Artificial Intelligence & Machine Learning

Project Documentation

Project Title:

"Online Payments Fraud Detection using Machine Learning"

Team ID: LTVIP2026TMIDS42974

Team Members:

1.Bellapukonda Aswini

- Machine Learning Model Development
- Frontend Design (HTML, CSS)
- Backend Development using Flask
- Model Integration and Testing
- GitHub Deployment

2.Akula Varshini

3.Chakali Geetharani

4.C. Harshitha

Project Overview

The **Online Payments Fraud Detection System** is a machine learning-based web application developed to identify fraudulent financial transactions in real time. With the rapid growth of digital payments, online fraud has become a major security concern for banks and financial institutions. This project aims to provide an intelligent solution that can analyze transaction details and predict whether a transaction is legitimate or fraudulent.

The system uses a trained machine learning classification model to examine important transaction features such as transaction amount, account balances, and transaction type. The model is integrated with a Flask-based backend, allowing users to input transaction details through a web interface and instantly receive prediction results.

This project demonstrates the practical implementation of machine learning in financial security systems. It combines data preprocessing, model training, backend development, frontend design, and system integration to simulate a real-world fraud detection application.

Project Goals

• Detect fraudulent online payment transactions accurately.
• Provide a simple and user-friendly web interface.
• Integrate a machine learning model with a Flask backend.
• Display real-time prediction results (Fraud / Legitimate).

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Key Features

• Transaction input form for users.
• Real-time fraud prediction using trained ML model.
• Backend processing using Flask.
• Instant result display on the webpage.

Folder Structure

fraud_web_app/

├── templates/

│ ├── home.html

│ ├── predict.html

│ ├── submit.html

├── app.py

├── fraud_model.pkl

└── requirements.txt

How to Run the Project

1. Install dependencies:
   `pip install -r requirements.txt`
2. Run the application:
   `python app.py`
3. Open browser and go to:
   http://127.0.0.1:5000

Learnings

- Learned how to train and test a machine learning model.
- Understood real-time fraud detection systems.
- Gained experience integrating ML with Flask.
- Improved frontend and backend integration skills.

Conclusion

The Online Payments Fraud Detection System successfully demonstrates how machine learning can be used to detect fraudulent financial transactions. The project integrates ML, backend development, and frontend design to create a functional and practical fraud detection web application.