

A

Project Report on

**CLOUD SECURITY ARCHITECTURE WITH DATA ENCRYPTION AND
ACCESS CONTROL IMPLEMENTED IN PYTHON**

*Submitted in partial fulfilment of the Requirements for the award
of the degree*

**MASTER OF TECHNOLOGY
IN
COMPUTER SCIENCE & ENGINEERING
BY**

NAME : Balla Arun Kumar

REGD.NO : 23U41D5802

Under the Esteemend guidance of

Dr. K. Sujatha,

M.Tech, PhD

Professor & HoD

**DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING**



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(2024 - 2025)



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that the project work entitled "Cloud Security Architecture With Data Encryption And Access Control Implemented In Python" is the bonafide work submitted by Balla Arun Kumar (23U41D5802). In partial fulfilment of the requirements for the award of degree of Master of Technology in Computer Science & Engineering by Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTU-GV, Andhra Pradesh during the academic year 2024 - 2025

Under the Supervision and guidance of

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Dr. K. Sujatha
Professor
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Head of the Department
Dr. K. Sujatha
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EXTERNAL EXAMINER

ABSTRACT

This Flask-based web application provides a secure and efficient system for managing and accessing patient records within a healthcare facility. Using JSON Web Tokens (JWT) for confirmation, the framework guarantees that validated clients with fitting jobs, like specialists, administrators, and gathering staff, can access patient information. The application highlights endpoints for login, putting away, recovering, and seeing patient information, with every endpoint implementing job-based admittance controls. Encryption is used using the Fernet symmetric encryption system to protect the mystery of patient data exceptionally still. This encryption plot ensures that sensitive patient information is securely handled in a mixed association and potentially unscrambled when central by a supported workforce. Furthermore, The system maintains basic Filth methodology on calm data while staying aware of high data decency and security. The mystery key organization system impacts bcrypt for hashing and securely affirming client passwords, giving areas of strength against monster force and other typical mystery key-related attacks. This system demonstrates the potential for Flask and associated libraries to create a secure, efficient, and scalable healthcare data management solution suitable for modern medical environments.

A Project Report on
Energy-Efficient Communication Strategies for
VANETs to Extend Network Lifespan

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

MASTER OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

by

S.PUSHPA

(23U41D5814)

Under the Esteemed guidance of

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M.Tech

Assistant Professor

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(2023 - 2025)



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CERTIFICATE

This is to certify that the project report entitled “ENERGY-EFFICIENT COMMUNICATION STRATEGIES FOR VANETS TO EXTEND NETWORK LIFESPAN” submitted by S.Pushpa (23U41D5814). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science & Engineering, from Dadi Institute of Engineering & Technology, Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by her under my guidance and supervision.

naidu

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EXTERNAL EXAMINER

ABSTRACT

The increasing demand for smart transportation systems has led to the rapid deployment of Vehicular Ad Hoc Networks (VANETs), which enable vehicles to communicate with each other and with infrastructure. However, the energy consumption of these networks poses significant challenges, particularly regarding the limited battery life of vehicles. This project proposes innovative energy-efficient communication strategies designed to enhance the lifespan and performance of VANETs. By analyzing existing communication protocols, the project identifies key areas for optimization, focusing on data transmission techniques, routing algorithms, and resource management. Implementing these strategies involves a comprehensive approach that includes simulations and performance evaluations to assess the impact on energy consumption and network reliability. The results demonstrate a significant reduction in energy usage while maintaining effective communication, ultimately contributing to more sustainable and reliable VANETs. This research aims to pave the way for smarter transportation solutions, promoting efficient use of resources in vehicular networks.

