COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"TRAFFIC MONITORING AND DETECTION SYSTEM USING YOLOv8 "**,is the bonafide work carried out by **B Bow Singh (160120733026)** and **Shaik Abdul Khader Al Amoudi (160120733051)** , students of B.E.(CSE)of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted inpartial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering** (**Computer Science and Engineering**) and that the project has not formedthe basis for the award previously of any other degree, diploma, fellowship or any othersimilar title.

Signature of the Supervisor
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Assistant Professor, CSE

Signature of the HoD
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Project External Examiner

Abstract

The pet care enterprise has witnessed full-size growth in latest years, pushed by way of the growing wide variety of pet proprietors who view their bushy companions as cherished own family members. This paper affords an innovative online pet services platform designed to cope with the evolving desires of each pet proprietors and provider companies. This platform leverages current era to create a handy and complete surroundings for pet care. Key features of the platform consist of: Service Marketplace: A consumer-friendly interface that connects pet owners with a numerous range of pet service vendors, together with pet sitters, groomers, trainers, and veterinarians. Scheduling and Booking: An integrated calendar and booking gadget that enables pet owners to schedule appointments and services at their comfort, at the same time as service companies can control their availability effectively. Community and Education: A dedicated area for pet proprietors to proportion reviews, are seeking for recommendation, and get admission to educational resources on pet care and training. Secure Payment and Feedback: A secure charge gateway for trouble-unfastened transactions and a remarks device to keep service high-quality. Emergency Assistance: Integration with emergency offerings and pet hospitals, ensuring instant assist in case of pet emergencies. By offering a centralized platform for all pet-associated wishes, this online pet offerings platform targets to decorate the overall pet ownership revel in, imparting peace of mind to pet owners and allowing service providers to increase their reach. The platform not handiest fosters a more potent bond among pets and their owners however also contributes to the growth of the thriving pet care industry. This paper explores the potential benefits, challenges, and future possibilities of such a web pet offerings platform inside the context of the evolving pet care landscape.

Keywords:Online pet services platform,Service Marketplace,Pet ownership experience,Service quality.

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CERTIFICATE

This is to certify that the project titled "**PET CARE CONNECT : BRIDGING PET OWNERS AND SERVICE PROVIDERS DIGITALLY**" is the bonafide work carried out by **Bhanuteja Vittalapuram (160120733025)** and **Shyam Sundar Pobbothi (160120733052)**, students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2023-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering(Computer Science and Engineering)**and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

G.S.R 25/4/24

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Assistant Professor, CSE

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Signature of the HoD
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26/4

Project External Examiner

A PROJECT REPORT ON

Pet Care Connect: Bridging Pet Owners and Service Providers Digitally

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

Computer Science and Engineering

(2023-2024)

by

Bhanuteja Vittalapuram 160120733025

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CERTIFICATE

This is to certify that the project titled "**FOREX PREDICTION BASED ON TECHNICAL ANALYSIS USING GENETIC ALGORITHM**" is the bonafide work carried out by **M G Shahbaz Jahan** & **160120733050** a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering(Computer Science and Engineering**)and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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26/4
Project External Examiner

Abstract

The "Forex Prediction Based on Technical Analysis using Genetic Algorithm" project seeks to revolutionize currency price prediction in the dynamic Forex market. By integrating technical analysis indicators such as Bollinger Bands, RSI, MFI and MACD with Genetic Algorithm. Our approach aims to provide traders with real-time insights, optimizing decision-making processes. This innovative method adapts and evolves over generations, offering nuanced predictions that extend beyond binary outcomes. Its potential lies in empowering traders with sophisticated tools to navigate market complexities and capitalize on opportunities while mitigating risks effectively.

Our project addresses the need for enhanced forecasting accuracy in Forex trading by leveraging the synergy between technical analysis and Genetic Algorithm. Unlike conventional methods that often rely on statistical models or sentiment analysis, our approach offers a unique blend of technical indicators and algorithmic adaptability. By continuously evolving and optimizing over generations, our Genetic Algorithm-based model aims to provide traders with actionable insights that align with the dynamic nature of the Forex market.

Through this project, we aim to equip traders with a robust predictive model that can navigate the intricacies of the Forex landscape with agility and precision. By harnessing the power of Genetic Algorithm alongside technical analysis indicators, we strive to offer a sophisticated solution that enhances decision-making capabilities in currency trading. This project represents a significant step towards empowering traders with the tools and insights needed to thrive in the fast-paced and ever-changing world of Forex trading.

Keywords: Foreign Exchange (Forex) , Autoregressive integrated Moving Average (ARIMA), Moving Average Convergence and Divergence (MACD), Relative Strength Index (RSI), Money Flow Index (MFI) Bollinger Bands, Genetic Algorithm.

Final Project Report on

FOREX PREDICTION BASED ON TECHNICAL ANALYSIS USING GENETIC ALGORITHM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted by

M G Shahbaz Jahan (160120733050)

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2020-2024

A PROJECT REPORT ON

Classification of Electromyographic Hand Gesture Signals

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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This is to certify that the project titled **"Classification of Electromyographic Hand Gesture Signals"**, is the bonafide work carried out by **P Aadarsh (160120733021) and B Dhanush (160120733028)**, students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. V. Uma Maheswari
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Project External Examiner

ABSTRACT

In the field of myoelectric prosthetics, the complexities of EMG signal processing have opened the door to personalized and intuitive control mechanisms. Advanced algorithms analyze the subtle patterns of electrical signals, fine-tuning prosthetic movements based on user intentions. This adaptability enhances precision and seamlessly integrates the prosthesis into daily life. Additionally, the dynamic nature of EMG-based control systems allows users to perform a wide range of tasks, from delicate movements to more robust actions. Ongoing advancements in EMG technology aim to bridge the gap between natural and artificial limb functionality, giving individuals with upper limb amputations increased confidence and dexterity in navigating their surroundings.

The proposed system majorly focuses on a dataset of Electromyogram which is used for the fingers(Thumb (T), Index (I), Middle (M), Ring (R), Little (L) and the pinching of combined Thumb-index (TI), Thumb-Middle (TM), Thumb-Ring (TR), Thumb-Little (TL), and finally the hand close (HC).) and seeks to improve the precision and accuracy by using different machine learning and deep learning approaches and also combining different machine learning approaches. But we are going to analyze another subset of the Electromyogram dataset which primarily focuses on wrist and hand movements and in addition to the previously mentioned methods in the considered research paper we aim to combine the results of two or more deep learning algorithms in order to improve the accuracy and precision of the movements where previously it was focused on the fingers movement.

Keywords: *Generative Adversarial Networks, Generator, Discriminator, Contrastive Language Image Pretraining, Structure Similarity Index measure, L2 norm*

Abstract

Autism Spectrum Disorder (ASD) presents a neurological and developmental disorder that has an impact on the social and cognitive skills of children causing repetitive behaviours, restricted interests, communication problems and difficulty in social interaction. This project aims to develop an innovative support system for individuals with ASD by leveraging the power of machine learning. The system encompasses a holistic approach, combining predictive modeling, precautionary measures, personalized nutrition recommendations, and therapy suggestions. This study introduces a pioneering machine learning (ML) framework for the early-stage detection and holistic management of Autism Spectrum Disorder (ASD) across various age groups. Unlike conventional ML-based systems primarily focused on detection, this framework adopts a multi-faceted approach, integrating diverse Feature Scaling (FS) techniques tailored to individual ASD datasets to enhance prediction accuracy significantly. By exploring multiple ML approaches for each feature-scaled dataset, the study conducts a comprehensive analysis of classification performances, aiming to identify the most effective FS techniques and ML algorithms. Moreover, the framework goes beyond detection, offering personalized suggestions and precautions spanning diet, therapy, and management strategies to proactively address ASD-related consequences. The project's objective is to develop ML algorithms to analyze diverse datasets, including behavioral patterns and sensory sensitivities, providing personalized insights into the unique needs of individuals with ASD. Additionally, a user-friendly interface allows caregivers to input and track potential triggers for challenging behaviors, while a nutrition recommendation module generates personalized food and therapy recommendations to support overall well-being and address specific ASD symptoms. This comprehensive approach aims to extend beyond detection, providing enhanced accuracy, personalized insights, and holistic management strategies for individuals affected by ASD across different ages.

A PROJECT REPORT ON

DETECTION OF AUTISM SPECTRUM DISORDER USING MACHINE LEARNING

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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16/4

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A PROJECT REPORT ON

SIDE CHANNEL ATTACK DETECTION AND PREVENTION USING DEEP LEARNING

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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ABSTRACT

Side-channel attacks pose a significant threat to the security of cryptographic systems by exploiting physical characteristics such as power consumption, electromagnetic emissions, or timing variations, necessitating robust mitigation strategies. While previous research has explored various models such as CNNs, MLPs, and ResNets, to predict keys from the side-channel information they often overlook the significance of the power trace position within a given timeframe. We propose a novel model that combines ResNet with a modified Mish activation function. The proposed model demonstrates a remarkable accuracy rate in predicting cryptographic keys in real-time scenarios.

The prevention techniques are proposed in such a way that these are directly dependent on the data collected from the device. This approach represents a significant advancement in side-channel attack mitigation, emphasizing the importance of temporal power trace analysis.

Keywords: Side Channel Attacks, Deep Learning, Convolutional Neural Networks, Residual Networks, Advanced Encryption Standard, Cybersecurity.

A PROJECT REPORT ON

Behavior-Based Privilege Escalation Detection System Using Deep Learning

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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IN

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A PROJECT REPORT ON

Behavior-Based Privilege Escalation Detection System Using Deep Learning

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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Abstract

This research introduces a robust privilege escalation detection system powered by deep learning methodologies, specifically leveraging Long Short-Term Memory (LSTM) networks and attention mechanisms. Through meticulous analysis of user and process behaviors within computing environments, our system achieves an impressive accuracy rate of 97 percent. By scrutinizing diverse system activities such as file accesses, network interactions, and process executions, our model effectively discerns patterns indicative of potential privilege escalation attempts. The integration of LSTM networks enables the capture of temporal dependencies, enhancing the system's ability to detect subtle deviations from normal behavior. Furthermore, the incorporation of attention mechanisms allows the model to prioritize relevant features, thereby improving interpretability and detection efficiency. Extensive experimentation and validation on comprehensive datasets validate the robustness and efficacy of our approach. Our system exhibits adaptability to evolving attack techniques, reducing reliance on manual rule creation and signature updates. The achieved accuracy rate of 97 percent signifies the system's high precision in distinguishing between benign and malicious activities. By integrating our solution into existing security frameworks, organizations can significantly enhance their ability to detect and mitigate privilege escalation threats, bolstering overall system security.

Keywords: *Privilege escalation, LSTM,Attention mechanism, Behavioral analysis, Security,Interpretability.*

A PROJECT REPORT

ON

Detection of Cardiovascular Diseases Using Deep Learning Models

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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IN

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Abstract

Cardiovascular disease (CVD) represents a significant global health burden that requires effective and timely detection methods to ensure effective intervention. This project investigates the development of deep learning models for the early detection of cardiovascular disease using diverse and high-quality medical data. Through careful data processing and model selection, deep learning architectures, including MobileNet, convolutional neural networks (CNNs), Xception and artificial neural networks (ANNs), are trained and optimized to accurately identify patterns indicative of cardiovascular disease. Hyperparameter tuning and rigorous evaluation ensure robust model performance in terms of evaluation of various metrics including precision, accuracy and recall. In addition, a user-friendly interface was developed to facilitate seamless interaction with the trained models, allowing users to enter important information and receive quick feedback on disease probability. This project aims to advance the detection of cardiovascular disease by automating the process and reducing reliance on manual screening, enabling early diagnosis and intervention, ultimately improving patient outcomes and reducing the burden of CVD on global health systems.

Abstract

Neural Style Transfer (NST) has emerged as a powerful and innovative technique in the realm of computer vision and artistic expression. This project explores the fusion of neural networks and artistic aesthetics to transform ordinary images and videos into captivating visual experiences. NST leverages deep convolutional neural networks, such as VGG19, and a combination of content and style loss functions to separate and recombine content from one source image with the artistic style from another. By doing so, it creates novel and visually striking compositions that merge the content of one image or video frame with the style of a famous artwork or a unique aesthetic, thereby transcending the boundaries of traditional image processing and artistic creation.

In this project, we implement NST for both images and videos, demonstrating its ability to enrich the visual storytelling capabilities in various domains, from filmmaking to content creation. The integration of deep learning and artistic expression opens new avenues for creative professionals and enthusiasts, allowing them to imbue their work with unique and captivating styles. We delve into the technical intricacies of the NST process, highlighting the role of convolutional neural networks in extracting content and style features, and showcase how this method transforms the mundane into the extraordinary. The results of this project reveal the potential of neural networks in solving the problem of artistic style transfer and offer a glimpse into the exciting possibilities this technology holds for the future of visual content creation.

Keywords: Neural Style Transfer (NST), deep convolutional neural networks, VGG19(Visual Geometry Group), artistic aesthetics.

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A PROJECT REPORT ON

NEURAL STYLE TRANSFER FOR IMAGES AND VIDEOS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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IN

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A PROJECT REPORT ON

SUSTAINABLE FARMING DECISION SUPPORT SYSTEM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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Abstract

The majority of India's populace resides in rural regions, where agriculture serves as the primary source of sustenance and income. This sector is not only pivotal for the country's economy but also fundamental for providing food to its burgeoning population. As the number of inhabitants continues to rise, the significance of meeting the escalating demand for food becomes increasingly evident, emphasizing the critical role played by agriculture in India's economic growth and food security.India's crop yields differ depending on a number of variables, including the weather, crop type, location, and farming methods.In recent years, crop yields in India have shown fluctuations. Farmers are cultivating the same crops repeatedly without experimenting with different crop varieties. Additionally, they are using fertilizers without proper knowledge of the specific nutrient deficiencies and appropriate quantities.Crop recommendation using machine learning holds immense importance in modern agriculture. It revolutionizes farming practices by leveraging data-driven insights to make informed decisions about crop selection. This has several far-reaching benefits. Machine Learning optimizes crop selection by considering factors like soil data and weather data. By recommending crops that are best suited to a specific area, farmers can significantly improve their yields while minimizing risks.The proposed system 'Smart Farming', considers farmers inputs, the soil properties and environmental characteristics, uses machine learning techniques to forecast the right crop, as well as to display the crop's historical pricing value and make fertilizer recommendations. This enables farmers to know the which crop and fertilizer is more suitable based on the given soil conditions and environmental characteristics. The objective of this article is to forecast suitable crop and fertilizer to enhance crop productivity and benefiting the agricultural sector. Increased productivity is another key outcome. Accurate recommendations lead to higher yields, improving farmers' income and food security.

Keywords: Crop yield, Machine Learning, Weather conditions, Soil properties, Fertilizers, Increase productivity.

A PROJECT REPORT

ON

General crime data analysis and prediction in Indian Cities

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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Abstract

In this project, the advancement of technology in every facet of human existence has molded a far broader crime-solving strategy. Extensive medical study has been conducted on the origins and shape of crime, as well as its intensity and dynamics, with the help of researchers from several scientific disciplines. Government agencies and police departments now have more options for tracking crime events, including the capacity to gather and preserve specific data as well as spatial and temporal information. Prophet is an additive model-based approach for forecasting time series data that matches non- linear patterns with yearly, weekly, and daily seasonality, as well as the holiday effect. It employs a decomposable model that consists of three primary components: trend, seasonality, and holiday effects. The Prophet model is used in this project to predict crimes. Combining Prophet with machine learning algorithms such as Logistic Regression, Decision Tree, and Random Forest enhances crime prediction accuracy. These tools empower law enforcement to proactively allocate resources and prevent crime, promising safer communities. This project showcases how cutting-edge technology and data-driven models are transforming crime-solving methods, ushering in a new era of crime prevention and community safety.

