

Fraud Detection in Mobile Payment System



PROBLEM STATEMENT

The project aims to detect fraud detection in synthetic datasets generated by the PaySim mobile money simulator.

MOTIVATION

Fraud in digital banking is increasing rapidly with the era of modern technology. To catch fraudsters, methodologies for the detection of fraud is essential to prevent risk of loss.

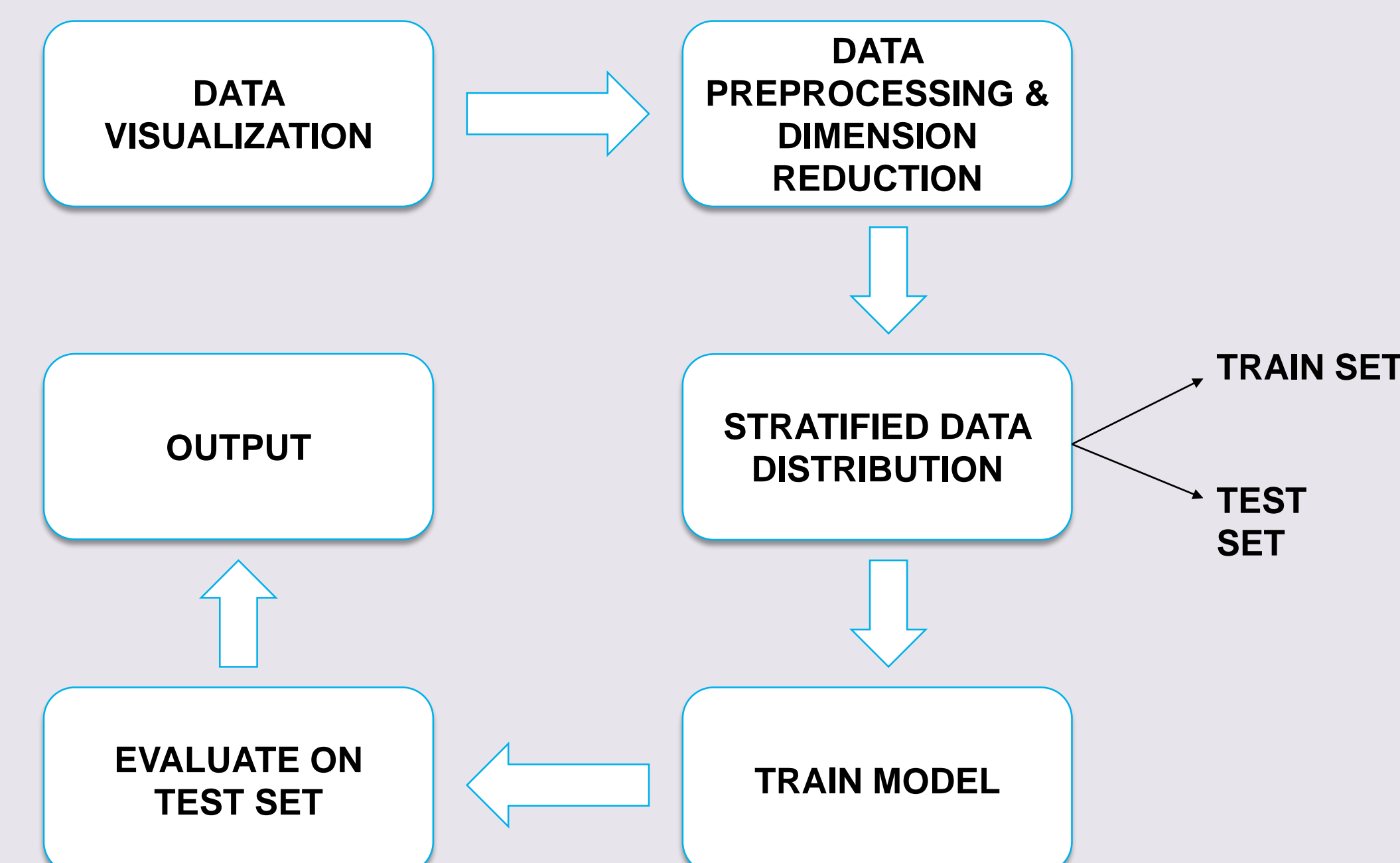
INTRODUCTION

- We are proposing ML models to detect frauds in the mobile-based payment transaction system using data produced by a simulator PaySim [2].
- Because of the lack of private datasets, PaySim added malicious behavior in the standard data and generated synthetic data for fraud detection.
- We need to classify only in two categories: fraud and not fraud. Therefore we will employ a binary classifier like naive bayes for training our model.
- We will do dimensionality reduction through PCA/LDA and then testing by stratified k fold validation.

