**Fraud Detection with Machine Learning**

**Overview**

This project aims to detect fraudulent transactions using machine learning techniques. It implements several models and evaluates their performance based on various metrics such as ROC AUC score. The dataset used contains features related to transactions and their outcomes (fraudulent or non-fraudulent).

**Models Used**

The following machine learning models were implemented and evaluated:

* Logistic Regression
* XGBoost Classifier
* Support Vector Machine (SVM)
* Random Forest Classifier
* Multi-layer Perceptron (Neural Network)

**Requirements**

Ensure you have the following Python libraries installed:

* numpy
* pandas
* matplotlib
* seaborn
* scikit-learn
* xgboost

**Dataset**

The dataset (dataset.csv) contains the following columns:

* step: Time step of the transaction
* type: Transaction type (e.g., CASH\_IN, CASH\_OUT)
* amount: Transaction amount
* nameOrig: Originator's account name
* oldbalanceOrg: Originator's initial balance before transaction
* newbalanceOrig: Originator's balance after transaction
* nameDest: Recipient's account name
* oldbalanceDest: Recipient's initial balance before transaction
* newbalanceDest: Recipient's balance after transaction
* isFraud: Binary label indicating if the transaction is fraudulent (1) or not (0)