Keywords: Time series Analysis, Prophet Model, Fourier series, Crime Prediction, Logistic Regression, Decision Tree, Random Forest.

A PROJECT REPORT ON

COTTON LEAF DISEASE DETECTION AND CLASSIFICATION SYSTEM USING DEEP LEARNING

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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IN

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Abstract

Cotton is a vital cash crop globally, yet foliar diseases significantly impact its production. Timely identification of these illnesses is paramount for implementing control measures and minimizing crop losses. The report, which aims to improve accuracy in disease identification tasks, introduces a nove; approach for cotton leaf disease prediction. It blends Xception for classification and YOLOv5 for detection.

The exploration encompasses various deep learning models, such as ResNet50, ViT, DenseNet, Xception, MobileNet, and their combinations, alongside YOLO variants YOLOv5, YOLOv6, YOLOv7, and YOLOv8 for detection tasks. Utilizing the Roboflow dataset, an extensive analysis is conducted on these models for classification purposes. Image processing techniques through libraries like ImageDataGenerator and Torchvision preprocess the dataset for training. Additionally, integration of a Flask framework with SQLite facilitates secure user authentication, enabling smooth interaction for image uploads and analysis.

The uploaded images undergo preprocessing before being input into the trained models for predictions. The final results and insights are then presented to the user. Through rigorous experimentation, it is observed that Xception outperforms Hybrid model, showcasing superior accuracy in disease classification. The study delves into the nuances of model selection, emphasizing the importance of choosing the right architecture for achieving robust disease detection in cotton leaves.

A PROJECT REPORT ON

Enhancing Image Restoration with CLIP

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

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COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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ABSTRACT

In the realm of image restoration, we propose an innovative approach that leverages recent advancements in deep learning techniques. Our method aims to address a wide range of image degradation types, including noise, blur, and various weather related issues. To achieve this, we introduce a dedicated controller that collaborates with high-quality feature embeddings to enhance the accuracy of degradation classification and contribute to efficient image reconstruction. Our model is designed to be adaptable to images of different sizes and capable of restoring images under various weather conditions. Through our experiments, we aim to demonstrate the model's potential to outperform existing methods in tasks such as image desnowing, deraining, and dehazing, making it suitable for multi-weather image restoration. In conclusion, our image restoration technique presents a promising solution that holds substantial potential for diverse image enhancement applications. As we move forward, we plan to implement and fine-tune this approach to further harness its capabilities and expand its impact in the field of image restoration

The importance of such advancements in image restoration cannot be overstated. In today's digital age, where images play a crucial role in various domains such as surveillance, remote sensing, medical imaging, and entertainment, the ability to effectively restore and enhance degraded images is invaluable. Therefore, our proposed method not only represents a significant advancement in image processing technology but also holds immense importance in practical applications across diverse domains.

Keywords: *Degradation Classification, Feature Embeddings, Multi-weather Restoration, Desnowing, Deraining, Dehazing, Size-agnostic Model, Computational Efficiency, Image enhancement, Fine-tuning*

A PROJECT REPORT ON

INATTENTIONAL DRIVER DETECTION USING FASTER R-CNN AND RESNET

Major project submitted in partial fulfillment of the requirements for the award of the degree of

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IN

COMPUTER SCIENCE AND ENGINEERING

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i

Abstract

Inattentional driving is a leading cause of road accidents globally, making the development of effective driver monitoring systems a critical priority for improving transportation safety. This study presents a novel deep learning-based approach for detecting inattentive driver behavior in real time.

The proposed system leverages the powerful Faster R-CNN object detection framework combined with the ResNet convolutional neural network architecture. Faster R-CNN enables efficient and accurate localization of the driver's head and facial features, while ResNet provides a robust feature extraction backbone for reliable classification of attentive and inattentive driver states.

The model was trained and evaluated on a large, diverse dataset of driver images annotated for attention levels. Extensive experiments demonstrate that the Faster R-CNN + ResNet approach significantly outperforms traditional machine learning techniques as well as other deep learning architectures in terms of detection accuracy, processing speed, and generalization capability.

This technology can be seamlessly integrated into advanced driver assistance systems (ADAS) and autonomous vehicles to enhance safety by providing timely alerts about driver inattention, ultimately reducing the occurrence of accidents caused by distracted or drowsy driving.

The findings of this work contribute to the advancement of computer vision-based driver monitoring systems and have important implications for improving road safety worldwide. The proposed approach demonstrates the potential of deep learning techniques to enable reliable and scalable solutions for monitoring driver attentiveness, a crucial step towards developing safer and more intelligent transportation systems.

ABSTRACT

In the domain of creative content generation, our project focuses on the text-driven generation of complex 3D shapes like human avatars, buildings, and game scenes. Our primary aim is to empower users to effortlessly convey their 3D object ideas through textual description, which can then be automatically translated into ready-to-load models.

The proposed method addresses the challenge of bridging the semantic gap between text prompts and 3D shape representations by leveraging the power of diffusion models and Neural Radiance Fields (NeRF). Our approach follows a two-stage process. In the first stage, a pre-trained diffusion model is employed to generate multiple visually aligned 2D images corresponding to the text prompt. Subsequently, in the second stage, NeRF, a fully connected neural network capable of synthesizing novel views of 3D shapes, utilizes a set of 2D images to generate comprehensive 3D representations. This combined approach enables the creation of detailed and realistic 3D shapes that reflect the semantics conveyed in the input text.

During evaluation, we prioritize assessing the quality of the generated 3D shapes. To achieve this, we leverage several established metrics commonly used in the field of generative models. These metrics include the CLIP Score, which measures how well the generated shapes align with the semantics of the text prompt. Additionally, we employ the Frechet Inception Distance (FID) and Inception Score. These metrics quantify the overall realism and diversity of the generated 3D objects. By employing this comprehensive evaluation strategy, we gain an understanding of the model's effectiveness in translating textual descriptions into high-quality 3D representations.

Keywords: *Diffusion model, Neural Radiance Fields, CLIP Score, Frechet Inception Distance, Inception Score.*

A PROJECT REPORT ON

TEXT DRIVEN COMPLEX 3D SHAPE GENERATION USING GAN

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

KODALI BHAVANA 160120733001

MAYANK GUJRATHI 160120733301

Under the Esteemed Guidance of

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Associate Professor

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ABSTRACT

The primary function of law enforcement is to locate missing persons or suspects using a variety of sophisticated techniques such as fingerprint and DNA analysis, geographic profiling, and, particularly, facial sketches. Among these methods, facial sketches have proven to be an extremely effective means of speeding up the identification process. Using facial sketches when combined with forensic analysis methods significantly improves the search for potential suspects in mugshot databases. It can also help the general public visualize the accused. The addition of Artificial Intelligence (AI) now stands out as a promising avenue for speeding up and improving this critical process.

A model based on Generative Adversarial Networks (GANs) is proposed as a solution to the problem of converting facial sketches into realistic images. This model is intended to recognize and extract key facial features from sketches, resulting in a coherent and detailed image that closely resembles reality. Textual input (processed using Contrastive Language Image Pretraining) is used to guide the generation of such images, providing specific details such as the individual's race and hair colour. The provided sketch and text embeddings are passed into an encoder that maps the input into a latent space vector. This vector is provided into a styleGAN generator, which creates a lifelike, realistic image. This encoder needs to be trained on a dataset of diverse faces in order to create an encoder that is capable of pointing to the appropriate vector in the latent space. During evaluation, assessing the quality of the generated image is achieved by leveraging several established metrics commonly used in the field of generative models. These metrics include the Structure Similarity Index measure (SSIM) and L2 norm.

Keywords: *Generative Adversarial Networks, StyleGAN, Contrastive Language Image Pretraining, Structure Similarity Index measure, L2 norm*

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An Autonomous Institute | Affiliated to Osmania University
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CERTIFICATE

This is to certify that the project titled **"Forensic Text-prompted Sketch to Image using GAN"**, is the bonafide work carried out by **Jahnavi Manoj (160120733003) and Jahnavi Reddy Malreddy (160120733004)**, students of **Bachelor of Engineering (Computer Science and Engineering)** of **Chaitanya Bharathi Institute of Technology(A)**, Hyderabad, affiliated to **Osmania University**, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Ms. I. Srujana
Assistant Professor
Internal Supervisor

Dr. Raman Dugyala
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26/4.
Project External Examiner

A PROJECT REPORT ON

FORENSIC TEXT-PROMPTED SKETCH TO IMAGE USING GAN

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

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A PROJECT REPORT ON

HEART RATE ESTIMATION USING OPENCV

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Abstract

Heart rate estimation using computer vision techniques has gained significant attention in recent years due to its non-invasive nature and potential applications in healthcare monitoring and human-computer interaction. This project proposes a novel approach to heart rate estimation leveraging the capabilities of OpenCV, a popular computer vision library. The methodology integrates the use of a Haar Cascade classifier for facial region detection, focusing on the forehead as a key area for heart rate analysis. Subsequent signal processing techniques, including bandpass filtering, Fast Fourier Transform (FFT), and interpolation, are applied to extract the heart rate frequency from the video frames. The system provides real-time heart rate monitoring by analyzing subtle changes in color intensity within the detected regions of interest. This project represents a significant advancement in non-contact heart rate monitoring, offering a cost-effective and accessible solution for personal health monitoring and clinical applications

A Project Report

Survival Prediction Of Children

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

by

Veekshah Rao Ponugoti (160120733131)

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[2023-2024]

ABSTRACT

Our motivation stems from a profound confidence in the efficacy of our algorithms, driving us to embark on a transformative project aimed at aiding both pediatric patients and physicians in predicting life expectancy and complications associated with Hematopoietic Stem Cell Transplantation (HSCT). By harnessing advanced technologies such as Machine Learning (ML), particularly Generalized Regression Neural Network (GRNN), Recurrent Neural Network (RNN), and Artificial Neural Network (ANN) coupled with the SMOTE algorithm, we endeavor to enhance the precision, speed, and efficacy of survival predictions for children undergoing this critical medical intervention. Our commitment lies in leveraging these cutting-edge methodologies to potentially save countless lives and advance the frontier of pediatric hematology.

CERTIFICATE

This is to certify that the project titled "**Credit Card Fraud Detection Using Machine Learning Algorithms And Deep Learning Algorithms**" is the bonafide work carried out by **Prashanth Ayyalasomayjula(160120733169)**, students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2023-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)**and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Supervisor
Sri B Ramadasu
Associate Professor,
Dept. of CSE,
CBIT, Hyderabad

Head, CSE Dept.
Dr Raman Dugyala
Professor,
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CBIT, Hyderabad

Project External Examiner

DECLARATION

I hereby declare that the project entitled "**Credit Card Fraud Detection Using Machine Learning Algorithms And Deep Learning Algorithms**" submitted for the B.E (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

A. Prashanth

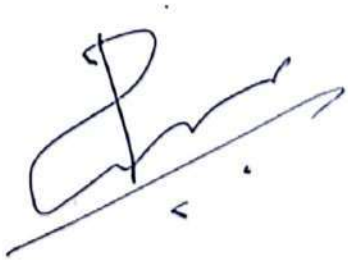
Name(s) and Signature(s) of the Student

Place: CBIT, Hyderabad.

Date: 24/04/2024

Abstract

People can use credit cards for online transactions as it provides an effificient and easy-to-use facility. With the increase in usage of credit cards, the capacity of credit card misuse has also enhanced. Credit card frauds cause signifificant fifinancial losses for both credit card holders and fifinancial companies. In this research study, the main aim is to detect such frauds, including the accessibility of public data, high-class imbalance data, the changes in fraud nature, and high rates of false alarm. The relevant literature presents many machines learning based approaches for credit card detection, such as Extreme Learning Method, Decision Tree, Random Forest, Support Vector Machine, Logistic Regression and XG Boost. However, due to low accuracy, there is still a need to apply state of the art deep learning algorithms to reduce fraud losses. The main focus has been to apply the recent development of deep learning algorithms for this purpose. Comparative analysis of both machine learning and deep learning algorithms was performed to fifind effificient outcomes. The detailed empirical analysis is carried out using the European card benchmark dataset for fraud detection. A machine learning algorithm was fifirst applied to the dataset, which improved the accuracy of detection of the frauds to some extent. Later, three architectures based on a convolutional neural network are applied to improve fraud detection performance. Further addition of layers further increased the accuracy of detection. A comprehensive empirical analysis has been carried out by applying variations in the number of hidden layers, epochs and applying the latest models. The evaluation of research work shows the improved results achieved, such as accuracy, f1-score, precision and AUC Curves having optimized values of 99.9%,85.71%,93%, and 98%, respectively. The proposed model outperforms the state-of-the-art machine learning and deep learning algorithms for credit card detection problems. In addition, we have performed experiments by balancing the data and applying deep learning algorithms to minimize the false negative rate. The proposed approaches can be implemented effectively for the real-world detection of credit card fraud.



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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"Transfer Learning for semantic search in Videos transcript "**,is the bonafide work carried out by **Usama Ahmed (160120733316) and Mohan Krishna (160120733319)**, a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr G Vanitha
Associate Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Professor and Head Department
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Gandipet, Hyderabad-500 075 (T.S.)

Project External Examiner

DECLARATION

I/we hereby declare that the project entitled **"Transfer Learning for semantic search in Videos transcript"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Name(s) and Signature(s) of the Student

Usama Ahmed: Usama

Mohan Krishna: M Krishna

Place: Hyderabad

Date: 29/08/24

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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"Acute Lymphoblastic Leukemia Detection using MobileNetV2 "**,is the bonafide work carried out by **Bommena Ashok (160120733314) and Gadham Srinivas(160120733315)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

15/4/2024

E. Kalpana
Assistant Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

Acute lymphoblastic leukemia (ALL) poses a significant challenge in terms of diagnosis, often necessitating invasive and expensive tests with potential side effects for patients. Unfortunately, access to these diagnostic tools is limited in many regions, exacerbating the issue. Traditionally, blood microscopic examination has been the main method for screening and diagnosing ALL. However, manual performance by laboratory staff and hematologists has its limitations. To tackle this challenge, the present study explored the use of artificial intelligence (AI) techniques in analyzing blood microscopy images. The study focused on employing deep convolutional neural networks (CNNs) to identify ALL cases, differentiate them from hematogones, and further classify the ALL subtype. The study aimed to develop a well-optimized model specifically for mobile and web applications to enhance accessibility. The modeling process included several crucial steps. Initially, a unique segmentation technique was utilized, involving color thresholding in the LAB color space. This technique incorporated the K-means clustering algorithm and a mask to isolate relevant components, effectively reducing image noise. Subsequently, the study assessed the performance of three lightweight CNN architectures - EfficientNetB0, MobileNetV2, and NASNet Mobile. Following a thorough comparison, the most efficient model was selected and meticulously fine-tuned. Notably, the proposed model achieved an outstanding accuracy in its classification task, showcasing its robustness and efficiency. Consequently, mobile and web applications based on this cutting-edge model were developed. Additionally, the implementation of a feature for locating nearby hospitals and providing directions enhances the utility of the application.