A Project Report on
**Blockchain-Enhanced Voting Systems for
Secure & Transparent Elections**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE & ENGINEERING

By

Satish Vanapalli

(23U41D5813)

Under the Esteemed guidance of

Mrs. K. U. V. Padma

M.Tech (PhD),

Asst. Professor

Department of Computer Science & Engineering



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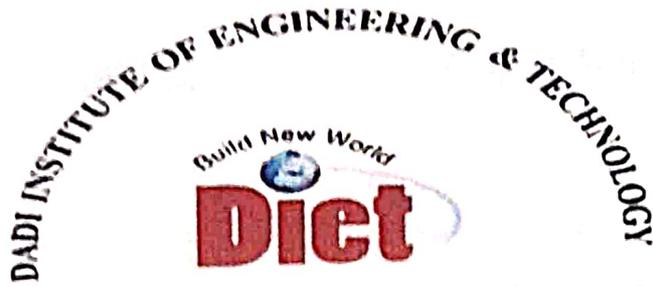
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This is to certify that the project report entitled “Blockchain-Enhanced Voting Systems for Secure and Transparent Elections” submitted by Satish Vanapalli (23U41D5813). In partial fulfillment of the requirements for award of the Degree of **Master of Technology in Computer Science & Engineering**, from Dadi Institute of Engineering & Technology An Autonomous Institute, Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by them under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

In recent years, the integrity and transparency of electoral processes have come under scrutiny, highlighting the need for innovative solutions to enhance voter confidence. This project presents a Blockchain-Enhanced Voting System designed to ensure secure and transparent elections. By leveraging blockchain technology, the proposed system provides a decentralized, tamper-proof platform for conducting elections.

The architecture of the system includes a user-friendly interface for voters, facilitating easy access to the voting process while maintaining the highest standards of security. Each vote is recorded as a unique transaction on the blockchain, ensuring that all ballots are immutable and verifiable. Additionally, smart contracts are utilized to automate the voting process, reducing the potential for human error and manipulation.

The project employs a combination of cryptographic techniques to safeguard voter identities and prevent unauthorized access, ensuring privacy while promoting accountability. Furthermore, the system enables real-time tracking of votes, enhancing transparency and fostering public trust in electoral outcomes.

Through rigorous testing and validation, the Blockchain-Enhanced Voting System demonstrates its potential to revolutionize the electoral landscape, providing a robust solution for secure and transparent elections. This project aims to contribute to ongoing discussions about electoral reform and the integration of technology in governance, ultimately paving the way for more trustworthy democratic processes.

A Project Report on
**DIABETES PREDICTION USING FUSED LEARNING
MODELS**

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

MASTER OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

By

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(23U41D5805)

Under the Esteemed guidance of

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M.Tech.,(Ph.D)

Assistant Professor

Department of Computer Science & Engineering



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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This is to certify that the project report entitled “**Diabetes Prediction Using Fused Learning Models**” submitted by D.Hema Sai Bhavani Surya (23U41D5805). In partial fulfillment of the requirements for award of the Degree of **Master of Technology in Computer Science & Engineering**, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by her under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

Diabetes has become a global health concern, with rising incidence rates impacting millions of individuals worldwide. Early detection and intervention are crucial in managing this chronic condition effectively. This project presents a Fused Learning Model for predicting diabetes, integrating multiple machine learning algorithms to enhance predictive accuracy and robustness. The proposed model utilizes a comprehensive dataset, comprising various health parameters such as age, BMI, glucose levels, and family history, to train the predictive algorithms.

The methodology begins with data preprocessing, including data cleaning, normalization, and feature selection to improve model performance. Subsequently, the project implements a hybrid approach that combines traditional machine learning techniques with modern ensemble methods to leverage their strengths. By employing algorithms like Decision Trees, Support Vector Machines, and Neural Networks, the fused model effectively captures the complex relationships within the data.

To evaluate the model's performance, a series of metrics such as accuracy, precision, recall, and F1-score are utilized, ensuring the reliability of predictions. Additionally, the project emphasizes the development of a user-friendly interface that facilitates seamless interaction for healthcare professionals and patients, allowing for real-time diabetes risk assessment.

Through this project, the aim is to provide a powerful tool for early diabetes detection, contributing to improved health outcomes and better management of this widespread disease.

