Project Proposal: Fraud Detection System

This project aims to develop a fraud detection system. The proposal outlines framework, objectives, and essential details. This initial submission is for review only and not graded.

Project Title Options

Primary Title

Real-Time Credit Card Fraud Detection using Machine Learning
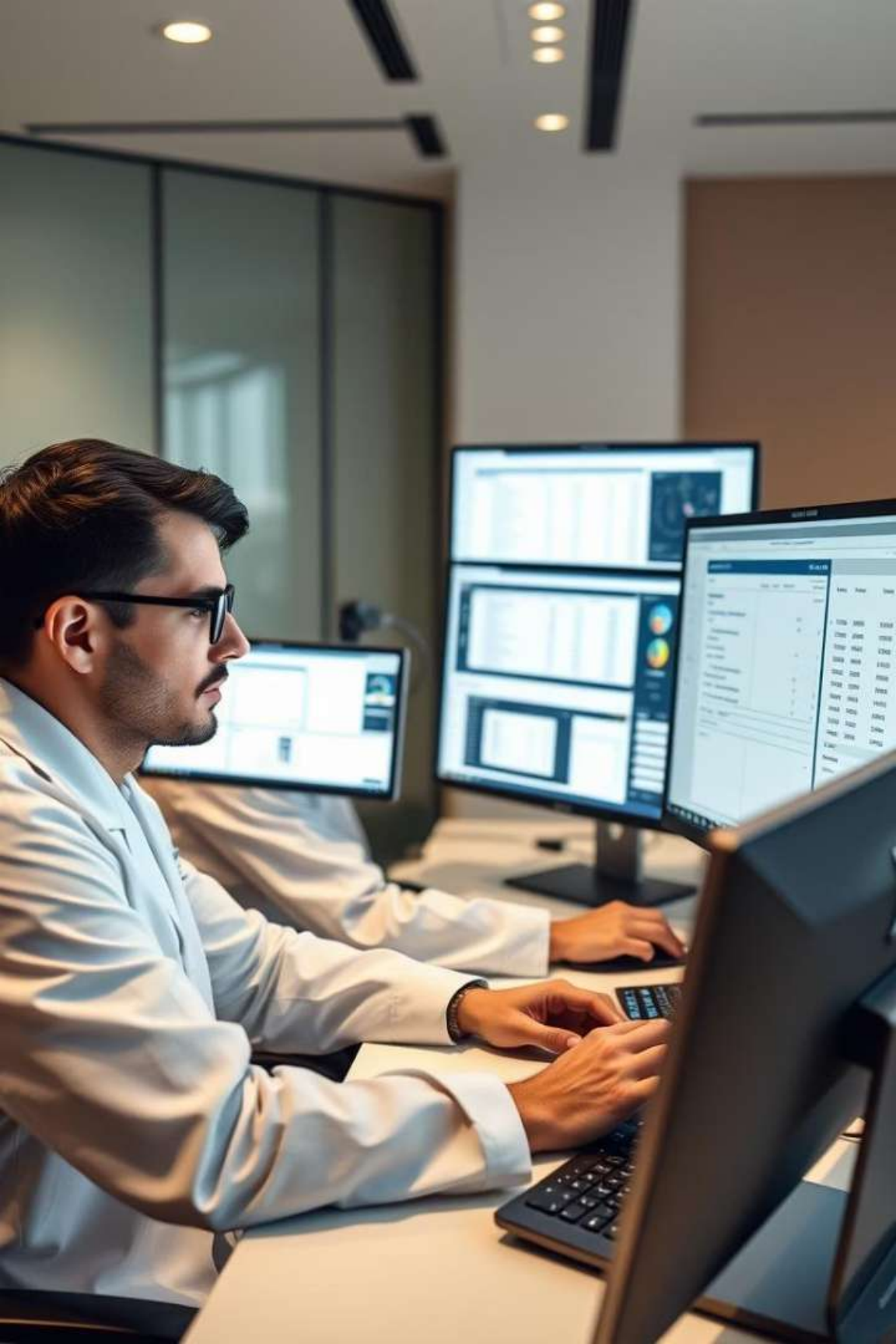
Alternative Title

AI-Powered Fraud Detection for E-commerce Transactions

Key Words

- Fraud Detection
- Machine Learning
- Real-Time

Project Description

Purpose

Identify fraudulent credit card transactions in real-time.

