

Model Performance Report

Dataset

Kaggle Credit Card Fraud Detection dataset

Transactions: 284,807

Fraud cases: 492 (0.172%)

Evaluation Metrics

We focused on Recall, F1-score, and AUC-ROC due to the imbalanced dataset.

Isolation Forest (Anomaly Detection)

Precision: 0.30

Recall: 0.28

F1-score: 0.29

AUC-ROC: 0.65

Random Forest Classifier

Precision: 0.91

Recall: 0.84

F1-score: 0.87

AUC-ROC: 0.97

Observations

- Isolation Forest performed poorly for fraud detection, with low recall.
- Random Forest performed significantly better across all metrics, making it more suitable for production fraud detection tasks.