A Project Report on
AI-Driven Insights for Forecasting Stock Market Trends
Submitted in partial fulfillment of the requirements for award of the degree of

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE & ENGINEERING

By

DADI ARAVINDA

(23U41D5804)

Under the Esteemed guidance of

K. Mohan Rao

M.Tech

Asst. Professor

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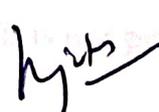


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This is to certify that the project report entitled “**AI-Driven Insights for Forecasting Stock Market Trends**” submitted by D. Aravinda (23U41D5804). In partial fulfillment of the requirements for award of the Degree of **Master of Technology in Computer Science Engineering**, from Dadi Institute of Engineering & Technology An Autonomous Institute, Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by them under my guidance and supervision.


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EXTERNAL EXAMINER

ABSTRACT

The project "AI-Driven Insights for Forecasting Stock Market Trends" aims to develop an advanced system that leverages Artificial Intelligence (AI) and machine learning to predict stock market trends. The volatile nature of financial markets necessitates accurate forecasting tools that can help investors make informed decisions. This system integrates historical stock data, technical indicators, and market sentiment analysis to build predictive models that provide users with insights into future stock price movements.

The project utilizes various machine learning algorithms, such as Long Short-Term Memory (LSTM) networks, to capture complex temporal patterns in stock data. It also incorporates data preprocessing techniques like normalization and feature selection to enhance the accuracy of predictions. Additionally, the system offers user-friendly visualizations, allowing stakeholders to interpret the predictions effectively. This AI-powered tool not only helps users optimize investment strategies but also supports real-time decision-making by providing actionable insights into stock market fluctuations.

Through this project, the students aim to bridge the gap between traditional stock market analysis and modern AI technologies, showcasing the potential of AI in financial forecasting.

A Project Report on
EXTENSIBLE MACHINE LEARNING FOR ENCRYPTED
NETWORK TRAFFIC CLASSIFICATION THROUGH
UNCERTANTY QUANTIFICATION

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE & ENGINEERING

By

N. Ashok

(23U41D5809)

Under the Esteemed guidance of

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Asst.Professor.

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CERTIFICATE

This is to certify that the project report entitled “**EXTENSIBLE MACHINE LEARNING FOR ENCRYPTED NETWORK TRAFFIC CLASSIFICATION THROUGH UNCERTANTY QUANTIFICATION**” submitted by **N. Ashok (23U41D5809)**. In partial fulfilment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology An Autonomous Institute Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by her under my guidance and supervision.


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EXTERNAL EXAMINER

ABSTRACT

In the age of increasing cybersecurity threats, the need for effective classification of encrypted network traffic has become paramount. This project explores an innovative approach that combines extensible machine learning techniques with uncertainty quantification to enhance the classification of encrypted network data. Traditional methods often struggle to accurately classify encrypted traffic due to its opaque nature, leading to challenges in identifying malicious activities.

This research proposes a framework that integrates machine learning algorithms capable of adapting to evolving traffic patterns while quantifying the uncertainty associated with their predictions. By employing techniques such as probabilistic modeling and Bayesian inference, the project aims to provide a robust solution that not only classifies encrypted traffic but also offers insights into the confidence levels of these classifications.

The implementation of this framework will be validated through extensive experimentation using real-world datasets, focusing on performance metrics such as accuracy, precision, and recall. The outcomes of this project are expected to contribute significantly to the fields of network security and traffic analysis, providing a scalable and reliable tool for security professionals in the face of growing encrypted traffic volumes.

A Project Report on

**ENHANCING AMD DIAGNOSIS THROUGH TRANSFER
LEARNING TECHNIQUES IN DEEP LEARNING MODELS**

Submitted in partial fulfillment of the requirements forward of the degree of

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

By

PULI GOVINDA RAJU

(23U41D5806)

Under the Esteemed guidance of

Dr. Srinivasa Rao,

M.Tech, PhD

Professor

Department of Computer Science & Engineering



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BONAFIDE CERTIFICATE

CERTIFICATE

This is to certify that the project report entitled “ENHANCINGAMD DIAGNOSIS THROUGH TRANSFER LEARNING TECHNIQUES IN DEEP LEARNING MODELS” submitted by P. Govinda Raju (23U41D5806). Inpartial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by them under my guidance and supervision.

