A Major Project Report on

# ADVANCED NEURAL NETWORK ARCHITECTURE FOR DETECTING FRAUD IN INTERNET LOAN APPLICATIONS

Submitted in partial fulfilment of the requirements

BACHELOR OF TECHNOLOGY

**IN**

COMPUTER SCIENCE AND ENGINEERING

Submitted by

**Batch: 02**


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**Under the esteemed guidance of**

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**Professor & HOD**

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**Malla Reddy Engineering College and Management Sciences**

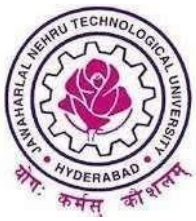


## MALLA REDDY ENGINEERING COLLEGE AND MANAGEMENT SCIENCES

(Approved by AICTE New Delhi & Affiliated to JNTU Hyderabad)
Kistapur, Medchal Dist.- 501401.

**2020-2024**

**Affiliated to**

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## CERTIFICATE

This is to certify that the Mini project report entitled "ADVANCED NEURAL NETWORK ARCHITECTURE FOR DETECTING FRAUD IN INTERNET LOAN APPLICATIONS" submitted by

**GADDAM SHRIYA REDDY** **20UJ1A0514**

To the department of COMPUTER SCIENCE AND ENGINEERING, **MALLA REDDY ENGINEERING COLLEGE AND MANAGEMENT SCIENCES**, in partial fulfilment for the award of **BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING** during the academic year 2020-2024.

| **Internal Guide** | **Head of The Department** |
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**EXTERNAL EXAMINER**

# ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crowned our efforts with success. It is a pleasant aspect that I have now the opportunity to express my guidance to all of them.

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I am thankful to **Mr. V. RAGHAVENDER REDDY** director of "Malla Reddy Engineering College and Management Sciences" helping me to undergo project work as a part of the university curriculum.

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My special thanks to **Dr. V. MANISARMA Ph.D** Professor & Head in Computer Science and Engineering and internal guide for guiding me in the right way to complete my project at the right time.

As a gesture of respect for our **Family Members** and support I received from them, I dedicate this work to them.

And, I would like to express our heartfelt thanks to **Faculty Members of the Computer Science and Engineering Department, Lab Technicians And Friends**, one and all who has helped me directly or indirectly in successful completion of the Major Project.

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## DECLARATION

I GADDAM SHRIYA REDDY (20UJ1A0514), student of 'Bachelor of Technology in Computer Science And Engineering, during the session: 2020-2024, Malla Reddy Engineering College and Management Sciences, Medchal, Hyderabad, hereby declare that the work presented in this Project Work entitled "**ADVANCED NEURAL NETWORK ARCHITECTURE FOR DETECTING FRAUD IN INTERNET LOAN APPLICATIONS**" is the outcome of my bonafide work and is correct to the best of my knowledge and this work has been undertaken taking care of Engineering Ethics. It contains no material previously published or written by another person nor material that has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

**DATE:**

**GADDAM SHRIYA REDDY (20UJ1A0514)**

# ABSTRACT

The rise of digital technology and online transactions has led to an increase in various types of fraud, especially in the financial sector. Internet loans, being a convenient way for people to access quick financial assistance, have also become a target for fraudulent activities. Traditional fraud detection systems typically rely on rule-based methods and statistical models. Rule-based systems use predefined rules to flag transactions that match specific patterns associated with fraud. Statistical models, such as logistic regression, analyze historical transaction data to identify anomalies. While these methods have been useful, they often struggle with detecting complex, non-linear patterns that are characteristic of fraud in internet loan applications. Therefore, it is necessary to combat fraudulent activities effectively and efficiently. Detecting fraud in internet loan applications is crucial for financial institutions to maintain trust, reduce financial losses, and comply with regulatory requirements. Deep learning, a subset of artificial intelligence (AI), has shown great promise in enhancing fraud detection capabilities due to its ability to analyze large volumes of data and identify complex patterns. These models offer advanced techniques to process vast amounts of data, enabling the identification of subtle and sophisticated fraud patterns that might be undetectable by traditional methods. Thus, this research develops a deep learning anti-fraud model for Internet loan applications, which includes improving model accuracy through advanced neural network architectures, enhancing real-time processing capabilities, integrating explainable AI techniques for better transparency, and leveraging unsupervised learning methods for detecting previously unknown fraud patterns. Additionally, the future lies in collaborative efforts between data scientists, cybersecurity experts, and financial institutions to stay ahead of fraudsters and create a secure digital lending environment.

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# ABBREVIATIONS

| | |
|---|---|
| **AI** | Artificial Intelligence |
| **GTWE** | Gaussian Transform weighted Embedding |
| **AUC** | Area Under the curve |
| **PCA** | Principal Component Analysis |
| **RF** | Random Forest |
| **MLP** | Multi-Layer Perceptron |
| **CNN** | Convolutional Neural Network |
| **BILSTM** | Bidirectional Long Short-Term Memory |
| **GAN** | Generative Adversarial Network |
| **CCFD** | Cross-Channel Fraud Detection |
| **RTAHC** | Reinforcement Training Adaptive Heterogeneous CCFD |
| **SDG** | Stochastic Gradient Descent |
| **TFD** | Transaction Fraud Detector |
| **SVM** | Support Vector Machine |
| **KNN** | K-Nearest Neighbors |
| **CPU** | Central Processing Unit |
| **GUI** | Graphical User Interface |
| **SMOTE** | Synthetic Minority Oversampling Technique |
| **IOT** | Internet of Things |
| **JDBC** | Java Data Base Connectivity |
| **ODBC** | Open Data Base Connectivity |
| **IDLE** | Integrated Development and Learning Environment |

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