

## Phase-1 Submission

**Student Name:** S.Yalini Nachiyar

**Register Number:** 410723104097

**Institution:** Dhanalakshmi college of  
engineering

**Department:** CSE

**Date of Submission:** 30.04.2025

---

### 1.Problem Statements

*Guarding transactions with AI-powered credit card fraud detection and prevention*

### 2.Objectives of the Project

*To develop a machine learning model capable of accurately detecting fraudulent credit card transactions.*

*To analyze transaction patterns and identify key indicators of fraud.*

*To create a real-time or near-real-time fraud detection system.*

*To visualize key insights for understanding fraud trends and model performance.*

### 3.Scope of the Project

*Features to be analyzed :* Transaction features such as amount, time, location, merchant, user behavior, etc. - Anomaly detection based on transaction patterns. - Real-time classification of transactions as fraudulent or genuine.

### 4.Data Sources

- Dataset Name: Credit Card Fraud Detection - Source: Kaggle ([credit card fraud detection](#))- Type: Public dataset - Nature: Static dataset with anonymized features representing transactions made by European cardholders in 2013.

## 5.High-Level Methodology

- **Data Collection** –*Data Collection: - Download the dataset from Kaggle. - Load it into the working environment (Google Colab / Jupyter Notebook)*
- **Data Cleaning** – *Handle missing values if any (although the Kaggle dataset is already clean). - Remove duplicate entries if present. - Normalize/scale features where necessary.*
- **Exploratory Data Analysis (EDA)** – *Use visualizations (e.g., histograms, heatmaps, box plots) to explore class imbalance and feature distribution. - Analyze relationships between features and the fraud label.*
- **Feature Engineering** – *Derive new features like transaction velocity or user behavior metrics. - Apply PCA or dimensionality reduction if needed.*
- **Model Building** – *Derive new features like transaction velocity or user behavior metrics. - Apply PCA or dimensionality reduction if needed.*
- **Model Evaluation** – *Derive new features like transaction velocity or user behavior metrics. - Apply PCA or dimensionality reduction if needed.*
- **Visualization & Interpretation**--- *Visualize model results, feature importances, and fraud detection rates using matplotlib/seaborn/Plotly.*
- **Deployment** – *- Build a demo web app using Streamlit or Flask to simulate real-time fraud detection. - Allow user input for live model predictions.*

## 6.Tools and Technologies

- **Programming Language** –Python
- **Notebook/IDE** –Google Colab, Jupyter Notebook
- **Libraries** –pandas, numpy, seaborn, matplotlib, plotly, scikit-learn, XGBoost, TensorFlow/Keras
- **Optional Tools for Deployment** – Streamlit, Flask, FastAPI

## 7.Team Members and Roles

S NO	TEAM MEMBERS	ROLES
1.	Nirosha.M	Exploratory Data Analysis
2.	Poorna kala.G	Data collection
3.	Nithyashree.S	Data Cleaning
4.	Yalini Nachiyar.S	Model Building & visualization