PROJECT GUIDE

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EXTERNAL EXAMINER

ABSTRACT

Enhancing the diagnosis of Age-related Macular Degeneration (AMD) through the application of transfer learning techniques offers significant advancements. By fine-tuning pre-trained models with retinal imaging datasets, this method aims to improve the accuracy and efficiency of AMD detection. This approach provides a more reliable and accessible diagnostic tool for early identification and management of AMD. The integration of transfer learning into AMD diagnosis leverages the strength of existing deep learning models that have been trained on large and diverse datasets. This technique allows for the adaptation of the model to the specific features of retinal images associated with AMD, thus enhancing its diagnostic performance. The use of transfer learning significantly reduces the time and computational resources required to train a new model from scratch, making it a cost-effective solution for medical imaging applications. By improving the diagnostic capabilities and reducing the dependency on highly specialized equipment or personnel, the tool aims to facilitate wider adoption in various clinical settings, including those with limited resources. The ultimate goal is to ensure early and accurate diagnosis of AMD, leading to timely treatment and better management of the condition, thereby improving patient outcomes and quality of life.

A Project Report on
Proactive DDoS Detection and Prevention
Using Digital Twin Frameworks

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

By

T.DILEEP NAIDU

(23U41D5816)

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M.Tech

Assistant Professor

Department of Computer Science & Engineering



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NH-16, Anakapalle – 531002, Visakhapatnam, A.P

(2023 - 2025)

A Project Report on
**Proactive DDoS Detection and Prevention
Using Digital Twin Frameworks**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

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Assistant Professor

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(2023 - 2025)



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This is to certify that the project report entitled "PROACTIVE DDoS DETECTION AND PREVENTION USING DIGITAL TWIN FRAMEWORKS " submitted by T.Dileep Naidu (23U41D5816). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by his under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

In recent years, the prevalence of Distributed Denial of Service (DDoS) attacks has posed significant challenges to network security, disrupting services and compromising data integrity. This project, titled "Proactive DDoS Detection and Prevention Using Digital Twin Frameworks," aims to address these challenges by leveraging the concept of digital twins—virtual replicas of physical systems—to enhance the detection and mitigation of DDoS attacks.

The approach involves creating a digital twin of the network infrastructure, enabling real-time monitoring and analysis of traffic patterns and anomalies. By simulating various attack scenarios within the digital twin environment, the project seeks to develop proactive detection algorithms and prevention strategies that can identify potential threats before they escalate.

The project employs advanced machine learning techniques to analyze historical and real-time data, facilitating early warning systems that can trigger automated response mechanisms. This proactive framework not only enhances the resilience of the network against DDoS attacks but also provides insights for improving overall cybersecurity posture. Ultimately, the implementation of digital twin technology in DDoS detection and prevention represents a significant advancement in safeguarding critical network resources, ensuring continuous service availability in an increasingly hostile digital landscape.

A Project Report on
**Emotion Prediction Using Audio Data
With Deep Learning**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

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ARORA SUSANNANEHA (23U41D5801)

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NH-16, Anakapalle – 531002, Visakhapatnam, A.P (2023 - 2025)



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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This is to certify that the project report entitled "Emotion Prediction Using Audio Data With Deep Learning" submitted by A.Susannaneha (23U41D5801). In partial fulfillment of the requirements for award of the Degree of **Master of Technology in Computer Science Engineering**, from **Dadi Institute of Engineering & Technology (A)**, Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by them under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

In the contemporary digital landscape, the increasing frequency and sophistication of cyberattacks pose significant challenges to network security. This project proposes an "Intelligent Intrusion Detection System" (IIDS) that utilizes artificial intelligence (AI) and deep learning techniques to enhance the detection and prevention of intrusions within network infrastructures. The proposed system employs various deep learning architectures, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), to analyze network traffic and identify anomalous patterns indicative of potential threats. To achieve high accuracy and efficiency, the project incorporates a comprehensive dataset containing diverse attack types and benign traffic, enabling the model to learn and generalize effectively. Preprocessing techniques, including data normalization and feature extraction, are applied to optimize the input data for training. The system's performance is evaluated against existing intrusion detection methodologies, highlighting improvements in detection rates and reduction in false positives.

