Credit Card Fraud Detection Using Machine Learning

**Project Proposal**

**Document**

**Course Code:** CS-3002

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Numerous instances of credit/debit card fraud have been documented in recent years, in short fraudulent activities have multiplied. Due to the sharp growth in banking fraud, it is urgent that these fraudulent transactions be discovered in time to assist both consumers and banks, who are daily losing their credit value. The purpose of this project is to use machine learning models to detect and anticipate fraudulent credit card transactions. The following sections will execute this strategy:

1. **Data Collection**

The data needed for this project will be sourced via Kaggle. Where Class is the desired variable that indicates whether or not the credit card is fraudulent (i.e., 1 or 0).

1. **Data Preparation & Exploratory Data Analysis (EDA)**

EDA will be used to examine other features. For outliers, basic EDA tools like correlation and boxplots will be used.

1. **Model Selection & Training**

Data will be divided using sklearn’s train\_test\_split(), with 80% of the data utilized for training and the remaining 20% for testing and evaluation. Multiple machine learning models, including KNN, Decision Trees, Logistic Regression, Random Forest, etc., will be used. These models will be trained using 80% of the previously divided data.

1. **Model Testing**

The remaining 20% of the data will be tested using the trained models established in the preceding steps. The models' predictions will then be assessed in the following stage.

1. **Model Evaluation**

We will use sklearn classification\_report and roc\_auc\_score on the predictions gathered in the previous step. ROC curve is the plot between True Positive Rate (TPR) and False Positive Rate (FPR), and classification report contains metrics like precision, recall, and F1-score.

Data Collection

Model Evaluation

Model Testing

Model Selection & Training

Data Preparation & EDA