Abstract

In the world which is connected altogether via the internet, streaming and social media platforms play a crucial role in delivering the information, low-quality video content remains a major obstacle to enjoyable user experiences. A person with a minimum and low specs of the PC always find struggles to provide clear and detailed visuals, especially for face cams and other low-resolution videos. This limitation affects communication, gaming, and live streaming, reducing overall content quality. The lack of effective real-time resolution improvement means users miss out on enhanced clarity and detail, slowing down the progress of digital media consumption. Embracing innovations like SRGAN is essential to overcoming these challenges and achieving high-quality, engaging video content delivery. Our proposed solution integrates a real-time resolution upscaling mechanism utilizing Super Resolution Generative Adversarial Networks (SRGAN). SRGAN effectively bridges the resolution gap between low and high-resolution video frames, resulting in a substantial enhancement in streaming quality. The system incorporates dynamic video quality improvement during live sessions, promising an elevated and immersive user experience. This innovative fusion of deep learning models along with User Interface represents a significant breakthrough in low-resolution video delivery technologies, catering to diverse requirements across domains such as content creation, gaming, and live streaming.

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CERTIFICATE

This is to certify that the project titled **"Dynamic Resolution for Video Streaming using GAN"**, is the bonafide work carried out by **Gourabattuni Vijaya Venkata Sai (160120733179) and Patcha Kiran Deep (160120733313)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

16/4/24

Mr. J Shiva Sai
Assistant Professor
Internal Supervisor

Accepted but with Small Correction that will reflect in Black book

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

CERTIFICATE

This is to certify that the project titled **"Camouflaged Object Detection using Hybrid Deep Learning Model"**, is the bonafide work carried out by **Jampani Teja sai chenna malleswar rao (160120733175) and CH Venkata Koti Reddy (160120733177)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Smt Isha Padhy
Asst Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Professor and Head Department
Department of Computer Science & Engineering
Chaitanya Bharathi Institute of Technology (A)

Project External Examiner

Abstract

Camouflaged object detection (COD) plays a vital role in various real-world applications such as surveillance, military reconnaissance, and wildlife monitoring. Despite significant progress in recent years, detecting camouflaged objects remains challenging due to their ability to blend seamlessly into their surroundings. In this paper, we propose a novel approach for camouflaged object detection utilizing the Swin Transformer architecture, augmented with Enhanced Receptive Field (ERF) modules and Cross-Scale Feature Fusion (CSFF) mechanisms. The Swin Transformer, known for its effectiveness in handling long-range dependencies in images, serves as the backbone of our proposed model. By incorporating ERF modules, we enhance the network's ability to capture contextual information, allowing for better discrimination between camouflaged objects and their backgrounds. Additionally, the CSFF mechanism facilitates the integration of multi-scale features, enabling the model to effectively localize and classify camouflaged objects across different scales. We evaluate the proposed approach on benchmark datasets for camouflaged object detection and demonstrate its superior performance compared to existing methods. Our experiments showcase the efficacy of the Swin Transformer combined with ERF and CSFF in addressing the challenges associated with camouflaged object detection, paving the way for advancements in this critical area of research.

A PROJECT REPORT ON

Automated Violence Detection in Video Streams

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

T SUSHANTH REDDY 160120733173
SAMA UDAY KUMAR REDDY 160120733176

Under the Esteemed Guidance of

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Abstract

Violence detection in video streams is a critical task with applications ranging from public safety to content moderation in online platforms. This project proposes a novel approach that combines the strengths of MobileNetV2, a lightweight convolutional neural network (CNN), and Bidirectional Long Short-Term Memory (BiLSTM) networks to detect violent activities in videos. First, it utilizes MobileNetV2 as a feature extractor to efficiently capture spatial information from video frames. These features are then fed into a BiLSTM network, which captures temporal dependencies and context across frames. The bidirectional nature of the LSTM allows for a comprehensive understanding of both past and future contexts, enhancing the model's ability to recognize violent actions effectively. To train and evaluate our model, we utilize publicly available datasets containing videos of both violent and non-violent activities. This project employs techniques such as data augmentation to improve the robustness of our model and address issues such as class imbalance. Experimental results demonstrate the effectiveness of our proposed MobileNetV2-BiLSTM fusion approach in accurately detecting violent actions in video streams. We compare our method against existing approaches, showcasing superior performance in terms of accuracy, efficiency, and generalization. Additionally, we discuss potential real-world applications and future avenues for research to further enhance violence detection systems

A PROJECT REPORT ON

DATA ANALYSIS STREAMLINER USING SUM OF WORD EMBEDDINGS(GloVe)

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

MAREPALLY SAITEJA 160120733167

NENAVATH SHASHI KIRAN 160120733168

Under the Esteemed Guidance of

Smt. Isha Padhy, Asst.Professor

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Abstract

According to recent studies, a large number of data scientists spend most of their time on tasks like data cleaning and organizing the data which is very time-consuming. Data scientists have to memorize long complex syntaxes for major tasks in the data science life cycle. Often these tasks are deemed to be redundant and time-consuming across all the data science projects like data cleaning and modeling. So, we propose to build a smart system that enables data scientists to perform all the tedious and time-consuming tasks such as EDA, data cleaning, data preprocessing, data visualization, modeling, and evaluation in the data-science life cycle, by only conveying the logic of the task in natural language (English) and the system will automatically give out all the relevant python code snippets. Existing applications involving text-to-code generation and code-search are very limited and most of them do not work in non-ideal conditions. The main reason for this is the dataset that the existing models are based on. These datasets do not account for real-world factors like slang language, acronyms, paraphrased sentences, etc. Therefore, a new dataset was created consisting of real-world user queries which represent the scenarios users are most likely to face during daily usage of this system. Furthermore, using the same dataset we train various intent classification models which include GloVe based word embedding, Facebook InferSent, Semantic Subword Hashing, and TF-IDF model to find the best technique to classify the intent of user query from our dataset and NER (Named Entity Recognition) model, to identify all the entities present in the user's sentence. Hence, we plan to build a logic-oriented system that only requires the user to simply convey the logic correctly in natural language via text. This will most certainly save time exponentially and data scientists can devote most of their time to building logic rather than focusing on code.

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An Autonomous Institute | Affiliated to Osmania University

COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"Quality Analysis Of Rice Grains Using Canny Edge Detection And Convolutional Neural Network"**, is the bonafide work carried out by **S. SAI PRANAY (160120733166) and R. NIHAL KUMAR (160120733318)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Internal Supervisor
Smt.E.Kalpana
Assistant Professor,
Dept. of CSE,
CBIT, Hyderabad

Head, CSE Dept.
Dr Raman Dugyala
Professor
Dept. of CSE,
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Professor and Head Department
Department of Computer Science & Engineering
Chaitanya Bharathi Institute of Technology (A)
Hyderabad-500 075.(T.S.)

Project External Examiner

CERTIFICATE

This is to certify that the project titled "**AI Based Helpdesk for CBIT**" is the bonafide work carried out by **R. Sai Karthik (160120733165) and K. Naga Sai Vivek(160120733155)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering** (**Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Internal Supervisor
Dr. R. Ravinder Reddy
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Dept. of CSE,
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Head, CSE Dept.
Dr. Raman Dugyala
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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"X-Ray Captioning Using Encoder Decoder Model"** is the bona fide work carried out by **Mohammad Adnan - 160120733153 and Rayan Ahmed - 160120733164,** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India)during the academic year 2023-2024, submitted in partial fulfilment of the Requirements for the award of degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar title.

Supervisor
Ch. Madhavi Sudha
Asst. Professor, CSE Dept.

Head, CSE Dept.
Dr. Raman Dugyala

Place: Gandipet
Date: 16/4/2024

External Examiner

- 2 -

ABSTRACT

X-Ray diagnosis is an essential part of medical imaging and is used widely for identifying various different medical conditions. However manually generating reports for X-rays can often be tiresome and inefficient for radiologists, it is also prone to human error. We attempt to automate the task of generation of descriptive captions for X-rays by leveraging Artificial Neural Networks (ANNs), specifically encoder-decoder models. The aim of this project is to empower healthcare professionals by automating the generation of informative and insightful captions. We have used the Indiana University Chest X-ray (IUCXR) dataset to train and evaluate our model. The dataset lists impressions and findings etc... for various different X-ray images. We employ CheXNet, a convolutional neural network (CNN) used for disease detection to ensure that diagnostic information is captured properly.

We use the attention mechanism in our model to ensure that long term dependencies are captured properly. Through our project, we hope to build a robust X-ray captioning system which has the ability to accurately generate contextually relevant captions. Automated X-ray caption generation can be of enormous help to radiologists and clinicians as it allows them to interpret X-ray images and diagnose patient conditions in an efficient and accurate manner. This ultimately leaves to better utilization of time, more efficient diagnosis and better patient outcomes.

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CERTIFICATE

This is to certify that the project titled **"Paddy Disease Detection using Deep Learning "**,is the bonafide work carried out by **Yela Rahul (160120733163) and Velpula Sujith Kumar(160120733172)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

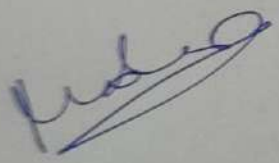
Sri S. Mohan, Asst. Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

Rice serves as a staple food for numerous tropical and subtropical nations worldwide. However, the maintenance and care of extensive paddy fields spanning hectares can be arduous for farmers. Identifying specific diseases becomes a challenging task, often resulting in farmers resorting to excessive chemical usage to safeguard their crops. Unfortunateiy, these chemicals can be detrimental to consumers and have negative long-term effects. Hence, there is a pressing need for a rapid classificatio.. method that distinguishes between healthy and diseased paddy plants. This research proposes a solution by swiftly categorizing paddy plants as diseased or healthy and providing multi target or multi output classification.The image dataset for this module consists of 13876 pictures (more than 10 types of diseases) sourced from open repositories, including both healthy and diseased paddy leaves.The main objective of this project is to make a deep learning model for the classification of paddy crop diseases through transfer learning and image processing.



CERTIFICATE

This is to certify that the project titled "**Heart disease prediction using blockchain based federated learning**" is the bonafide work carried out by **Rustumpet Nitin Kumar (160120733160), Billa Prahas Reddy (160120733161),** a student of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2023-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Supervisor
Dr. K. Spandana, Assistant Professor

Head, CSE Dept.
Dr. Raman Duggyla

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Project External Examiner

CERTIFICATE

This is to certify that the project titled **"Enhancing Human-Computer Interaction Through Emotion Intelligence and Adaptability",** is the bonafide work carried out by **B.NAREN REDDY (160120733156) and J. NITHIN (160120733159)** , a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering** (**Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. E. Padmalatha
Associate Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

This project aims to improve human-computer interaction by making computer interfaces more intelligent at detecting and reacting to user emotions. We developed a system that uses webcam video and microphone sounds to analyze a user's facial expressions, tone of voice and speech patterns. Based on these inputs, machine learning models can detect the user's emotional state, such as frustration, engagement, confusion, etc. Once the system detects the user's emotional state, it can automatically adapt and personalize the user interface and interactions suits the mood. For example, if the system detects that the user is frustrated while using the learning software, it can slow down the teaching pace, provide more explanations, or switch to a different multimedia format to reactivate the user. The most important update. creates intelligent user interfaces that can adapt their behavior based on the emotional state of a particular user at that moment. This emotional intelligence and adaptability can lead to better learning outcomes, better user engagement, better satisfaction and an overall better user experience when interacting with computers. We prototyped emotionally adaptive user interfaces and compared them to non-adaptive versions by the user, studies. Early results show promising benefits of this emotion-responsive approach, such as users staying motivated, recovering more easily from negative states such as confusion, and absorbing information more effectively when the system adapts to their emotional needs.

A PROJECT REPORT ON

DEPRESSION RECOGNITION USING MULTI-MODAL DATA

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

NIKETH MALIGE 160120733157
NITHIN ARE 160120733158

Under the Esteemed Guidance of

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Associate Professor

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Abstract

Depression is a prevalent mental health condition affecting millions globally, emphasizing the importance of early detection and intervention. This project introduces a Depression Detection System leveraging deep learning algorithms to analyze text, image, and speech data for depression indicators. The system preprocesses data, trains distinct models for each data type, and evaluates their performance using metrics like accuracy, precision, recall, and F1 score.

For text analysis, a Random Forest Classifier is employed on TF-IDF features to predict depression from user comments. Text preprocessing involves removing stop words and tokenization for feature extraction. For image analysis, a Convolutional Neural Network (CNN) learns to classify facial expressions into different emotions, focusing on facial features linked with emotions. Speech data analysis utilizes another CNN to classify audio features and identify depressive speech patterns.

The system demonstrates strong accuracy and performance in depression detection across all data types, offering a screening tool for individuals based on their text, facial expressions, and speech. This tool holds promise for aiding healthcare professionals in early diagnosis and intervention for individuals at risk of depression.

A MAJOR PROJECT REPORT ON

BUS ROUTE DETECTION USING YOLOv5 AND PADDLEOCR

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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MOHAMMAD SOHAIL 160120733154

Under the Esteemed Guidance of

DR. KOLLA MORARJEE, ASSOCIATE PROFESSOR

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Submit with Suggested corrections.

15/04/2024

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CERTIFICATE

This is to certify that the project titled "**BUS ROUTE DETECTION USING YOLOv5 AND PADDLEOCR",** is the bonafide work carried out by **B KOMAL ADITHYA REDDY (160120733152)** and **MOHAMMAD SOHAIL (160120733154)**, student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

26/04/2024

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Head, CSE Dept.
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Project External Examiner

Abstract

Recognizing buses and other public transport vehicles can be a difficult task, especially in crowded and noisy environments. The primary objective of this research is to develop a robust and efficient system that can accurately detect buses routes and assist people. Our proposed system integrates CNN based Deep Learning model with OCR technologies to detect bus routes efficiently in the real-world scenario. We used YOLOv5 object detection with enhanced efficiency and PaddleOCR for precise character recognition to enhance the extraction of textual information from images. Our results with YOLOv5 and PaddleOCR proves the efficacy of our model compared to other competitive detection model.

CERTIFICATE

This is to certify that the project titled **Skin Disease Detection: Leveraging Transfer Learning and Ensemble Techniques** is the bonafide work carried out by **Kandula Dinesh (160120733150) and K.J Anirudh Vyas (161020733150)** a student of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2023-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Supervisor
Dr G. Vanitha

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Place: Hyderabad

Date: 29/04/2024

29/04/24

Abstract

Skin diseases present a significant global health concern affecting millions of individuals, ranging from common afflictions such as acne and eczema to more severe conditions like melanoma and psoriasis. Timely and accurate diagnosis is critical for effective treatment and prevention of complications. However, the inherent variability in the appearance and symptoms of skin diseases often results in misdiagnosis and delayed interventions.

In response to these challenges, our project employs advanced deep learning techniques, specifically leveraging Xception, VGG19, and DenseNet architectures, along with ensemble learning strategies. We harness the capabilities of Xception, a state-of-the-art deep learning model, for skin disease classification. Transfer learning empowers us to adapt the model to our specific task by leveraging pre-trained knowledge from the ImageNet dataset. Additionally, ensemble learning enhances classification accuracy by amalgamating the strengths of multiple models. Leveraging a diverse dataset, including Ham10000, we systematically compare the performance of each model and iteratively enhance their accuracy.

Furthermore, the depth-wise separable convolutions inherent in the Xception model facilitate efficient feature extraction, making it well-suited for processing large datasets without sacrificing performance. This efficiency leads to expedited results and streamlined computational resource utilization.