Ultimately, the intelligent intrusion detection system aims to provide organizations with a robust, adaptive solution for safeguarding their networks against emerging threats, thereby ensuring the integrity and confidentiality of sensitive information. Through this project, the potential of AI and deep learning in revolutionizing network security is explored, paving the way for future advancements in this critical field.

A Project Report on'
**Detection and Mitigation Of Botnet Attack in Software-
Defined Network Using Deep Learning**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

By

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(23U41D5803)

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NH-16, Anakapalle – 531002, Visakhapatnam, A.P

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This is to certify that the project report entitled "DETECTION AND MITIGATION OF BOTNET ATTACKS IN SOFTWARE DEFINED NETWORKS USING DEEP LEARNING" submitted by B.Reecha (23U41D5803). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology An Autonomous Institute, Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by her under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

The surge in interconnected devices in recent years has led to an increase in the complexity and frequency of cyber threats, notably botnet attacks. These attacks represent a significant risk to network integrity and security. This project focuses on the detection and mitigation of botnet attacks within Software-Defined Networks (SDNs) using deep learning techniques, offering a novel approach to enhancing cybersecurity measures in modern network environments. By leveraging the centralized control and flexibility of SDNs, combined with the advanced pattern recognition capabilities of deep learning models, this system provides real-time surveillance and active management of network traffic. The proposed solution involves training deep learning models on extensive datasets characterized by normal and malicious traffic patterns, allowing for precise anomaly detection. Upon detecting irregularities indicative of botnet activity, the SDN controller swiftly implements countermeasures such as traffic rerouting, IP blocking, and network segmentation to mitigate the attack's impact. This project not only aims to increase the accuracy of threat detection but also enhances the responsiveness of networks to emerging cyber threats, ensuring a robust defense mechanism against the evolving landscape of network security challenges.

A Project Report on
Hybrid Machine Learning Framework for
Effective Botnet Detection in IoT Environment

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

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NH-16, Anakapalle – 531002, Visakhapatnam, A.P

(2023 - 2025)



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
CERTIFICATE

This is to certify that the project report entitled “HYBRID MACHINE LEARNING FRAMEWORK FOR EFFECTIVE BOTNET DETECTION IN IOT ENVIRONMENT” submitted by Tabassum (23U41D5815). In partial fulfillment of the requirements for award of the Degree of **Master of Technology in Computer Science Engineering**, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of Bonafide work carried out by her under my guidance and supervision.

PROJECT GUIDE

HEAD OF THE DEPARTMENT
Head of the Department
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Dadi Institute of Engg. & Tech
Anakapalle-531002

EXTERNAL EXAMINER

ABSTRACT

The proliferation of Internet of Things (IoT) devices has significantly enhanced connectivity and convenience in various domains; however, it has also introduced new vulnerabilities, particularly concerning botnet attacks. This project presents a Hybrid Machine Learning Framework designed to detect and mitigate botnet activities in IoT environments effectively. The framework integrates multiple machine learning algorithms, including supervised and unsupervised learning techniques, to enhance detection accuracy and response times. Initially, a comprehensive dataset comprising normal and botnet traffic patterns is collected and pre-processed to ensure quality inputs for the model. Feature extraction techniques are employed to identify relevant characteristics, followed by the application of various classifiers, such as Random Forest, Support Vector Machine, and Neural Networks, to classify traffic behaviour. The hybrid model's effectiveness is further enhanced by implementing ensemble methods that combine the strengths of individual classifiers, improving overall detection rates while minimizing false positives. The proposed framework is evaluated through rigorous testing in simulated IoT environments, demonstrating its capability to adapt to dynamic network conditions and effectively identify evolving botnet threats. The results indicate significant improvements in detection accuracy and responsiveness compared to traditional methods. This research contributes to advancing cyber security measures in IoT systems, providing a robust solution for safeguarding against botnet attacks and enhancing the overall security posture of IoT infrastructures.

