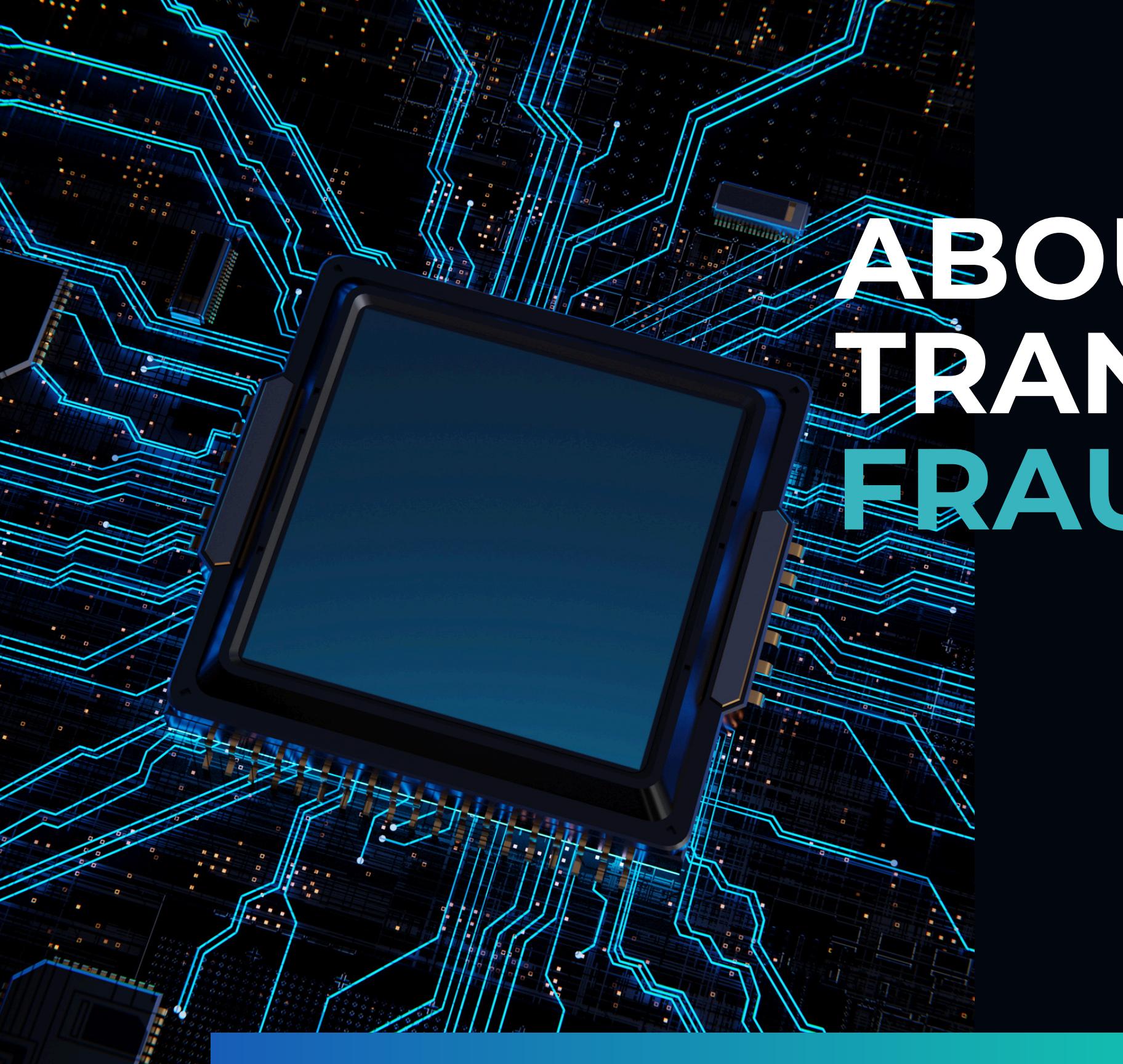




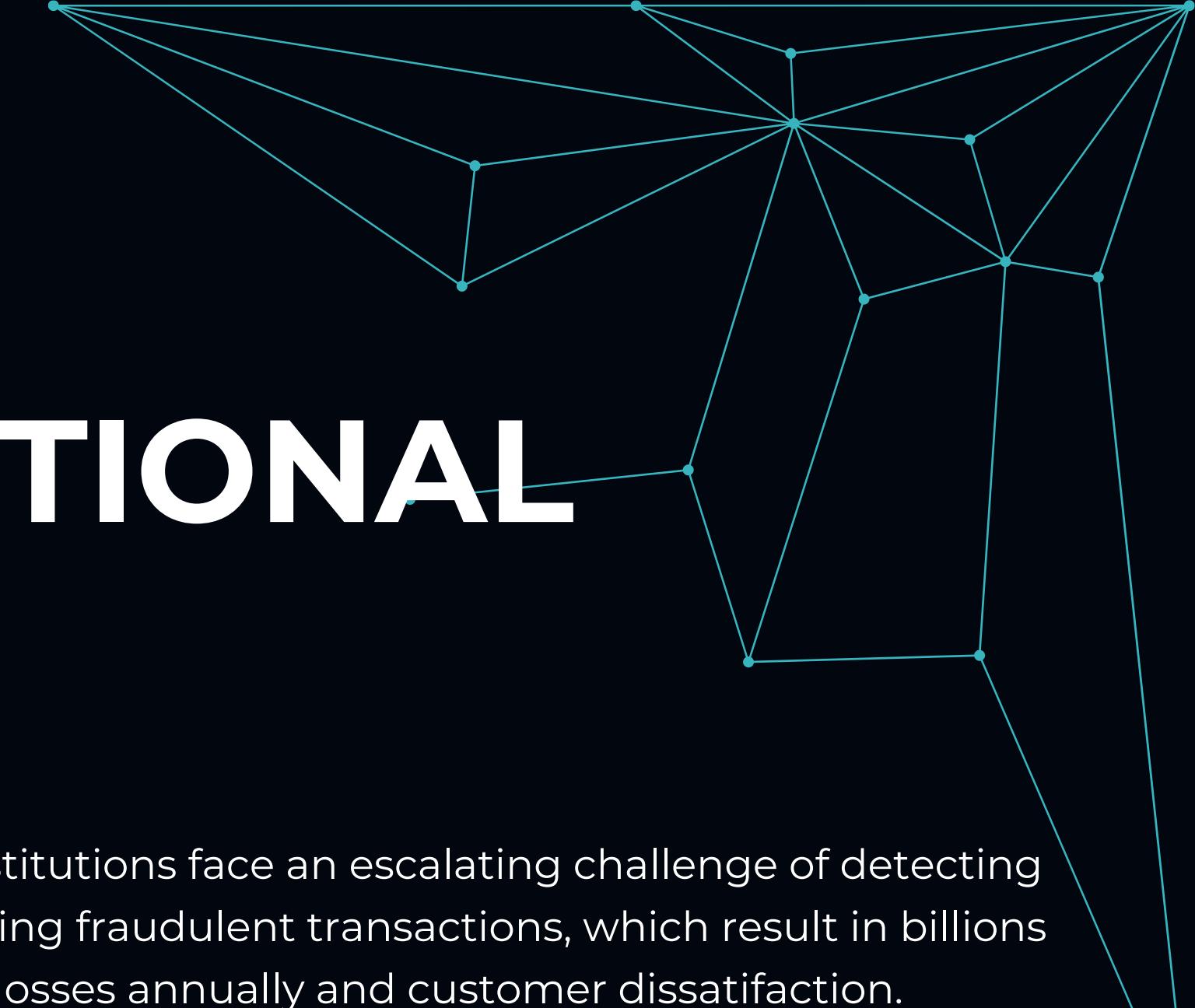
FRAUD DETECTION SYSTEM



Protecting online banking transactions



ABOUT TRANSACTIONAL FRAUD



Financial institutions face an escalating challenge of detecting and preventing fraudulent transactions, which result in billions of dollars in losses annually and customer dissatisfaction.