Key Terms: Xception, VGG19, DenseNet, Transfer Learning, Ensemble Learning, Pre-trained Models, ImageNet.

CERTIFICATE

This is to certify that the project titled **"An Enhanced Anti Phishing System Using Deep Learning"**, is the bonafide work carried out by **Bharath Varala (160120733148) and Somula Bala Chandra Shekar (160120733149)** , students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. E. Padmalatha
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Project External Examiner

Abstract

Phishing remains a critical issue in the realm of cybersecurity, with considerable financial and data-related consequences. Traditional anti-phishing methods often depend on skilled professionals to extract features from phishing websites, a process that is both time-consuming and requires expertise. Additionally, using external detection services can lead to delays. To overcome these challenges, this study introduces a new approach that utilizes deep learning, specifically convolutional neural networks (CNNs), and ensemble classifiers, aiming to increase the accuracy and efficiency of phishing website detection without the need to access web content or rely on third-party services. The proposed methodology involves the conversion of URLs into fixed-size matrices by employing character embedding techniques. Following this, CNN models are utilized to extract multi-level features, which are then used by ensemble classifiers for classification.

This innovative combination of CNNs and ensemble algorithms offers a promising solution to improve the detection accuracy of phishing websites while minimizing the reliance on human experts and external services. The key findings of this study demonstrate that the proposed technique achieves robust and timely results in identifying phishing threats. By integrating CNNs and ensemble algorithms, the method improves detection accuracy, making it a valuable tool in strengthening cybersecurity measures. The use of deep learning and machine learning algorithms to detect phishing websites provides a more efficient and accurate alternative to conventional approaches. In conclusion, this study presents a novel hybrid approach for the detection of phishing websites. The combination of CNNs and Ensemble algorithms demonstrates significant advancements in detection accuracy and timeliness, providing a valuable solution to enhance cybersecurity measures against phishing threats.

Abstract

A chronic illness that affects millions of people globally is heart failure. To predict early heart failure health status and take the necessary activities to address this widespread problem, an effective machine learning-based approach is required. Exercise is becoming recognized as an effective adjunct therapy for controlling heart failure, even if medicine remains the main course of treatment. In this work, we developed an approach to enhance heart failure detection based on patient health parameter data involving machine learning. Our work helps improve heart failure detection at its early stages to save patients' lives.

In-order to predict early heart failure health status and take the necessary activities to address this widespread problem, an effective machine learning-based approach is required. In this work, we developed an approach to enhance heart failure detection based on patient health parameter data involving machine learning.

We employed nine machine learning based algorithms for comparison and proposed a Stacking Classifier and Principal Component Heart Failure (PCHF) feature engineering technique to select the most prominent features to enhance performance. We attempted to optimize the proposed PCHF mechanism by creating a new feature set as an innovation to achieve higher accuracy score.

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CERTIFICATE

This is to certify that the project titled **"Early heart failure detection with stacking classifier "**,is the bonafide work carried out by **Akash Kasam -160120733146 and Aniketh Konda-160120733147** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

16/4/2024

E Kalpana, Asst. Prof.
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

A Project Report On

VIDEO TRANSCRIPT SUMMARIZER USING STACK MODEL

Major project submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

SUNSHINE PENUMAKA (160120733138)

YASHASVI CHANDA (160120733142)

Under the Esteemed Guidance of

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ABSTRACT

In recent times, as the volume of videos continues to grow exponentially, it's becoming increasingly difficult for individuals to keep up with the sheer amount of information being presented. A raw video can extend up to hours which would require a lot of time and effort, and thus, is not acceptable. Thus, we propose video transcript summarizer which involves creation of a concise and compact version of video. The existing video summarization systems come in various models tailored to specific needs like target audience, video volume, and output format. They segment videos into frames or segments for analysis using techniques like genism and the key words from the transcripts are selected using techniques like TF-IDF, extractive, or abstractive methods. Some systems focus on summarizing video transcripts from platforms like YouTube, enhancing accessibility to educational content. Here we have compared our stack model using the BERT and the T5 models with the Seq2Seq LSTM and PEGASUS models and we found out that our stack model gives better accurate summaries. Thus we have implemented our video transcript summarizer using the stack model. The amalgamation of these state-of-the-art techniques aims to elevate the summarization efficacy, enhancing the extraction of salient information from diverse video sources. It provides the solution by generating summary of the video and the users can have a quick glance at the summary of the YouTube video and know whether watching the video is worth their time and if the content in the video matches with the topics that they are looking for.

CERTIFICATE

This is to certify that the project titled " **Community Relationship Management using Google Cloud Platform**", is the bonafide work carried out by **Varshika Sunkari (160120733140) and Vijay Vardhan Reddy Nandikonda (160120733178)**, a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

16/4/24

Dr. V. Padmavathi
Associate Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

"Community Relationship Management using Google Cloud Platform" is a Software as a Service (SaaS) platform designed to facilitate the management of relationships between community-based organizations (CBOs) and their target communities while helping the organizations to maintain. Its primary objective is to enhance the reach and impact of CBOs by automating processes and bridging the gap between these organizations and end- users. Unlike traditional event management platforms, the CoRM tool offers a comprehensive set of features to empower CBOs in engaging with their communities more effectively. One of the key features of the CoRM tool is its Streamlined Event Management Workflow, which simplifies the process of organizing and managing events. This includes features such as event creation, promotion, attendee management, and post-event analytics. Additionally, the platform allows organizations to develop and maintain a detailed Organisation Portfolio, showcasing their achievements, events, and impact within the community. The Visual Dashboard Analytics feature provides organizations with valuable insights and data regarding their events and community engagement. This includes metrics such as event attendance, user engagement, and community growth over time. The Collaborative Opportunity Portal facilitates partnerships, initiatives, and sponsorships, promoting a collaborative spirit among CBOs and their communities. Furthermore, the CoRM tool includes an Organisation Team Management feature, enabling organizations to manage their team members, roles, and responsibilities effectively. This ensures smooth coordination and communication within the organization, leading to more successful community engagement efforts.

CERTIFICATE

This is to certify that the project titled **"Virtual Try-On using Deep Learning"**, is the bonafide work carried out by **Shreya S (160120733136) and Srihitha V (160120733137)**, students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

T Suvarna Kumari, Assistant professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

In response to the escalating demand for convenient and personalized shopping experiences within the contemporary retail landscape, this project introduces a groundbreaking Virtual Try-On system aimed at revolutionizing how customers engage with fashion. Traditional retail limitations, such as geographic constraints and the inability to physically try on clothing items before purchase, have been further exacerbated by the rise of e-commerce platforms. This project addresses these challenges by leveraging cutting-edge technology to create a Virtual Try-On platform that transcends conventional boundaries. The system offers a seamless virtual environment wherein users can try on clothing items without the need for a physical presence. Key to its innovation is the incorporation of advanced features, including 2D pose transfer, virtual try-on functionality, and an extensive suite of fashion editing capabilities. Moreover, the system's recurrent generation module enables dynamic garment interactions such as tucking in, layering, and editing individual elements, enhancing the realism of virtual try-on experiences. By explicitly encoding garment shape and texture, the system empowers users with precise control over their virtual wardrobe, facilitating diverse and customizable styling options. This project holds significant promise for transforming the fashion retail sector, enhancing customer engagement, satisfaction, and ultimately driving business growth.

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CERTIFICATE

This is to certify that the project titled **"Surface Enhancement for LiDAR Point Cloud"** is the bonafide work carried out by **Shreya Koka (160120733135) and Raghav Gupta (160120733162)**, student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Head, CSE Dept.
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Project External Examiner

Abstract

Autonomous vehicles represent a transformative shift in the field of transportation in terms of enhanced safety, accessibility, and convenience. A common sensor technology used in autonomous vehicles to scan their surroundings is LiDAR (Light Detection and Ranging). Although LiDAR-based autonomous vehicles are rapidly gaining popularity in recent times, constructing complete and accurate images of the surrounding driving environment remains one of the major tasks. The project proposes a logical pipeline to collect, view, and pre-process the existing LiDAR datasets. To remove unnecessary data points that are far away from the vehicle, we implement a statistical outlier removal method. We then perform RANSAC-based ground point removal, for clearer visualization of surrounding objects. We compare these specific implementations in our existing system with related work to identify the gaps and challenges. We introduce our proposed system, where we explore surface enhancement using upsampling, that substantially improves output visualization from the existing system. Furthermore, we perform a comprehensive comparison of various approaches and propose the best method suitable for universal datasets. We also implement the Iterative Closest Point (ICP) method on LiDAR point cloud data to iteratively align and refine overlapping point clouds, thereby enhancing the representation of surfaces. Additionally, we briefly discuss the bounding box algorithm for object detection. We then explore DBSCAN clustering on point cloud data to identify and group together spatially dense regions, enabling robust detection of objects in complex environments. This clustering technique enhances our object segmentation process, facilitating more precise labeling and identification of various objects within the LiDAR data. Based on our observations and results, we determine the future possibilities of research in LiDAR data processing techniques. Testing and evaluating the existing datasets prove that the proposed method can achieve a good balance between quality pre-processing, file size, and accuracy.

CERTIFICATE

This is to certify that the project titled **"Human Face Generation using Conditional Generative Adversarial Network (CGAN)"** is the bonafide work carried out by **Saphalya Peta (160120733134) and Vineela Bellamkonda (160120733141)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Abstract

The collection of images conditioned on specific attributes is the primary goal of this study, which investigates the use of Conditional Generative Adversarial Networks (CGANs) for the generation of images of the face. Our goal is to produce realistic facial images with desired properties like gender, hair color, and facial features by utilizing the CelebA dataset. The approach consists of putting into practice a CGAN architecture with a Generator and a Discriminator that have been trained against each other to produce high-fidelity image synthesis. To enable conditional picture generation, preprocessing of the dataset involves including image data with attribute labels. Our method integrates picture and attribute data seamlessly by using exclusive dataset loading techniques and PyTorch for model development and training. The Generator gains the ability to create images that are identical to genuine ones through iterative optimization and adversarial training, while the Discriminator develops the ability to correctly discern between real and artificial images. TensorBoard is used in the study to assess training dynamics and image quality in real time. The effective synthesis of realistic face images conditioned on certain attributes is one of the main discoveries, proving the effectiveness of the suggested CGAN architecture. This work advances generative models in computer vision and has implications for face generation for character simulation, data augmentation in facial recognition systems, and manipulation of facial attributes in image editing software, among other uses.

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CERTIFICATE

This is to certify that the project titled **"Enhanced Depression Detection by optimisation and comparison of Ensemble approaches"**, is the bonafide work carried out by **D. Asritha (160120733123) and Sampriti Thummala (160120733132)**, the students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Smt. A. Sangeetha,
Assistant Professor
Internal Supervisor

Dr. Raman Dugyala,
Head, CSE Dept.

Professor and Head Department
Department of Computer Science & Engineering
Chaitanya Bharathi Institute of Technology (A)
Gandipet, Hyderabad-500 075.(T.S.)

Project External Examiner

Abstract

Depression, often referred to as a "disease of modernity," is predicted to become one of the top three leading diseases by 2030. Despite its prevalence, discussing depression remains a taboo in many places, prompting individuals to turn to social media as an anonymous platform for sharing their thoughts. Therefore, the early and timely detection of depression can help save the lives of many. In recent times, there were several methods adopting machine learning and deep learning techniques for depression detection. However, accurate detection of depression is required as misclassification can be hazardous. In this study, we employ a methodology that incorporates data from three diverse sources: Reddit, eRisk, and CLpsych. This methodology covers data preprocessing, tokenization, feature selection, and model development, using a range of models including Long Short-Term Memory (LSTM), LSTM with Attention, Logistic Regression, LSTM with Gated Recurrent Unit (LSTM+GRU), BERT, XLNet and ensemble techniques like Voting Classifier and Stacking Classifier to predict depression.

Moreover, our project extends the initial findings by exploring alternative ensemble methods to potentially improve the accuracy of depression detection. Additionally, we introduce a user-friendly web application, developed using the Flask framework, allowing users to input text for analysis. This approach of using ensemble and hybrid methods have shown better accuracy for depression detection and it demonstrates the practicality of using technology for real-world mental health assessment and support, addressing the anonymity and accessibility that social media platforms offer to those affected by depression

CERTIFICATE

This is to certify that the project titled **"A Hybrid Method of Feature Extraction of Signatures for Verification using Xception and HOG"** is the bonafide work carried out by **Yalla Sai Keertana -160120733130 and Sanvi Reddy Sama-160120733133** ,students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

T. Suvarna Kumari
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Project External Examiner

Abstract

The offline signature verification systems feature extraction is crucial to their performance. The amount and precision of extracted characteristics influence how successfully these algorithms can distinguish authentic and fraudulent signatures. Using Xception and Histogram of Oriented Gradients, we established a novel technique to extract features from signature photos. We then selected the most significant attributes using Decision Trees. Integrating Xception (a CNN) and HOG was the last step. Three models—long short-term memory, support vector machine, and K-nearest Neighbor—tested the combination technique. Our approach accurately forecasted the future and utilized the CEDAR information effectively, according to the trials. Since we tested sophisticated false signatures, which are harder to recognize than simple or opposite signs, this accuracy is crucial. The hybrid method was evaluated using three classifiers (long short-term memory, support vector machine, and K-nearest Neighbor) and tested on two datasets (UTSig and CEDAR). The experimental results showed high accuracy in distinguishing between authentic and forged signatures, even for skilled forgeries.The project now includes a Voting Classifier for Dataset Analysis and Feature Extraction and Xception classifier for better accuracy. We achieved 99% accuracy for improved Signature Verification utilizing Xception and HOG, a multi-classification approach. Users can easily sign up and log in for testing using a simple Flask framework that uses SQLite, ensuring that the application can be used safely in real life.

Abstract

Location-based privacy preservation is crucial in the digital age due to the widespread use of location-based services and growing concerns about individual privacy. Despite the use of k-anonymity measures, current systems face challenges, particularly the risk of re-identification, especially when attackers have additional contextual information. These systems also suffer from information loss, leading to a significant decrease in data utility. Striking the right balance between privacy and data utility remains a prominent challenge in the field of location-based privacy preservation. To address the existing gaps and challenges in privacy-preserving location data publishing, a robust framework termed Location anonymization framework is being introduced which consists of three methods Generalization, Sequence alignment and Clustering. DGH Trees are being used for Generalization to balance privacy and utility. To enhance privacy preservation in overly sensitive datasets, a modified version of the k-means algorithm is being put forth. Moreover, to improve the alignment process, the more efficient iterative multisequence alignment is being opted for over the progressive counterpart within this framework. The aim is to achieve a more balanced trade-off between privacy and utility in location data publishing.