A Project Report on
**NEURAL NETWORK-BASED FINANCIAL
FRAUD DETECTION SYSTEM**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE ENGINEERING

By

Vakula Kanithi

(23U41D5807)

Under the Esteemed guidance of

Mrs M Sharmila

M.Tech, PhD

Professor,

Department of Computer Science & Engineering



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CERTIFICATE

This is to certify that the project report entitled “NEURAL NETWORK-BASED FINANCIAL FRAUD DETECTION SYSTEM” submitted by Kanithi Vakula (23U41D5807). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by them under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

Financial fraud poses a significant threat to global financial institutions, leading to considerable economic losses. Traditional fraud detection systems, based on rule-based approaches, struggle to adapt to the rapidly evolving nature of fraudulent activities. This project, *Neural Network-Based Financial Fraud Detection Systems*, aims to design and implement an intelligent detection mechanism using deep learning techniques to identify and prevent fraudulent transactions in real-time.

The project employs a neural network model to detect irregular patterns in financial data that may indicate fraud. Through extensive preprocessing and feature selection, the system learns to differentiate between legitimate and fraudulent transactions with high accuracy. The model is trained using a labeled dataset of financial transactions, and its performance is evaluated using metrics such as precision, recall, and F1-score to ensure reliability.

By leveraging deep learning's capability to automatically learn complex patterns and continuously improve with more data, the proposed system offers a dynamic and scalable solution to financial fraud detection. This project not only aims to enhance detection accuracy but also to reduce false positives, minimizing disruption to legitimate customers. The solution is expected to significantly improve the financial sector's ability to combat fraud efficiently and in a timely manner.

A Project Report on
**Intelligent Intrusion Detection with AI and Deep
Learning for Enhanced Network**

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

MASTER OF TECHNOLOGY

In

COMPUTER SCIENCE & ENGINEERING

By

SALAPU VENKATA LAKSHMI

(23U41D5812)

Under the Esteemed guidance of

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Department of Computer Science & Engineering



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CERTIFICATE

This is to certify that the project report entitled "INTELLIGENT INTRUSION DETECTION WITH AI AND DEEP LEARNING FOR ENHANCED NETWORK" submitted by S.Venkata Lakshmi (23U41D5812). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from Dadi Institute of Engineering & Technology (A), Anakapalle affiliated to JNTUGV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by her under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

In the contemporary digital landscape, the increasing frequency and sophistication of cyber attacks pose significant challenges to network security. This project proposes an "Intelligent Intrusion Detection System" (IIDS) that utilizes artificial intelligence (AI) and deep learning techniques to enhance the detection and prevention of intrusions within network infrastructures. The proposed system employs various deep learning architectures, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), to analyze network traffic and identify anomalous patterns indicative of potential threats. To achieve high accuracy and efficiency, the project incorporates a comprehensive dataset containing diverse attack types and benign traffic, enabling the model to learn and generalize effectively. Preprocessing techniques, including data normalization and feature extraction, are applied to optimize the input data for training. The system's performance is evaluated against existing intrusion detection methodologies, highlighting improvements in detection rates and reduction in false positives.

Ultimately, the intelligent intrusion detection system aims to provide organizations with a robust, adaptive solution for safeguarding their networks against emerging threats, thereby ensuring the integrity and confidentiality of sensitive information. Through this project, the potential of AI and deep learning in revolutionizing network security is explored, paving the way for future advancements in this critical field.

A Project Report on
**Machine Learning-Based Sign Language to
Speech Translation**

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

**MASTER OF TECHNOLOGY
in
COMPUTER SCIENCE AND ENGINEERING**

by
SURISSETTI NARSINGARAO
(23U41D5810)

Under the Esteemed guidance of

Dr. M. SRINIVASA RAO,
M.Tech., Ph.D.
Professor

Department of Computer Science & Engineering



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NH-16, Anakapalle – 531002, Visakhapatnam, A.P.

