

Securing Transactions: An Advanced AI Framework for Fraud Prevention

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Problem statement-

Financial institutions face a critical challenge in detecting fraudulent transactions. The increasing volume and sophistication of fraudulent activities lead to significant financial losses, damage to customer trust, and regulatory penalties. Traditional rule-based systems are often rigid and struggle to adapt to new fraud patterns, resulting in both high false positive rates (legitimate transactions flagged as fraud, inconveniencing customers) and high false negative rates (actual fraudulent transactions missed).

This project aims to address the real-world problem of financial transaction fraud detection by developing a robust and reliable machine learning model. The core challenge lies in the highly imbalanced nature of fraud datasets (fraudulent transactions are extremely rare compared to legitimate ones) and the need for model interpretability to understand why a transaction is flagged as suspicious. The ultimate goal is to minimize financial losses, enhance customer security, and build a system that provides actionable insights for fraud analysts, thereby improving the overall reliability of the financial system.

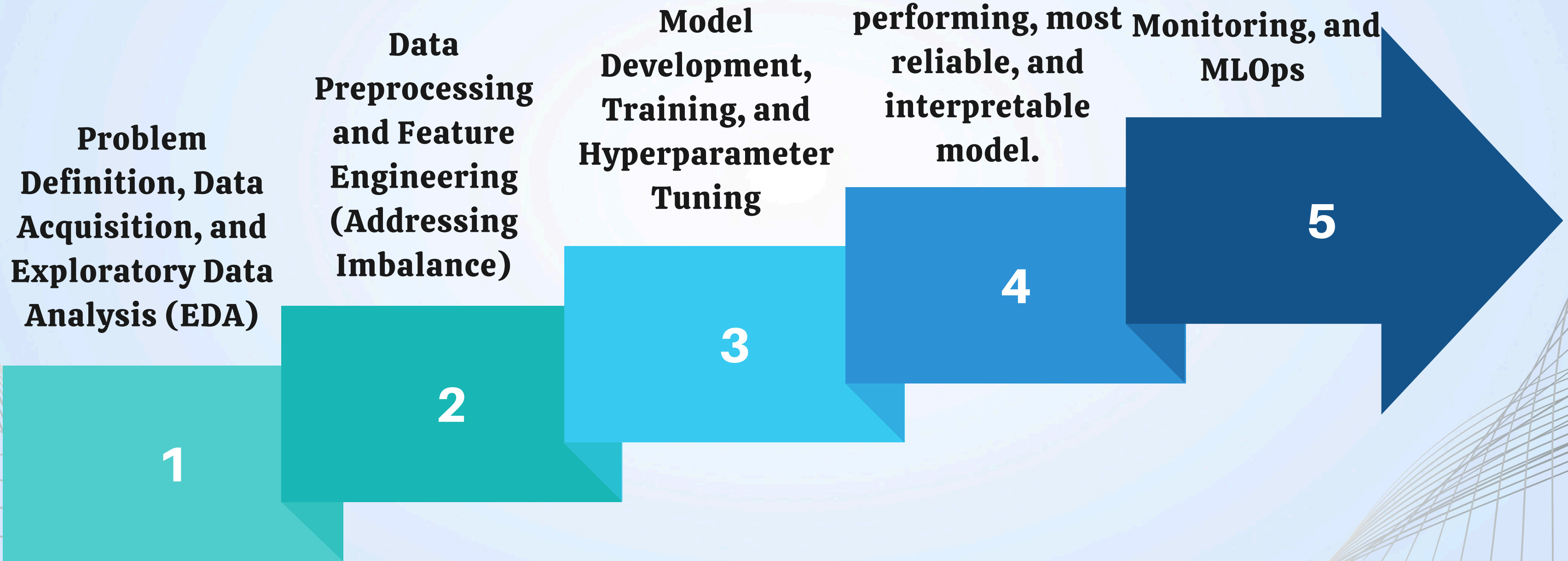
Data we will use-

- **Credit Card Fraud Detection Dataset 2023 (From Kaggle)**

Dataset summary-

- **The "Credit Card Fraud Detection Dataset 2023", (from Kaggle) provides a comprehensive, yet anonymized, snapshot of credit card transaction behavior, explicitly highlighting the critical challenge of financial fraud.**
- **The dataset is structured to reflect the operational realities faced by financial institutions, featuring PCA-transformed variables (V1 to V28) that simulate real-world data privacy practices, alongside the raw Amount of each transaction. Crucially, it paints a clear picture of the extreme class imbalance inherent in fraud detection, where genuine transactions vastly outnumber fraudulent ones, mirroring the persistent challenge that robust AI solutions must overcome to secure financial systems.**

What we will do week wise plan



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THANK YOU