CERTIFICATE

This is to certify that the project titled **"Alert System For Drivers By Traffic Sign Board Detection "**,is the bonafide work carried out by **Ravikanti Chandralekha (160120733125) and Pravalika Badhey (160120733128)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. R. Ravinder Reddy
Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

A vast collection of laws governs the universe, including environmental, physical, and other elements. Similarly, society has evolved a set of traffic regulations to direct and regulate traffic movement. When traffic signs are correctly observed and followed, accidents can be avoided. A driver's ability to perceive and act on all the sign boards is quite tough. It is proposed to utilize an automatic recognition system to identify sign boards and notify the drivers. The device, which recognizes indications and guides drivers through proper procedures, could be highly useful in driverless vehicles. Road traffic is a big factor to society's problem. As the amount of traffic on the road's increases, it is more vital than ever to follow traffic laws strictly. Everyone in society is expected to follow traffic laws, which include the use of traffic signs and signals. The Traffic Signboard detection and Traffic Sign Board Recognition are included to assist the driver in following traffic signs. The project's primary objectives include detection and recognition of the Traffic Signboards. Implementing a robust Traffic Signboard Detection and Recognition system is paramount for enhancing road safety and efficiency in today's bustling transportation networks. With the surge in traffic volume, adherence to traffic laws and signboards becomes increasingly critical to prevent accidents and streamline traffic flow. Leveraging advanced technologies such as YOLOv8 within OpenCV, this project aims to seamlessly detect and recognize traffic signboards. Upon successful detection and recognition, the system promptly gives information to the driver through an intuitive interface, such as an LCD display or voice alerts. This instant notification mechanism ensures that drivers are promptly informed of important instructions and warnings, enabling them to adhere to traffic regulations without distraction or delay. By integrating voice alerts, the system caters to diverse user preferences and enhances accessibility, providing clear auditory cues to supplement visual feedback

CERTIFICATE

This is to certify that the project titled **"Enhancing Eye Disease Diagnosis with Low-Quality Fundus Images: A Deep Transfer Learning Approach",** is the bonafide work carried out by **Laya C(160120733124) and Sriteja G(160120733171),** a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

T Suvarna Kumari, Asst.Prof.
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

In this study, we propose a deep transfer learning strategy for diagnosing eye-related conditions and diseases, focusing on low-quality fundus images. We explore multiple datasets including EyePacs, Messidor, ODIR, and REFUGE, along with DRD Detection from Roboflow. Our approach begins with comprehensive image processing techniques utilizing ImageDataGenerator and Torchvision for preprocessing and detection tasks. For classification, we employ well-known architectures such as VGG16, ResNet50, Inception-v3, Xception, DenseNet121, DenseNet169, and InceptionResNet-v2. Additionally, for detection tasks, we integrate YOLOv5 and YOLOv8 models. Training our models on these datasets, we achieve high accuracy, with our proposed model surpassing 99% accuracy on the DRD dataset, particularly using VGG16. To enhance performance further, we propose utilizing YOLO-based detection methods. In extending our work, we integrate a Flask framework with SQLite for user authentication and interaction. Users can upload fundus images for analysis, wherein the preprocessed input undergoes prediction using the trained model. Finally, the outcome is displayed to the user. This comprehensive approach not only showcases the effectiveness of deep transfer learning in diagnosing eye-related conditions but also provides a user-friendly interface for real-world application, promising improved accessibility and accuracy in diagnosis.

A PROJECT REPORT ON

Vulnerability Detection in websites using Machine Learning

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

ASIYA ANJUM - 160120733122
SHIRISHA.V - 160120733317

Under the Esteemed Guidance of

Dr. M Swamy Das
Professor

Chaitanya Bharathi Institute of Technology (Autonomous)

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Hyderabad, TELANGANA (INDIA) –500 075

Abstract

The proliferation of web applications in contemporary society has heightened concerns regarding website security, with attacks posing significant threats to private and public organizations. Recent data underscore the severity of the issue, with over 1.5 lakh Indian websites falling victim to hacking between 2014 and 2020, averaging 26,000 breaches annually or 72 daily. Furthermore, Sitelock's cybersecurity report highlights that 113 million website harbor security vulnerabilities, exposing them to an average of 50 attacks per day. The surge in online services, e-commerce, and e-banking users has attracted cyber attackers, leading to the proliferation of phishing websites aimed at stealing sensitive information. Consequently, detecting and preventing web-based attacks, including phishing, SQL injection, and cross-site scripting (XSS), have become imperative. Traditional methods, though widely used, suffer from limited accuracy, primarily due to their reliance on large datasets. Heuristic-based machine learning approaches have shown promise, but existing models such as XGBoost and SVM still exhibit shortcomings in accuracy and false-positive rates.

In this study, we proposed a novel approach to website vulnerability detection leveraging heuristic-based machine learning techniques. Recognizing the attackers' focus on extracting sensitive user information through malicious URLs and exploiting vulnerabilities like SQL injection and XSS, we aim to address the limitations of traditional methods. Building upon previous research, our study highlights the inadequacies of current approaches, notably their lower accuracy scores, high false-positive rates, and computational inefficiencies.

Based on our findings, we advocate for the adoption of Random Forest algorithms to overcome existing gaps in vulnerability detection, specifically targeting phishing, SQL injection, and XSS attacks. By harnessing the capabilities of Random Forest, we aim to enhance the accuracy and efficiency of website vulnerability detection, thereby mitigating the risks posed by malicious attacks. Our proposal represents a significant step towards bolstering cybersecurity measures in an increasingly interconnected digital landscape, safeguarding users and organizations against the evolving threat landscape.

To validate our approach, we collected a comprehensive dataset from Kaggle, comprising various website features and labels indicating vulnerability. After preprocessing and feature engineering, we trained a Random Forest model on this dataset. The results were highly promising, with our model achieving an accuracy of 97% in detecting website vulnerabilities, outperforming existing techniques. This significant improvement in accuracy, coupled with reduced false-positive rates, underscores the potential of our proposed method to revolutionize website vulnerability detection.

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY
An Autonomous Institute I Affiliated to Osmania University
Kokapet Village, Gandipet Mandal, Hyderabad, Telangana-500075. www.cbit.ac.in

COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"Helmet Detection and Number Plate Extraction using YOLOv8 "**,is the bonafide work carried out by **Gandla Alekhya (160120733121) and Veldurthi Jhahnavi (160120733126)** ,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

15/4/24

Dr. R. Ravinder Reddy
Professor
Internal Supervisor

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

Abstract

Motorbikes serve as the primary mode of transportation in most of the countries as they are cost effective and appropriate for a nuclear family. But according to the recent report released by 'The Times of India' on August, 2023, 87% of the deaths in road traffic accidents involving two wheelers is due to non-compliance in wearing safety helmets for various reasons. Right now, the usual method to make sure of this is by having traffic police officers physically monitoring the people riding motorcycles. But due to excess traffic and limited traffic personnels, many violators go unrecognized and continue to practice the same. Thus, it is important to eliminate the human intervention and automate the monitoring system. Our proposed system implements this by extracting number plate of helmet violators and generates an e-challan on the registered mobile number. We have used YOLO-v8 + EasyOCR for number plate extraction and identification and a specially trained YOLO-v8 model for violation detection. Image preprocessing techniques such as Median Blur and Negative Imaging were incorporated to improve the Character Recognition rate and increase the ability to be distinguished from one character to another. This system holds great potential for enhancing safety-related policies and ensuring strict enforcement of traffic regulations as it achieved a mAP of 96%. Additionally, it contributes to the advancement of traffic management through the implementation of an AI-based automated traffic violation and ticketing system.

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Private & Confidential
Reference ID: 237707

04 May 2024

Gundaram Rohith

Dear Gundaram,

We are pleased to offer you employment in the position of Associate Applications Developer with Oracle India Private Limited, IDC ("Oracle") Your base of operation is Hyderabad, India. This offer of employment is made based on India laws.

We offer you a starting compensation as detailed below payable over twelve (12) months. In addition, you will be eligible to participate in the standard compensation plan relevant to your role and line of business.

Components	Amount (INR) p.a
A. Basic salary	652,500.00
B. Flexible Benefit Plan (FBP) **	797,500.00
C. Annual Gross Pay AGP (A+B)	1,450,000.00
D. Company's contribution to PF	78,300.00
Total Gross (C+D)	**1,528,300.00**

In addition to the above you will be eligible for Gratuity benefit in accordance with the statutory provisions governing payment of Gratuity which may be applicable at the time.

** - Details of Flexible Benefit Plan is provided in the Annexure *"Employment Agreement & Employment Benefits"*

The Company may, at any time, review and/or restructure the Compensation Package.

Relocation Assistance:

If you accept your employment offer, Oracle has agreed to make a contribution of **INR 307,679.33** toward relocation costs under the JAPAC and India Relocation Program. Please note that this amount includes your relocation budget as well as estimated service or tax fees that may apply. The relocation policy is structured to provide flexibility based on your personal needs. You will be able to allocate your available funds toward relocation services up the maximum budget amount and within the parameters of the Relocation Policy.

Oracle has partnered with SIRVA for relocation in Japan, APAC and India. Your manager will initiate your relocation with SIRVA after an Oracle purchase order has been created and approved. You will be contacted by SIRVA within 24 hours of your relocation authorization. If you are not contacted by SIRVA within a few days, please contact your Oracle manager to ensure s/he has completed the necessary steps to authorize your relocation.

Do not take any steps to initiate your own relocation prior to speaking to SIRVA. Doing so may result in a refusal to reimburse associated costs. SIRVA will review the Oracle JAPAC and India Relocation Policy and processes with you and help you manage the relocation budget.
Before receiving any relocation assistance you will be required to sign and return a Relocation Agreement (provided and collected by SIRVA).

This offer is our formal contract and must be read and accepted in conjunction with the Employment Agreement & Employment Benefits, Proprietary Agreement and Disclosure of interest. In addition to these terms and conditions stated in the above documents, there are other company policies and procedures which you agree to observe and follow during your employment with Oracle. These company policies and procedures may be varied from time to time.

This offer of employment is contingent upon no adverse information being obtained during reference checking with previous employers, approval of your employment / immigration pass application (if applicable) and upon satisfactory clearance of criminal check prior to commencement of employment. If you fail any of the above checks, validation or approval process, or do not cooperate or provide assistance in undergoing such checks, validation or approval process, this offer will immediately lapse without any claim against, or liability to Oracle.

This offer is made with the explicit understanding that you will pass the qualifying examination in the first attempt and that you will not have any arrears till the final examination. In the event that you do not satisfy any of the aforesaid conditions, the Company may withdraw its offer of employment and revoke the appointment at any time without compensation. Your on-board date will be at your Hiring Manager's discretion, and the Hiring Manager's decision will be final.

By accepting this offer you confirm that there are no contractual or other legal impediments which may prevent you commencing employment with the Company. Upon acceptance by you, this offer shall form the employment agreement between you and the Company.

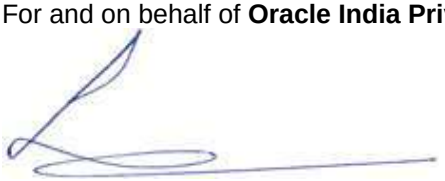
On your day of commencement you will be required to sign in all pages including Employment Agreement for our records, a copy of the offer and the Proprietary Information Agreement.

The letter of offer is valid for two (2) weeks from the date hereof for conveying your acceptance and conditional on confirmation by you that you will commence employment on the date specified by your Manager Chandra Perni (unless agreed otherwise by your Manager).

This offer will automatically lapse if not accepted within two (2) weeks from the date hereof.

We look forward to having you with us in our team.

Yours Sincerely,
For and on behalf of **Oracle India Private Limited, IDC**



Srihari Beldona
Group Vice President - Human Resources

OFFER LETTER ACCEPTANCE:

This offer is our formal contract and must be read and accepted in conjunction with the Employment Agreement & Employment Benefits and Proprietary Information Agreement. Those documents can be accessed via the hyperlinks and must be read prior to acceptance of this offer. You will also be required to complete a Disclosure of Interest form.

I acknowledge that I have read and understood the terms of this offer letter. I understand that as a pre-condition of my employment by Oracle, I will also be required to review and accept

- An Employment Agreement which, together with this offer letter, will constitute my formal contract of employment; and

- A separate Proprietary Information Agreement.

In addition to the terms and conditions stated in the above documents, there are other company policies and procedures which I agree to observe and follow during my employment with Oracle. These company policies and procedures may be varied from time to time at Oracle's discretion.

Restricted Stock Grant Addendum

04 May 2024

Dear Gundaram,

After you begin employment with Oracle, a request for approval will be submitted to the Board of Directors of Oracle Corporation submitted to grant you restricted stock units (RSUs) of Oracle Corporation common stock pursuant to the Oracle Corporation 2020 Equity Incentive Plan (the "Plan"), the number of which shall be calculated as follows:

$20,000.00 USD divided by the closing sale price of one share of Oracle Corporation common stock as reported on the New York Stock Exchange on the RSU grant date, rounded up to the nearest whole share.

If approved, any RSU award will be issued according to the Plan under a written agreement and will be subject to qualification under all applicable securities regulations. As long as you remain continuously and actively employed by Oracle or its affiliates, you will receive 25% of the RSU shares per year, beginning one year after the RSU grant date. Please note that there is no guarantee that the value of the shares you receive if and when the RSU shares vest will be equal to $20,000.00 USD, as the future value of Oracle's common stock is unknown, indeterminable, and may fluctuate between the date of this letter and the grant date, and between the grant date and the applicable vesting dates.

By accepting this offer, you agree to abide by the terms of the written RSU agreement and comply with Oracle Corporation's Insider Trading Policy. We recommend that you consult your personal tax advisor at your own expense regarding the tax implications of your participation in the Plan or if you have tax questions regarding your RSUs.

Oracle grants RSUs on the 5th day of the calendar month following the month of the grant approval or the month of your start date, whichever occurs later. You will be notified once your grant is available to view and accept, typically towards the end of the grant month.

Your participation in the Plan is entirely voluntary and the benefits that are afforded under the Plan do not form an employment contract with Oracle Corporation or its affiliates. The RSUs acquired under the Plan are not part of your salary or other remuneration for any purposes, including, in the event your employment is terminated (for any reason whatsoever), for purposes of computing payment during any notice period, payment in lieu of notice, severance pay, other termination compensation or any similar payments.

A PROJECT REPORT ON

MMAMS – A MULTI MODEL BASED AGRI MANAGEMENT SYSTEM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

VAASUKI ACHAMPETA **160120733087**

Under the esteemed guidance of

Dr. M Swamy Das, Professor

Chaitanya Bharathi Institute of Technology
(Autonomous)
(Affiliated to Osmania University, Hyderabad)
Hyderabad, TELANGANA (INDIA) –500 075

APRIL - 2024

CERTIFICATE

This is to certify that the project titled " **MMAMS - a Multi Model based Agri Management System"**, is the bonafide work carried out by **Vaasuki Achampeta (160120733087)**, a student of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. M Swamy Das
Professor
CSE Dept.

Dr. Raman Dugyala
Professor
Head, CSE Dept.

Professor and Head Department
Department of Computer Science & Engineering
Chaitanya Bharathi Institute of Technology (A)
Gandipet, Hyderabad-500 075.(T.S.)

Project External Examiner

DECLARATION

I hereby declare that the project entitled **"MMAMS- a Multi Model based Agri Management System"** submitted for the B.E (CSE) degree is my original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

A. Vaasuki

Name(s) and Signature(s) of the Student

Place: Hyderabad

Date: 27/04/24

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

I wish to express my deep sense of gratitude to **Dr. M Swamy Das**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his able guidance and useful suggestions, which helped me in completing the project in time.

I am particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped me to develop my project into a successful one.

I show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

I also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all my friends and family members for their continuous support and enthusiastic help.

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ABSTRACT

In the agricultural landscape of India, where farming serves as the lifeblood of the nation, precise crop yield prediction and optimal fertilizer application play pivotal roles in maximizing productivity. This study delves into the exploration of various machine learning algorithms for both tasks. A suite of algorithms including Decision Tree, LightGBM, XGBoost, AdaBoost, Random Forest, ExtraTrees, Gradient Boosting, Bagging Classifier with RF, Stacking Classifiers, and Voting Classifiers for fertilizer recommendation, were investigated and employed the same set for crop yield prediction.