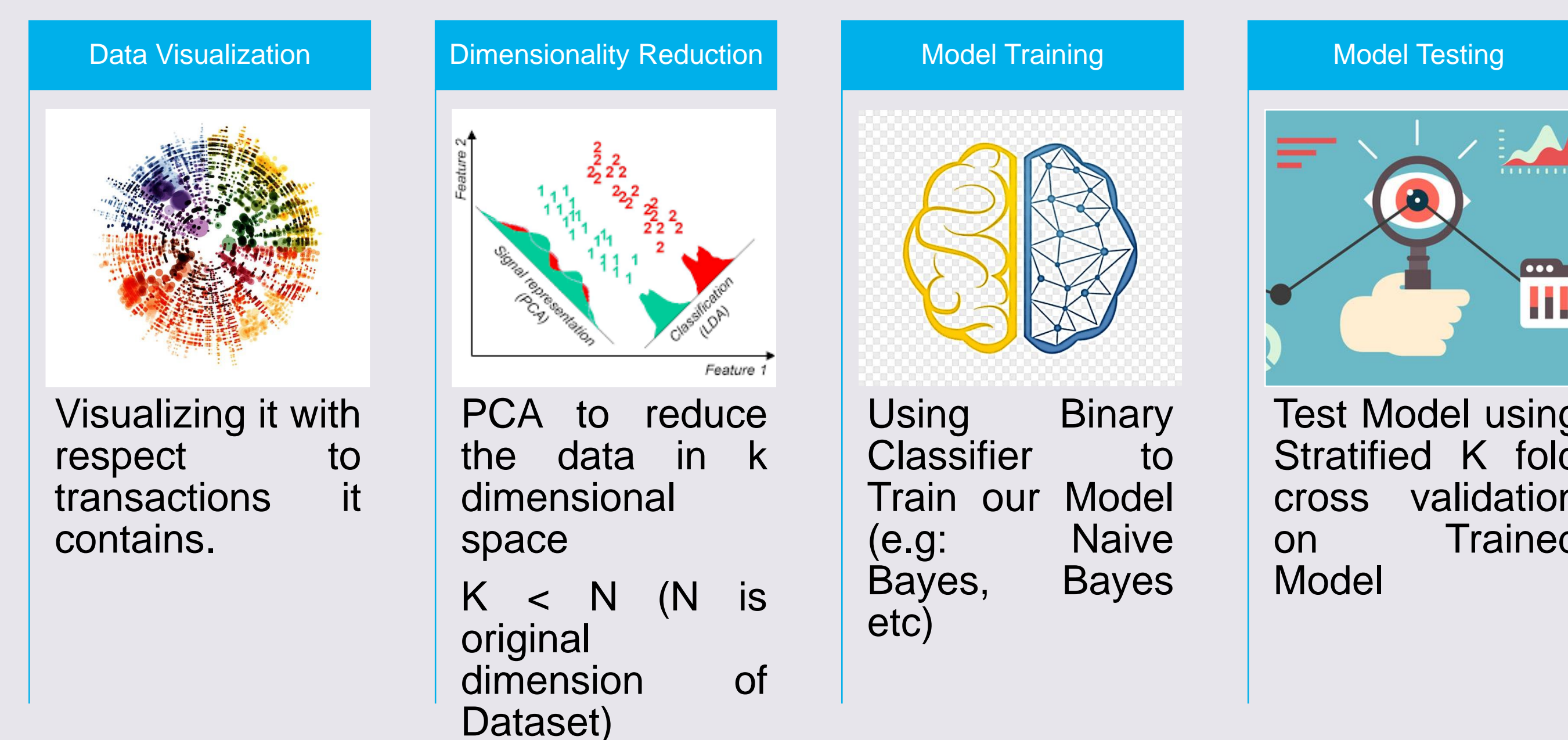
LITERATURE REVIEW

- Work that has been done in this direction-
- To detect fraud in the payment transaction applied ML techniques like SVM to the model.[3]
- Review state of the art in credit card fraud detection techniques.[4]
- Describe the tools available for statistical fraud detection.[5]
- Considered the risk in mobile payment transactions [6]

METHODOLOGY



PROCEDURE



DATA SET

- A Kaggle dataset of payment transactions made by mobile phone. Dataset is generated with the help of a simulator called PaySim [1]. Dataset contains five categories of transactions labeled as 'CASH IN', 'CASH OUT', 'DEBIT', 'TRANSFER' and 'PAYMENT'.

Total transaction data	6 million
Fraud transactions	8200

TIMELINE

WORK	TIME
Till Dimensionality Reduction	Mid Evaluation
Final Model	End Sem Evaluation

EVALUATION METRICS

- Confusion matrix.
- Precision Recall graph.
- F1 score.
- AUC – ROC Curve.

REFERENCES

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2. E. A. Lopez-Rojas , A. Elmir, and S. Axelsson. "PaySim: A financial mobile money simulator for fraud detection". In: The 28th European Modeling and Simulation Symposium-EMSS, Larnaca, Cyprus. 2016
3. Fraud Detection Using Machine Learning, <http://www.Stanford.edu>
4. A Survey of Credit Card Fraud Detection Techniques: Data and Technique Oriented Perspective - Samaneh Sorournejad, Zojah, Atani et.al - November 2016
5. Statistical Fraud Detection: A Review - Richard J. Bolton and David J. Hand.
6. Roland Rieke, Maria Zhdanova, Jürgen Repp, Romain Giot, Chrystel Gaber, "Fraud Detection in Mobile Payments Utilizing Process Behavior Analysis", *Availability Reliability and Security (ARES) 2013 Eighth International Conference*

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