Approach

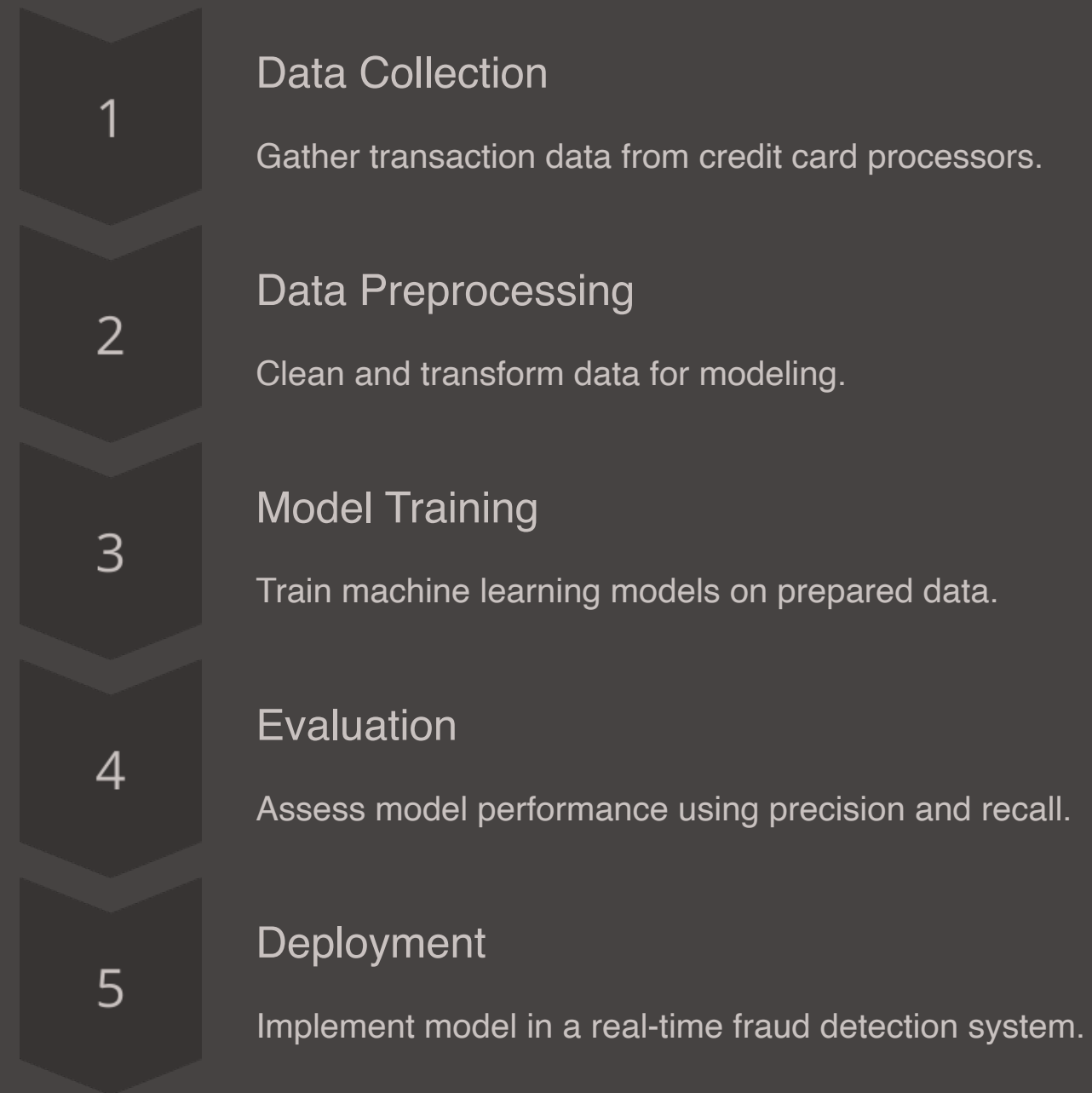Use machine learning algorithms to analyze transaction data.

Expected Results

Reduce fraudulent transactions by 30% within the first year.

Tech Stack & Dataset

Python, TensorFlow, Scikit-learn; Kaggle dataset with 284,807 transactions.

Project Framework

1 Data Collection

Gather transaction data from credit card processors.

2 Data Preprocessing

Clean and transform data for modeling.

3 Model Training

Train machine learning models on prepared data.

4 Evaluation

Assess model performance using precision and recall.

5 Deployment

Implement model in a real-time fraud detection system.

Project Objectives

Accurate Fraud Prediction

Develop model to predict fraudulent transactions precisely.

High Precision

Achieve 90% precision in fraud detection.

Low False Positives

Keep false positives under 5% to reduce customer friction.

Performance Goal

Process up to 1,000 transactions per second efficiently.

Data and Methodology

Data Source & Features

- Kaggle and IEEE-CIS transaction datasets

- Transaction amount, location, time, merchant info

Algorithms & Metrics

- Logistic Regression, Random Forest, Neural Networks

- Precision, Recall, F1-score, AUC-ROC evaluation

Data Size

Training: 200,000 transactions; Testing: 84,807 transactions

Expected Results and Future Work

Predicted Outcome

30% reduction in fraudulent transactions within first year.

Performance Metrics

Achieve 90% precision and 95% recall on test data.

Deployment Readiness & Future

Fully functional system; research deep learning to improve accuracy.

Thank You

We appreciate your time reviewing our fraud detection project proposal.

We look forward to collaborating and driving impactful results together.

1 Questions?

We're ready to discuss any part of the proposal in detail.

2 Next Steps

Planning a detailed timeline and deployment strategy.

3 Contact Us

Feel free to reach out for further clarifications or meetings.