Through meticulous experimentation and evaluation, a Stacking Ensemble model, comprised of Decision Tree, AdaBoost, XGBoost, and LightGBM with Random Forest as the base learner, emerged as the superior performer, achieving an impressive accuracy of 97.8%. This ensemble approach significantly outperformed individual models and even the Voting Classifier approach, highlighting the effectiveness of ensemble techniques for accurate crop yield prediction and fertilizer recommendation in the Indian agricultural context. Such heightened accuracy has the potential to significantly enhance decision-making processes for farmers, ultimately leading to improved crop yields and promoting sustainable agricultural practices.

Furthermore, MMAMS, a comprehensive agri-management system, goes beyond yield prediction and fertilizer recommendation, offering district-level forecasting for crop area, fertilizer quantity, and pesticide quantity. This empowers stakeholders with valuable insights for resource planning and allocation. A secure user authentication system ensures tailored access and dashboards for different user groups, fostering collaboration and transparency. By leveraging machine learning and ensemble techniques, MMAMS bridges traditional practices and data-driven decision-making in Indian agriculture, enhancing productivity, profitability, and sustainability.

A PROJECT REPORT ON

ANALYZING TWITTER DATA FOR ELECTION RESULT PREDICTION

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

V.S.K HARSHAVARDHAN REDDY 160120733099
RAPELLY VIKAS SWAGATH 160120733120

Under the Esteemed Guidance of

Dr. Kolla Morarjee, Associate Professor

Chaitanya Bharathi Institute of Technology (Autonomous)
(Affiliated to Osmania University, Hyderabad)
Hyderabad, TELANGANA (INDIA) –500 075

CERTIFICATE

This is to certify that the project titled **"Analyzing Twitter Data for Election Result Prediction"**, is the bonafide work carried out by **V.S.K Harshavardhan Reddy (160120733099) and Rapelly Vikas Swagath (160120733120)** , students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

26/04/2024

Dr. K. Morarjee
Associate Professor
Supervisor

26/4

Dr. Raman Dugyala
Professor
Head, CSE Dept.

Professor and Head Department
Department of Computer Science & Engineering
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Gandipet, Hyderabad-500 075.(T.S.)

Project External Examiner

ABSTRACT

Elections serve as a way for the people to express their opinions about the performance of a government and can alter their future to a great extent. In the last few years, there has been an exponential increase in the number of people openly expressing their political views through platforms like Twitter. This makes Twitter one of the best sources for analysing the public pulse. The major gaps observed in existing approaches include, inability to handle tweets in multiple languages, failing to handle fake twitter handles, and failing to discard spam tweets. In addition, very few studies were performed with respect to Indian context. To overcome these gaps, we have come up with a solution that would specifically work in the Indian context and is capable of handling tweets in Hindi in addition to English. The data related to all major political parties is collected from kaggle and various preprocessing steps are performed. Our proposed model uses Langdetect module to segregate Hindi tweets from the corpus. Subsequently, Googletrans module for translation. Our proposed system uses the RoBERTa model for performing opinion mining on the datasets. The results obtained will show the performance of our approach.

A PROJECT REPORT ON

Chatcare: Enhancing mental health support using NLP and AI

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

BHASURI POLAKI 160120733067
RISHIKA PONNA 160120733076

Under the Esteemed Guidance of

Dr. ANILA MACHARLA
Assistant Professor

Department of Computer Science and Engineering

Chaitanya Bharathi Institute of Technology

(Autonomous)

(Affiliated to Osmania University, Hyderabad)

Hyderabad, TELANGANA (INDIA) –500 075

2023-24

CERTIFICATE

This is to certify that the project titled **"Chatcare: Enhancing mental health support using NLP and AI"**, is the bonafide work carried out by **Bhasuri Polaki (160120733067)** and **Rishika Ponna (160120733076)**, student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Professor and Head Department
Department of Computer Science & Engineering
Chaitanya Bharathi Institute of Technology (A)
Gandipet, Hyderabad-500 075 (T.S.)

Dr. Anila Macharla
Assistant Professor
Supervisor

Dr. Raman Dugyala
Professor
Head, CSE Dept.

Project External Examiner

Abstract

This paper introduces ChatCare, a chatbot-based platform designed to address the escalating demand for accessible mental health support worldwide. Leveraging artificial intelligence and natural language processing, ChatCare delivers personalized emotional assistance and guidance. Key features include sentiment analysis and intent recognition, with metrics like emotion detection accuracy and intent recognition rates used for evaluation. With WHO reporting nearly 1 billion people globally living with mental disorders and 75% lacking treatment in low and middle-income countries, innovative solutions like ChatCare are imperative. Additionally, a Deloitte survey indicates 82% of respondents believe technology can improve mental health management, while 76% value emotional support in chatbot interactions. With rising mental health challenges exacerbated by events like the COVID-19 pandemic, scalable and cost-effective solutions such as ChatCare are vital for promoting global mental well-being. Through its user-friendly interface and 24/7 availability, ChatCare aims to provide support regardless of geographical or socioeconomic barriers. The project has achieved notable results, with an 87% accuracy rate in intent recognition, showcasing its effectiveness in understanding user needs and providing appropriate support.

A PROJECT REPORT ON

ENHANCING DECISION SUPPORT FOR TELANGANA AGRICULTURE WITH THE FARM ADVISOR

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

B.SATHYA SUSHEELA 160120733079
SREEJA SOMAVARAPU 160120733082

Under the Esteemed Guidance of

Dr. G. Kiran Kumar, Associate Professor

Chaitanya Bharathi Institute of Technology (Autonomous)
(Affiliated to Osmania University, Hyderabad)
Hyderabad, TELANGANA(INDIA)–500075

CERTIFICATE

This is to certify that the project titled " **Enhancing Decision Support for Telangana Agriculture with the Farm Advisor ",** is the bonafide work carried out by **B.Sathya Susheela (160120733079) and Sreeja Somavarapu (160120733082)** ,student's of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. G. Kiran Kumar
Associate Professor
Internal Supervisor

Dr.Raman Dugyala
Professor
Head,CSEDept.

Project External Examiner

DECLARATION

I/we here by declare that the project entitled **"Enhancing Decision Support for Telangana Agriculture with the Farm Advisor"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Name(s) and Signature(s) of the Student

Place:

Date:

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete with out the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Mr. Venkata Siva Rao Alapati**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

This project presents a pioneering farm advisory methodology tailored specifically for the unique requirements of Telangana farmers, aiming to advance agricultural practices and promote sustainable development. Leveraging a comprehensive dataset encompassing soil composition, groundwater levels, and crop cultivation , the system delivers personalized crop recommendations through rigorous model training. Deep learning architectures including LSTM, Bidirectional LSTM, CNN LSTM, and GRU are explored to capture temporal and spatial dependencies in agricultural data, ensuring accurate predictions. Ensemble learning techniques such as stacking further enhance predictive performance. Evaluation metrics, including precision, recall, and F1-score, attest to the system's reliability, with an accuracy exceeding 98.1%. This practical and effective solution for precision agriculture in Telangana signifies a significant step towards a more impactful agricultural ecosystem, with scalability potential for broader application in other regions.

A PROJECT REPORT ON

INTRUSION DETECTION FOR SOFTWARE DEFINED NETWORKING FOCUSING ON DDOS ATTACKS

submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

RANGAVAJJALA SANKARA BHARADWAJ **160120733110**
VARSHITH REDDY RAVULA **160120733119**

Under the esteemed guidance of

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Chaitanya Bharathi Institute of Technology (Autonomous)
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APRIL - 2024

A PROJECT REPORT ON

INTRUSION DETECTION FOR SOFTWARE DEFINED NETWORKING FOCUSING ON DDOS ATTACKS

submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

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RANGAVAJJALA SANKARA BHARADWAJ **160120733110**
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APRIL - 2024

CERTIFICATE

This is to certify that the project titled "**Intrusion Detection System for Software Defined Networking focusing on DDoS Attacks**", is the bonafide work carried out by **Rangavajjala Sankara Bharadwaj (160120733110) and Varshith Reddy Ravula (160120733119)**, student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Dr. Raman Dugyala
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Chaitanya Bharathi Institute of Technology (A)
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Project External Examiner

DECLARATION

We hereby declare that the project entitled **"Intrusion Detection System for Software Defined Networking focusing on DDoS Attacks"** submitted for the B.E (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Names and Signatures of the Students

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Rangavajjala Sankara Bharadwaj

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Varshith Reddy

Varshith Reddy Ravula

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Place: Hyderabad

Date: 27/04/2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. Raman Dugyala**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful to **Dr. Raman Dugyala**, the Incharge Head of the Department, of Computer Science and Engineering, for his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

In response to the escalating demand for high-speed networking in the contemporary computing landscape, traditional network paradigms with separate control and data planes are being replaced by software-defined networking (SDN). This transformative approach centralizes intelligence in a controller, abstracting network architecture from specific applications. Despite the advantages offered by SDN, there arises a vulnerability wherein a breach in the controller's security could grant unauthorized access, enabling potential manipulation of the entire network. This project addresses this critical concern by presenting an Intrusion Detection System (IDS) tailored for SDN. The proposed IDS employs a comprehensive strategy encompassing real-time network traffic monitoring, anomaly detection algorithms, and responsive threat mitigation measures. By scrutinizing data packets and communication patterns using deep learning and statistical analysis, the IDS identifies deviations from normal behavior, promptly coordinating with the SDN controller for threat mitigation. This project mainly focuses on the enhanced performance of IDS using a deep learning architecture involving LSTM and autoencoders compared to the other baseline deep learning models.

A PROJECT REPORT ON

Resilient Model Deployment using Design Patterns: Stateless Serving Function and Continuous Model Evaluation

for project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2023-2024)

by

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Jayesh Ishwar 160120733101

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A PROJECT REPORT ON

Resilient Model Deployment using Design Patterns: Stateless Serving Function and Continuous Model Evaluation

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2023-2024)

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CERTIFICATE

This is to certify that the project titled **"Resilient Model Deployment using Design Patterns: Stateless Serving Function and Continuous Model Evaluation",** is the bonafide work carried out by **N Bhanu Prakash (160120733095) and Jayesh Dhoot (160120733101)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

DECLARATION

I/we hereby declare that the project entitled **"Resilient Model Deployment using Design Patterns: Stateless Serving Function and Continuous Model Evaluation"** submitted for the B.E (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

N. Bhanu Prakash

Jayesh Dhoot

Name(s) and Signature(s) of the student

Place: Hyderabad

Date: 27/04/24

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Smt. G. Shanmukhi Rama,** Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala,** the in-charge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu,** for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

Machine learning models have become integral components of various real-world applications, ranging from predictive analytics and recommendation systems to autonomous driving and healthcare diagnostics. While these models offer significant advantages in terms of accuracy and automation, they also introduce challenges related to maintaining performance and reliability in dynamic and evolving environments. This study investigates innovative design patterns aimed at bolstering the resilience and reliability of deployed machine learning models, emphasizing the critical importance of ensuring that models not only perform well during the initial deployment but also adapt and thrive amidst changing conditions and requirements.

The "Stateless Serving Function" design pattern advocates for the adoption of stateless serving functions, which are instrumental in achieving high availability and scalability. By eliminating the reliance on persistent states, these functions enable models to seamlessly handle increased workloads, facilitate failover mechanisms, and ensure consistent predictions. The study offers comprehensive insights into the architecture, design considerations, and implementation strategies for deploying stateless serving functions in production environments, illustrating the tangible benefits through practical examples and case studies.

Furthermore, the "Continuous Model Evaluation" design pattern addresses the imperative need for ongoing monitoring and evaluation of model performance post-deployment. Recognizing the inherent challenges associated with model degradation, concept drift, and data drift, this pattern introduces a systematic framework for real-time performance monitoring, facilitating proactive interventions, such as automatic retraining and recalibration, to maintain optimal performance levels.

A PROJECT REPORT

ON

ENHACING CROP HEALTH USING DEEP LEARNING TECHNIQUES

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

Sai Sahithi Kosaraju 160120733078

Manjusha Sunkara 160120733072

Under the Esteemed Guidance of

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CERTIFICATE

This is to certify that the project titled "**Enhancing Crop Health Using Deep Learning Techniques**" is the bonafide work carried out by **Sai Sahithi Kosaraju (160120733078) and Manjusha Sunkara(160120733072)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

DECLARATION

I/we hereby declare that the project entitled "**Enhancing Crop Health Using Deep Learning Techniques**" submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Sai Sahithi Kosaraju - Sahithi

Manjusha Sankara - Manjusha

Name(s) and Signature(s) of the students

Place: Hyderabad, Telangana.

Date: 25 - 04 - 2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. G. Kiran Kumar**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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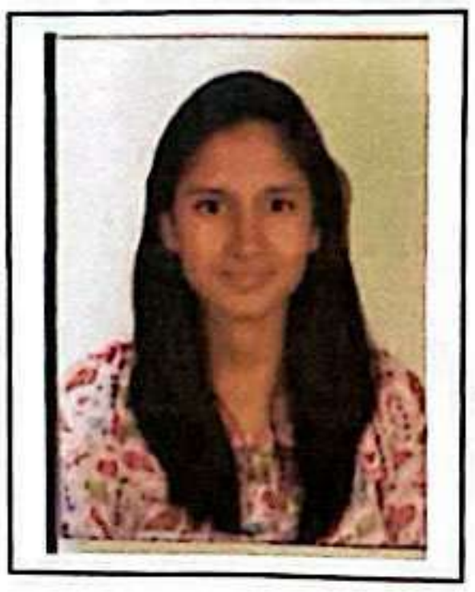

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Abstract

Traditional methods of identifying pests, leaf diseases, and selecting appropriate pesticides are time-consuming and prone to errors. The technological advancements have led to the development of leaf disease monitoring devices that empower farmers with early and accurate diagnoses. Existing systems leverage the power of Convolutional Neural Networks (CNNs) for image analysis. These systems capture images of leaves and utilize pre-trained CNN models, fine-tuned for specific diseases, to classify the illness. Researchers are actively exploring alternative architectures like DenseNets and EfficientNets for improved disease classification. Some advanced systems go beyond classification, employing image segmentation to pinpoint infected areas on the leaf. This granular analysis provides valuable insights into disease progression, aiding in the development of targeted treatment strategies. Data augmentation techniques are crucial for improving model robustness, especially when dealing with limited datasets. These techniques artificially expand the training data by creating variations of existing images, enhancing the model's ability to generalize and perform well on unseen data.The proposed application explores various classification and detection models, including MobileNet, VGG16, and YOLOv5, trained on a comprehensive dataset like PlantVillage. It allows users to capture images and receive disease classifications and detections. Further advancements incorporate high-performing models like DenseNet201 and Xception for classification, while YOLOv5 remains the champion for detection tasks. In conclusion, these innovative leaf disease monitoring devices, armed with deep learning and advanced image analysis techniques, empower farmers with the ability to identify and address crop ailments early on. This translates to improved crop yields, reduced reliance on pesticides, and ultimately, contributes to a more sustainable agricultural future.

A PROJECT REPORT ON

AHEAD OF THE STORM: EARLY WARNING SYSTEM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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This is to certify that the project titled "**Ahead of the Storm: Early Warning System**", is the bonafide work carried out by **Shruthi Kunchakuri(160120733080)** and **Srimeghana Akella(160120733084)**, a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in Bachelor of Engineering (Computer Science and Engineering) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

for

Dr. K. Spandana,
Assistant Professor
Internal Supervisor

Dr. Raman Dugyala,
Head, CSE Dept.