(2023-2025)



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the project report entitled “Machine Learning-Based Sign Language to Speech Translation” submitted by **S NARSINGA RAO (23U41D5810)** In partial fulfilment of the requirements for award of the Degree of Master of Technology in Computer Science & Engineering, from **Dadi Institute of Engineering & Technology (A)**, Anakapalle affiliated to **JNTUGV, Accredited by NAAC with 'A' grade** is a record of bonafide work carried out by them under my guidance and supervision.

PROJECT GUIDE

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EXTERNAL EXAMINER

ABSTRACT

Communication barriers between hearing-impaired individuals and the rest of society often pose significant challenges. Sign language serves as a critical tool for bridging this gap, but its understanding is not widespread. This project, titled "*Machine Learning-Based Sign Language to Speech Translation*" aims to develop an intelligent system that can translate sign language gestures into spoken language, enhancing accessibility for hearing-impaired individuals in real-time.

The system utilizes computer vision techniques to capture and recognize hand gestures, employing deep learning models such as Convolutional Neural Networks (CNN) for accurate gesture detection and classification. These gestures are then mapped to corresponding text, which is subsequently converted into speech using Natural Language Processing (NLP) techniques. This approach enables seamless, two-way communication, providing a real-time translation from sign language to speech.

The project encompasses stages such as data collection and pre-processing, model training for gesture recognition, and speech synthesis. The model's performance is evaluated for its accuracy, speed, and usability in various real-world scenarios. The solution is designed to operate on edge devices, making it practical and accessible for everyday use by individuals in need. By facilitating communication, this project contributes to improving inclusivity for the hearing-impaired community.

Key words: Sign Language Recognition (SLR), Machine Learning (ML), Deep Learning (DL), Computer Vision, Gesture Recognition, Natural Language Processing (NLP), Speech Synthesis, Convolution Neural Network (CNN), Recurrent Neural Network (RNN), Long Short-Term Memory (LSTM), Transformer Model, Real-Time Translation, Feature Extraction, Human-Computer Interaction (HCI), Hand Tracking, Speech Generation, Artificial Intelligence (AI), Sensor-Based Recognition, Image Processing, Embedded Systems, Edge Computing.

A Project Report on
**Advanced Health Monitoring Using IOT and Machine
Learning for Improved Patient Care**

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

MASTER OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

By

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the project report entitled "ADVANCED HEALTH MONITORING USING IOT AND MACHINE LEARNING FOR IMPROVED PATIENT CARE" submitted by Rugada Abhishikth Vardhan(23U41D5811). In partial fulfillment of the requirements for award of the Degree of Master of Technology in Computer Science Engineering, from **Dadi Institute of Engineering & Technology (A)**, Anakapalle affiliated to JNTU GV, accredited by NAAC with 'A' grade is a record of bonafide work carried out by her under my guidance and supervision.

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EXTERNAL EXAMINER

ABSTRACT

In recent years, the rapid advancement of technology has significantly transformed healthcare delivery, particularly through the integration of Internet of Things (IoT) devices and machine learning algorithms. This project presents an innovative approach to health monitoring, aimed at enhancing patient care through real-time data collection and analysis. The proposed system utilizes IoT sensors to continuously monitor vital signs such as heart rate, blood pressure, and glucose levels, transmitting this data to a centralized platform for processing. By employing machine learning techniques, the system analyzes the collected data to detect anomalies, predict potential health risks, and offer personalized recommendations for patient care. The implementation of predictive analytics allows healthcare providers to make informed decisions, leading to timely interventions and improved patient outcomes. Furthermore, the system features a user-friendly interface for both patients and healthcare professionals, ensuring ease of access to critical health information. This project not only emphasizes the importance of technology in modern healthcare but also highlights the potential for IoT and machine learning to revolutionize patient monitoring and management. Through effective integration of these technologies, the project aims to contribute to a proactive healthcare model, ultimately improving the quality of care and enhancing the overall patient experience.