CREDIT CARD FRAUD DETECTION

Fraud ML Case Study

PRESENTED BY
Vachan Sardar

PROBLEM

Fraudulent transactions create direct financial loss and undermine customer trust. Traditional rule-based systems are reactive and do not adapt fast enough as fraud patterns evolve.

APPROACH

- Tested **Logistic Regression, XGBoost and Random Forest**
- Evaluated using **precision, recall and business loss**
- Focused on minimising cost of missed fraud, not generic accuracy

BUSINESS-ALIGNED THRESHOLD

- False Negative cost set to 100× False Positive
- Optimal operating threshold identified at **0.025**

IMPACT

- Expected **loss reduced by ≈90% vs default 0.50 threshold**
- **Random Forest** selected based on lowest expected financial loss

KEY DRIVERS (EXPLAINABILITY)

- **Low V14 / V12 / V17 / V10 → high fraud risk**
- **High V4 → high fraud risk**
- ID feature shows leakage pattern → excluded for deployment integrity

RECOMMENDATION

Deploy Random Forest at threshold 0.025 with human-review for borderline cases.