Professor and Head Department
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Project External Examiner

ABSTRACT

Floods are among the most severe natural calamities, posing serious threats to human lives, infrastructure, and the economy. Accurate flood prediction is critical for successful disaster response and management. This study looks at the application of machine learning algorithms to predict flood severity in India, where rainfall is a major source of floods. We hoped to create a predictive model for flood severity across the country by analysing historical rainfall data. In this study, various machine learning (ML) and deep learning (DL) models were evaluated, including Random Forest (RF), Support Vector Machine (SVM), Logistic Regression, k-Nearest Neighbors (KNN), Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM), and ensemble techniques like Voting Classifier. Among these, RF emerged as the most effective method for predicting flood severity.

The research faced a number of problems in developing the prediction model, the most significant of which were data availability and accessibility. The collection included rainfall data from 36 regions in India, however acquiring comprehensive and complete data proved problematic. Despite these issues, the RF model provided consistent performance, making it a valuable tool for disaster preparedness and risk mitigation. This study demonstrates the potential of machine learning in flood prediction and highlights the need for enhanced data collection and access to improve prediction accuracy further. These insights can contribute to more effective disaster response and help mitigate the impact of floods on communities and infrastructure.

A Project Report on

WASTE CLASSIFICATION USING CONVOLUTIONAL NEURAL NETWORK

Submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

Bandam Shiva Kumar	**160120733113**
Syed Md Kashan Naiyer	**160120733118**

Under the Esteemed Guidance of

Dr. M. Swamy Das, Professor

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APRIL – 2024

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY
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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled "**Waste Classification using Convolutional Neural Network**", is the bonafide work carried out by **Bandam Shiva Kumar (160120733113) and Syed Md Kashan Naiyer (160120733118)**, a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Abstract

The United Nations Environmental Program defines wastes as substances or objects that are disposed of, are intended to be disposed of, or are required to be disposed of by the provisions of national law as mentioned in Article 2(1) of the Basel Convention. Waste, in its various forms, poses a significant and complex set of problems with far-reaching consequences for the environment, human health, and economies. The escalating production of waste, including solid waste, hazardous materials, and electronic waste, has become a global concern. One of the major issues related to garbage is its environmental impact. Improper disposal of waste can harm ecosystems, contaminate water sources, and even result in the release of harmful chemicals into the atmosphere, contributing to climate change.

This research aims to effectively identify, and analyze wastes into six recyclable waste categories: paper, plastic, glass, cardboard, metal, and trash, preventing the use of physical efforts that are hazardous to health. The proposed system employs combining machine learning and deep learning algorithms, and then the waste is classified into its category. This project has the potential to foster a sustainable and circular economy by enhancing the quality of recyclables. It will result in an efficient waste management system and significantly accelerate waste segregation.

Our research underscores the shortcomings of existing models in discerning the subtle evolution of wastes over time. It also underscores the necessity for more sophisticated models that not only identify immediate problems caused be waste but also accounts for the intricacies of the environments and ecosystems. The proposed model highlights the importance of use of CNNs in waste classification. The pre-trained models i.e., DenseNet121 and ResNet50, gives higher accuracy than the conventional CNNs. During the testing and evaluation of our models, the ResNet50 outperforms the other models within few epochs, producing a staggering high accuracy of 93 percent.

A PROJECT REPORT ON

WEATHER-BASED FARMER LOAN-DEFAULT PREDICTION SYSTEM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

By

JAMPALA SAI KUMAR **160120733109**
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Under the Esteemed Guidance of

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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled "**Weather-Based Farmer Loan-Default Prediction System",** is the bonafide work carried out by **Jampala Sai Kumar (160120733109) and Swaroop Patnaik(160120733117),** a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Project Title: Weather - Based Farmer Loan Default Prediction System Project Id: 22

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A) GANDIPET, HYDERABAD-500075

Department of Computer Science and Engineering

B.E.4/4 CSE II-Semester code:XX Weekly Project Progress Details Form

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5. Title of the Project & Id : Weather - Based Farmer Loan Default Prediction / ID - 22
6. Area/Domain : Data Engineering & Analytics / Machine Learning.
7. Type of the Project : **Simulation / Experimentation / Research / Any other specify**
8. Place of Project work : In house
9. Name(s) of the Supervisor(s): 1. J Shiva Sai 2.
10. Signature(s) of the Supervisor(s) : 1. 2.
11. Date of approval of the Project :

Project Monitoring : Supervisor(s) Remarks

	Remarks	**Supervisor(s) Signature(S)**
First Week	Literature survey of base paper.	
Second Week	Collecting datasets on weather & various crops	
Third Week	Discussion about the methodology & uses	
Fourth Week	Training and finalising a model for yield prediction	
Fifth Week	Discussion about next steps & its datasets	
Sixth Week	working on the Conference paper	
Seventh Week	Working on the models & improving the accuracy.	
Eighth Week	working on the frontend website design & linking it to backend through flask	
Ninth Week	checking for errors in model & website & improving it	

Week	working on farmer loan default model	
eventh Week	finetuning the model & linking with our website. (work on documentation draft).	
Twelve Week		
Thirteenth Week		
Fourteenth Week		
Fifteenth Week		

A PROJECT REPORT ON

CHILLI LEAF DISEASE DETECTION USING DEEP LEARNING

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

LINGA SRAVAN 160120733115
K. SREE VARDHAN REDDY 160120733116

Under the Esteemed Guidance of

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CERTIFICATE

This is to certify that the project titled " **Chilli leaf Disease Detection using Deep Learning** ", is the bonafide work carried out by **Linga Sravan (160120733115) and K. Sree Vardhan Reddy (160120733116)** , students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Mr. K. Karthik
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Dr. Raman Dugyala
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Project External Examiner

DECLARATION

I/we hereby declare that the project entitled **"Chilli Leaf Disease Detection using Deep Learning"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Name(s) and Signature(s) of the Student

Place: Hyderabad.

Date: 26-04-24

L. Sravan

K. Sree Vardhan Reddy

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Mr. K. Karthik, Assistant Professor**, Designation as, Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

Our study presents an integrated deep learning (DL) framework for the accurate detection and management of diseases affecting chilli leaves. Leveraging six distinct DL models, including ResNet50, EfficientNetB0, DenseNet121, VGG16, InceptionV3, and MobileNetV2, our approach offers comprehensive coverage of potential leaf diseases. Among these models, EfficientNetB0 emerged as the most effective, achieving an impressive accuracy of 98.6%. The dataset comprises seven distinct labels, encompassing six disease categories and one for healthy leaves. By harnessing Flask, a web framework, we seamlessly integrate our DL model into a user-friendly website interface. When a farmer uploads an image of a diseased chilli leaf, our model promptly identifies the specific disease, provides detailed information regarding symptoms, offers preventive measures, and suggests appropriate crop protection products. This integrated framework represents a significant advancement in agricultural technology, empowering farmers with the tools necessary for timely and accurate disease diagnosis and management, thereby enhancing crop yield and sustainability in chilli cultivation.

A PROJECT REPORT ON

Detection and Proactive prevention of Website Swindling Using Hybrid Machine Learning Model

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

JMS Abhinav	**160120733089**
G Nithish Rao	**160120733103**

Under the Esteemed Guidance of

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CERTIFICATE

This is to certify that the project titled **"Detection and Proactive prevention of Website Swindling Using Hybrid Machine Learning Model"**, is the bonafide work carried out by **JMS Abhinav (160120733089) and G Nithish Rao(160120733103)**,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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ACKNOWLEDGEMENT

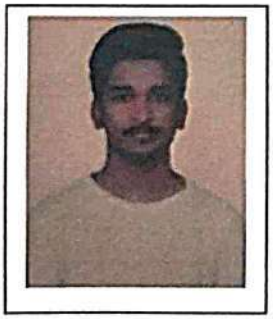
The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **M Venkata Krishna Reddy** , Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.



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Abstract

In the field of computer security, phishing is the criminally fraudulent process of attempting to acquire sensitive information such as usernames, passwords and credit card details, by masquerading as a trustworthy entity through an electronic message attempting to obtain sensitive information from an internet user to divulge personal data that can then be used for illegitimate purposes.

This project deals with machine learning technology for detection of phishing URLs by extracting and analyzing various features of legitimate and phishing URLs .There are several different approaches to detect phishing of websites using Machine Learning algorithms (Decision Tree, random forest and Support vector machine algorithms) used to detect phishing websites .After through studying and comparison, driving to a conclusion that no single technology will completely stop phishing, however a combination of good learning models proper application of current technologies and improvements in security technology has the potential to drastically reduce the prevalence of phishing and the losses suffered from it.

Cyber security persons are now looking for trustworthy and steady detection techniques for phishing websites detection. Therefore extensive usage of the existing hybrid models gives out optimal accuracy and precession of results in detection which might help the user to prevent and be aware of the swindling.

A PROJECT REPORT ON

From Pixels to Phrases: Advancements in VQA with Deep Learning Models

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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A PROJECT REPORT ON

From Pixels to Phrases: Advancements in VQA with Deep Learning Models

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"From Pixels to Phrases: Advancements in VQA with Deep Learning Models"**, is the bonafide work carried out by **Dakshata Patnam(160120733068) and Yogitha Aratla(160120733310)**,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering** (**Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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DECLARATION

I/we hereby declare that the project entitled **From Pixels to Phrases: Advancements in VQA with Deep Learning Models** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship, or any other similar titles.

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Place: Hyderabad

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ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr.K.Spandana**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

Visual Question Answering (VQA) represents a complex task that challenges the intersection of artificial intelligence, particularly where computer vision and natural language processing converge. At its core, VQA seeks to connect visual data, primarily images or videos, with natural language questions posed about them. In this realm, images provide rich information for querying visual content and extracting precise answers. However, this seemingly straightforward task becomes increasingly intricate when dealing with nuanced visual data or distinguishing visually similar elements.

Interpreting visual data manually, especially with large or intricate images, is laborious and time-intensive. Deep learning, a subset of machine learning, has emerged as a transformative solution to this challenge. These algorithms can analyze vast datasets, detect intricate patterns, and provide meaningful insights. In the context of VQA, deep learning models have shown significant promise, achieving high accuracy in classifying and responding to questions about visual content.

This paper delves into the intricacies of Visual Question Answering and explores its profound significance in the contemporary landscape. We examine various deep learning architectures, including those integrating attention mechanisms and LSTM networks, which have been employed to address the complexities of VQA.

The contributions of this VQA project can be summarized as follows - We introduce a methodology for Visual Question Answering (VQA) that integrates Roberta-based contextual understanding with Beit's visual reasoning capabilities. We conduct extensive experiments on a real-world dataset demonstrating the effectiveness of our approach in across various visual contexts, providing precise answers to a wide range of questions. We provide insights into the interpretability of our model and discuss potential avenues for future research in the domain and lays the groundwork for further advancements in multimodal AI, particularly in tasks requiring a fusion of visual and textual information.

A PROJECT REPORT ON

DeepSkin- A Skin Cancer Classification using Deep Learning and Image Processing

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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This is to certify that the project titled "**DeepSkin- A Skin Cancer Classification using Deep Learning and Image Processing",** is the bonafide work carried out by **160120733091 (Adityanarayana Rao Yerabati), 160120733098 (Dheeraj Nune)** student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

DECLARATION

I/we hereby declare that the project titled" DeepSkin- **A Skin Cancer Classification using Deep Learning and Image Processing"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Adityanarayan Rao Yerabati
Dheeraj Nive

Name(s) and Signature(s) of the Student

Place: Hyderabad

Date: 27/04/2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. V. Padmavathi**, Associate Professor as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the In-charge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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A PROJECT REPORT ON

A SECURE SUPPLY CHAIN SYSTEM FOR ORGANIC MANAGEMENT USING BLOCKCHAIN TECHNOLOGY

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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This is to certify that the project titled **"A Secure Supply Chain System for Organic Management using Blockchain Technology"** ,is the bonafide work carried out by **Chandrabose Chiluka (160120733094) and Pradhyumnabalaji Akkaladevi (160120733105)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Abstract

In today's globalized market, ensuring the integrity and authenticity of products in the supply chain is paramount. Traditional methods often fall short in providing transparent verification mechanisms, leaving consumers vulnerable to fraudulent practices. This project introduces a novel approach by harnessing the power of blockchain technology to establish a decentralized system dedicated to verifying product quality and provenance. Specifically focusing on certified organic food supply chains, our solution integrates blockchain's inherent security features with smart contracts to enhance data integrity and combat tampering and fraud. Through the issuance of quality assurance certificates, consumers can trust in the authenticity of the products they purchase. By bridging the gap between consumers and producers, this project not only strengthens supply chain transparency but also underscores the transformative potential of blockchain technology in revolutionizing trust and reliability across industries.

A PROJECT REPORT ON

DDOS / DOS DETECTION AND PREVENTION IN IOT-DRIVEN HEALTHCARE SYSTEMS

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2021-2024)

by

Maroju Nikhil	**160120733307**
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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled "**DDOS / DOS Detection and Prevention in IOT-Driven Healthcare Systems**", is the bonafide work carried out by **Maroju Nikhil(160120733307) and Veldoj Saiteja(160120733308)**,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2021-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

DECLARATION

we hereby declare that the project entitled "**DDOS / DOS Detection and Prevention in IOT-Driven Healthcare Systems**" submitted for the B.E (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship, or any other similar titles.

Maroju Nikhil (160120733307)
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Date: 27/04/2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Smt.Ch.Vijaya Lakshmi**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for her able guidance and useful suggestions, which helped us in completing the project in time.

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We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu**, for providing all facilities and support.

We also thank all the **staff members** of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

In the rapidly evolving landscape of IoT-driven healthcare systems, ensuring data security and privacy is of paramount importance. This project addresses the critical issue of data leakage detection and prevention, particularly focusing on safeguarding against malicious attacks such as Denial-of-Service (DoS), Distributed Denial-of-Service (DDoS), and BotNet intrusions. Recognizing the complexities and challenges inherent to this domain, we propose an innovative solution leveraging Deep Learning techniques and blockchain-enabled security measures.

For detection, we integrate Bidirectional Long Short-Term Memory (BiLSTM) and Convolutional Neural Network (CNN) architectures to capture temporal and spatial dependencies in network traffic data, enabling accurate identification of anomalous patterns indicative of potential data leakage. To enhance practical deployment and resource efficiency, we optimize the model through hidden layer compression, pruning, and quantization techniques, rendering it lightweight while preserving efficacy.

As part of this work, we also proposed a blockchain-based authentication and encryption framework as a counter measure for prevention. This decentralized architecture facilitates secure device authentication, while the MSR algorithm and AES encryption fortify communication channels, mitigating unauthorized access and data breaches.

By converging deep learning expertise, cybersecurity insights, and blockchain technology, our proposed work pioneers an approach that balances accuracy, resource efficiency, and robust security posture for IoT-driven healthcare networks. This endeavor stands at the forefront of safeguarding sensitive medical data, ensuring the integrity and confidentiality of patient information in an increasingly connected healthcare landscape.

Keywords: Data leakage detection, Deep Learning, IoT-driven healthcare, DOS attacks

DDOS attacks, Bi-LSTM, CNN, MSR, Encryption, Authentication.

