

Project description

Payment Security – Smart Fraud Detection & Analysis

Financial institutions face increasing threats from fraudulent transactions, such as fake or cloned cards, phishing attacks, and transactions originating from suspicious websites, causing financial losses and eroding customer trust.

We implemented a comprehensive fraud detection and analysis system combining:

Data Architecture & ETL Pipelines: Structured database for transactions, customers, and merchants, with scalable ETL for continuous data preparation and standardization.

Predictive Machine Learning: XGBoost model detecting complex fraud patterns with >94% accuracy and <2.5% FPR, ensuring fast and reliable detection.

User Interfaces & Analytics: Dynamic Power BI dashboards and a web app for on-demand fraud predictions and proactive rule management.

Fraud Intelligence Automation: Fully automated daily Executive Reports, providing actionable insights without manual effort.

Results & Impact:

Loss Mitigation: Proactively reduced fraud-related losses by 15% in the first quarter

Issue Resolution: Tracked and analyzed all common fraud sources, resolving detected issues to enhance system reliability.

Business Value: Enables proactive fraud monitoring, actionable insights, and strengthens customer trust and financial security.