A PROJECT REPORT

ON

Computer-Aided Diabetic Retinopathy Screening System Using Deep Learning

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Abstract

Diabetic retinopathy (DR) is a leading cause of vision loss worldwide. Early detection and treatment of DR are crucial to prevent vision loss. Conventional methods for DR detection are time-consuming, costly, and prone to human error. Deep learning-based approaches have emerged as promising alternatives for DR detection and classification. In this study, we propose a novel framework for DR detection and classification using a combination of ResNet50 convolutional neural networks (CNNs). The ResNet50 CNN is employed to extract features from retinal images, while the is image augmentation used to generate synthetic retinal images to augment the training dataset. The augmented dataset is then used to train the ResNet50 CNN, which is further fine-tuned on a validation dataset. The proposed framework is evaluated on a publicly available dataset of retinal images, demonstrating superior performance compared to state-of-the-art methods. Our results suggest that the proposed framework has the potential to improve the accuracy and efficiency of DR detection and classification, paving the way for more effective clinical decision-making and patient care.

A PROJECT REPORT ON

COUNTERFEIT CURRENCY NOTE DETECTION SYSTEM

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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CERTIFICATE

This is to certify that the project titled **"Counterfeit Currency Note Detection System"**, is the bonafide work carried out by **Abhinav Sandru (160120733090) and Phaneendra Koushik Ballamudi (160120733104)**, a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

DECLARATION

I/we hereby declare that the project entitled **"Counterfeit Currency Note Detection System"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

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Date: 27/4/24

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Phaneendra Koushik Ballamudi Koushik

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. B. Ramana Reddy**, Assistant Professor, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

With the increasing sophistication of counterfeit currency, the need for efficient and accessible detection mechanisms has become paramount. This project proposes a novel solution in the form of a mobile application designed for the rapid and reliable identification of counterfeit currency notes. The proposed system harnesses the power of image processing and computer vision algorithms to analyze key features of currency notes, enabling users to authenticate currency on the go. The mobile application utilizes the smartphone's camera to capture high-resolution currency notes images. The images are then processed through a robust image processing pipeline that extracts the latent image. This feature is critical for distinguishing genuine notes from counterfeit ones. With the increasing sophistication of counterfeit currency, the need for efficient and accessible detection mechanisms has become paramount. This project proposes a novel solution in the form of a mobile application designed for the rapid and reliable identification of counterfeit currency notes.

A PROJECT REPORT

ON

Node Influence and Link Prediction in Social Networks

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

Meghana Sreeya Veeramallu	**160120733073**
Harshitha Reddy Mallu	**160120733071**

Under the Esteemed Guidance of

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CERTIFICATE

This is to certify that the project titled "**Node Influence and Link Prediction in Social Networks**" , is the bonafide work carried out by **Meghana Sreeya Veeramallu, 160120733073 and Harshitha Reddy Mallu, 160120733071** student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Mr. B. Ramadasu

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Dr Raman Dugyala

Head, CSE Dept.

Project External Examiner

DECLARATION

I/we hereby declare that the project entitled **"Node Influence and Link Prediction in Social Networks"** submitted for the B.E (CSE) degree is my/our original work, and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Meghana Sreeya: V. Meghana

Harshitha Reddy: M. Harshitha

Name(s) and Signature(s) of the student

Place: Hyderabad, Telangana, India

Date: 25-04-2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Mr. B. Ramadasu**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

Link prediction in social networks remains an imposing challenge due to the complex interplay between network structure, node influences, and temporal evolution. This paper proposes a novel approach that synergistically combines gradient boosting techniques with centrality analysis to improve link prediction accuracy while providing interpretable insights into influential nodes. Our methodology quantifies node influence through centrality measures like eigenvector, betweenness, and closeness centrality. These influence scores are then incorporated as features into a gradient boosting model, leveraging its ability to capture complex non-linear relationships. Extensive experiments on a real-world Facebook dataset demonstrate the effectiveness of our approach, outperforming traditional link prediction methods. By associating node influences with link formation probabilities, our solution not only enhances prediction accuracy but also elucidates the key drivers of new connections, offering valuable interpretability for understanding social network dynamics.

A PROJECT REPORT ON

POLYCULTURE RECOMMENDER SYSTEM: ML ENHANCED WEB APPLICATION FOR SEAMLESS MIXED CROP PLANNING

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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SANGANABHATLA SAI HEMANTH **160120733108**

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CERTIFICATE

This is to certify that the project titled **" Polyculture Recommender System: ML-Enhanced Web Application for Seamless Mixed Crop Planning"**, is the bonafide work carried out by **Bathula Akash (160120733092) and Sanganabhatla Sai Hemanth (160120733108)**,a student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering**) andthat the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

26/04/2024

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Supervisor

Dr. Raman Dugyala
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Project External Examiner

DECLARATION

I/we hereby declare that the project entitled " **Polyculture Recommender System: ML-Enhanced Web Application for Seamless Mixed Crop Planning**" submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

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D. Jai Phanth Jai Phanth 160120733108

Name(s) and Signature(s) of the Student

Place: Hyderabad

Date: 26/04/2024

Abstract

Agriculture plays a crucial role in meeting the food and resource needs of our growing global population. To address the increasing demands for agricultural products while upholding environmental sustainability, it is essential to embrace innovative farming practices. One such practice is the cultivation of mixed crops, also known as polyculture, wherein different crop species are grown together in a single field. Polyculture has demonstrated its ability to enhance agricultural sustainability by increasing yields, mitigating pest and disease pressures, and improving soil health. Our project is founded on a wealth of agricultural data collected from reputable institutes, providing a robust basis for analysis. Leveraging machine learning algorithms, we categorize and recommend mixed crop combinations based on various agronomic and environmental factors. Beyond classification, our project also delves into uncovering the intricate patterns that characterize the spatial landscape of mixed cropping. Through the analysis of historical data, we explore the distribution of crop combinations in the agricultural orbital space. In this endeavor, we acquire insights that have the potential to revolutionize mod ern farming practices and lead to more sustainable and efficient land use. This project showcases the capacity of prediction, analysis, and visualization algorithms to drive advancements in agriculture at a smaller scale, utilizing data derived from the latest agricultural technologies. Ultimately, our work contributes to the shift towards more sustainable and resilient agricultural practices, ensuring a brighter and more productive future for farming.

A PROJECT REPORT ON

Scoring of User Profiles for Suicidal Vulnerability

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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Professor and Head Department
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Project External Examiner

Abstract

In recent years, the surge in mental health issues, including anxiety and depression, has raised significant concerns, exacerbated by the alarming expression of suicidal ideation on social media platforms such as X (formerly known as Twitter) and Reddit. While these platforms offer individuals a channel to openly discuss their mental health concerns, they also present an opportunity for researchers to analyze the emotional and psychological states of users.

This paper delves into the multidisciplinary approach of detecting suicidal ideation on social media, combining natural language processing, machine learning, deep learning, and mental health expertise. Although existing algorithms and machine learning models have made substantial progress in identifying keywords, phrases, and patterns associated with suicidal ideation, they often falter in capturing the dynamic and evolving nature of human emotions and mental well-being.

Our research underscores the shortcomings of existing models in discerning the subtle evolution of emotional dynamics over time. It underscores the necessity for more sophisticated models that not only identify immediate indicators of suicidal ideation but also account for the intricacies of emotional trajectories within online environments.

By delving into these intricacies, we aim to augment prediction accuracy by imbuing the model with greater contextual sensitivity, thereby reshaping our strategies for providing mental health support and intervention in the digital era.

A PROJECT REPORT ON

BLOOD SURE - BEYOND BLOOD DONATION

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

HARSHITA KALVA 160120733070

SNEHA BOORLA 160120733081

Under the Esteemed Guidance of

Dr. Uma Maheswari V

Chaitanya Bharathi Institute of Technology

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A PROJECT REPORT ON

BLOOD SURE - BEYOND BLOOD DONATION

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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COMMITTED TO RESEARCH, INNOVATION AND EDUCATION 45 years

CERTIFICATE

This is to certify that the project titled **"Blood Sure - Beyond Blood Donation"**, is the bonafide work carried out by **Harshita Kalva (160120733070), Sneha Boorla (160120733081)**, student(s) of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Sciences and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Project External Examiner

Annexure-3

DECLARATION

I/we hereby declare that the project entitled "**Blood Sure - Beyond Blood Donation**" submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Harshita

Harshita Kalva

Sneha

Sneha Boorla

Name(s) and Signature(s) of the Student

Place: Hyderabad

Date: 25-04-2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. Uma Maheswari V**, Designation as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the Incharge Head of the Department, Computer Science and Engineering, his guidance, intense support.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu Garu**, for providing all facilities and support. We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

Blood Sure - Beyond Blood Donation is a mobile application developed in collaboration with the NGO Engineers Without Borders, aiming to ease up and improve the blood donation services. Previously reliant on WhatsApp to connect donors with recipients, the NGO faced considerable challenges in managing the requests and verifying donor eligibility. Blood Sure automates this process, reducing the burden on their administrators and increasing efficiency.

Central to Blood Sure is its eligibility check feature, which screens potential donors for the important condition of anaemia, ensuring safety for both donors and recipients. The app incorporates a feature for assessing anaemia by analyzing the conjunctiva, providing a convenient and reliable screening mechanism.

In addition to this core functionality, Blood Sure offers many features designed to enhance the user experience. These include functionalities to locate the nearest available donors, participate in blood donation campaigns, view frequently asked questions, and receive updates on relevant news and events.

With an easy to use interface and helpful features, the app has potential to empower people to contribute to lifesaving efforts with ease and confidence. This is a useful application that can help improve the process of blood donations, effectively addressing various challenges faced by organizations like Engineers Without Borders. By connecting donors with recipients and improving the donation process, our app significantly reduces the burden on both parties, making blood donation more accessible and efficient for all involved.

A PROJECT REPORT ON

Devi – A Women's Safety App

Major project submitted in partial fulfillment of the requirements
for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

ADITI VARMA 160120733062

HAMSITHA KOTLA 160120733069

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A PROJECT REPORT ON

Devi – A Women's Safety App

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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CERTIFICATE

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Dr. V. Padmavathi
Associate Professor
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Gandipet, Hyderabad-500 075.(T.S.)

Dr. Raman Dugyala
Head, CSE Dept.

Project External Examiner

DECLARATION

I we hereby declare that the project entitled **"Devi – A Women's Safety App"** submitted for the B.E (CSE) degree is my/our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Aditi ADITI VARMA

Hansitha Kotla

Name(s) and Signature(s) of the Student

Place: Hyderabad

Date: 25th April 2024

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We wish to express our deep sense of gratitude to **Dr. V. Padmavathi**, Associate Professor as Project Supervisor, Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, for his/her able guidance and useful suggestions, which helped us in completing the project in time.

We are particularly thankful for **Dr. Raman Dugyala**, the In-charge Head of the Department, Computer Science and Engineering, his guidance, intense support, and encouragement, which helped us to develop our project into a successful one.

We show gratitude to our honorable Principal **Dr. C. V. Narasimhulu**, for providing all facilities and support.

We also thank all the staff members of the Computer Science and Engineering department for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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Abstract

This paper investigates the realm of women's safety Android applications, with a primary focus on their effectiveness in safeguarding women. Our methodology centers around evaluating the core functionalities of these applications, including live location tracking, information dissemination to nearby police stations and emergency contacts, danger zone alerts and detecting nearest police stations. Through an in-depth analysis of various Android applications, we assess their features, usability, accuracy, and real-world applicability, offering a holistic view of the progress and potential impact of women's safety technologies. This review contributes to the ongoing discourse on women's safety, equipping both developers and users with valuable insights for making informed decisions in a digitally connected world.

A PROJECT REPORT ON

NEXT-GEN HEALTH PREDICTION SYSTEM: ML EMPOWERED WEB APPLICATION FOR DISEASE PREDICTION

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

ASHISH GOLLA	**160120733094**
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CERTIFICATE

This is to certify that the project titled **" Next-Gen Health Prediction System : ML Empowered Web Application for Disease Prediction ",** is the bonafide work carried out by **Ashish Golla (160120733094) and Bandaru Sathvik (160120733111)** students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana (India) during the period of 2020-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering** (**Computer Science and Engineering**) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Mr. Venkata Siva Rao Alapati
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Dr. Raman Dugyala
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Professor and Head Department
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Project External Examiner

Abstract

The integration of technology within the healthcare sector has revolutionized the approach to diagnosing and treating illnesses. This outlines the development of an innovative web application designed to assist in disease identification by leveraging both a patient's historical health data and their current symptomatic presentation. The primary objective of this application is to offer personalized medical recommendations based on an analysis of the patient's health history and real-time symptoms. By employing machine learning algorithms, the application provides insights into potential illnesses or health conditions, subsequently offering suggested medications and nutritional supplements that align with the diagnosed ailment. This digital solution aims to streamline the diagnostic process, offering tailored health advice to users, thereby enhancing the efficiency and accuracy of healthcare delivery. The web application bridges the gap between patient data and medical expertise, contributing to improved patient care and well-being. In addition to offering personalized medical recommendations, the web application serves as a comprehensive health management tool. Users can securely upload and store their medical records, including past diagnoses, treatments, and laboratory results, facilitating a holistic view of their health history. This centralized repository of information enables healthcare providers to make informed decisions, ensuring continuity of care and minimizing the risk of medical errors. Overall, the development and implementation of this innovative web application represent a paradigm shift in healthcare delivery, leveraging technology to empower individuals, improve access to care, and drive positive health outcomes on both individual and population levels. By harnessing the potential of digital health solutions, we can usher in a new era of preventive medicine, personalized care, and collaborative healthcare ecosystems.

Keywords: Machine Learning, Disease Prediction, Web application, Symptoms, Transformer Model

A PROJECT REPORT ON

Integrated Diagnosis of Pulmonary Disorders using Chest CT Scan Analysis

Major project submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

(2020-2024)

by

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This is to certify that the project titled **"Integrated Diagnosis of Pulmonary Disorders using Chest CT Scan Analysis"** is the bonafide work carried out by **Niveditha Reddy Mandala (160120733074) and Roopika Ponnur(160120733077)** ,students of B.E.(CSE) of Chaitanya Bharathi Institute of Technology(A), Hyderabad, affiliated to Osmania University, Hyderabad, Telangana(India) during the academic year 2023-2024, submitted in partial fulfillment of the requirements for the award of the degree in **Bachelor of Engineering (Computer Science and Engineering)** and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

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Dr.Raman Duggyala
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Abstract

The accurate classification of chest CT scan images is critical in diagnosing various lung-related conditions, including Lung Cancer, Pneumonia, and COVID-19. This project aims to classify chest CT scan images into four classes which includes Lung Cancer, Pneumonia, COVID-19, and Normal, using a combination of preprocessing techniques and deep learning models. To enhance image quality and improve model performance, the preprocessing techniques were applied to the CT scan images which involves grayscale conversion to standardize the image format, histogram equalization to improve contrast, and Wiener filtering to reduce noise. These preprocessing steps ensure that the images are well-prepared for analysis by deep learning models.

The project uses an ensemble of three deep learning models—Resnet50, AlexNet, and VGG16—to classify the preprocessed images. This ensemble approach leverages the strengths of each model, resulting in a more robust and accurate classification system. The combined performance of the ensemble model achieved a notable accuracy demonstrating the effectiveness of the preprocessing techniques and the ensemble approach in accurately classifying chest CT scan images. This high level of accuracy underscores the potential for this method to be used in medical settings to assist in the early detection and diagnosis of lung-related conditions. Additionally, the project highlights the importance of preprocessing techniques in enhancing deep learning model performance in medical imaging tasks.

Keywords: Computed Tomography, Multi-classification, Deep Learning, Pulmonary diseases, Pre-processing.