PROJECT AIM:

Develop a robust, scalable, and adaptive fraud detection system to accurately identify fraudulent activities in real-time

Evolution of Attack

90%



OBJECTIVE

Exploratory Data Analysis

uncover trends and hidden insights

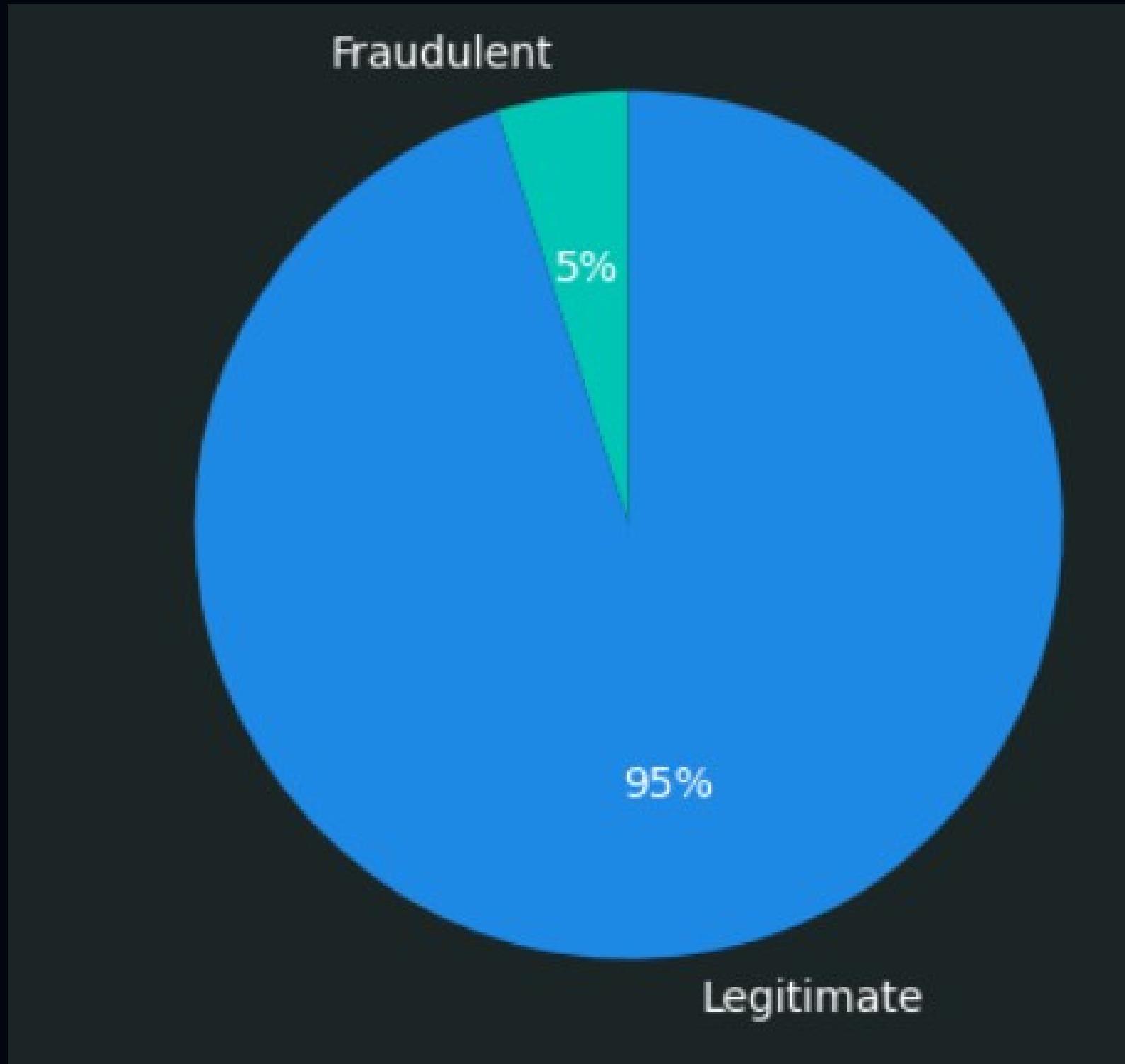
Machine Learning Model

Predictive model to detect fraudulent transactions

Dashboard

Assess transactional information and highlight fraudulent transactions in real time

CLASS DISTRIBUTION



Majority of the transactions are classified to be legitimate

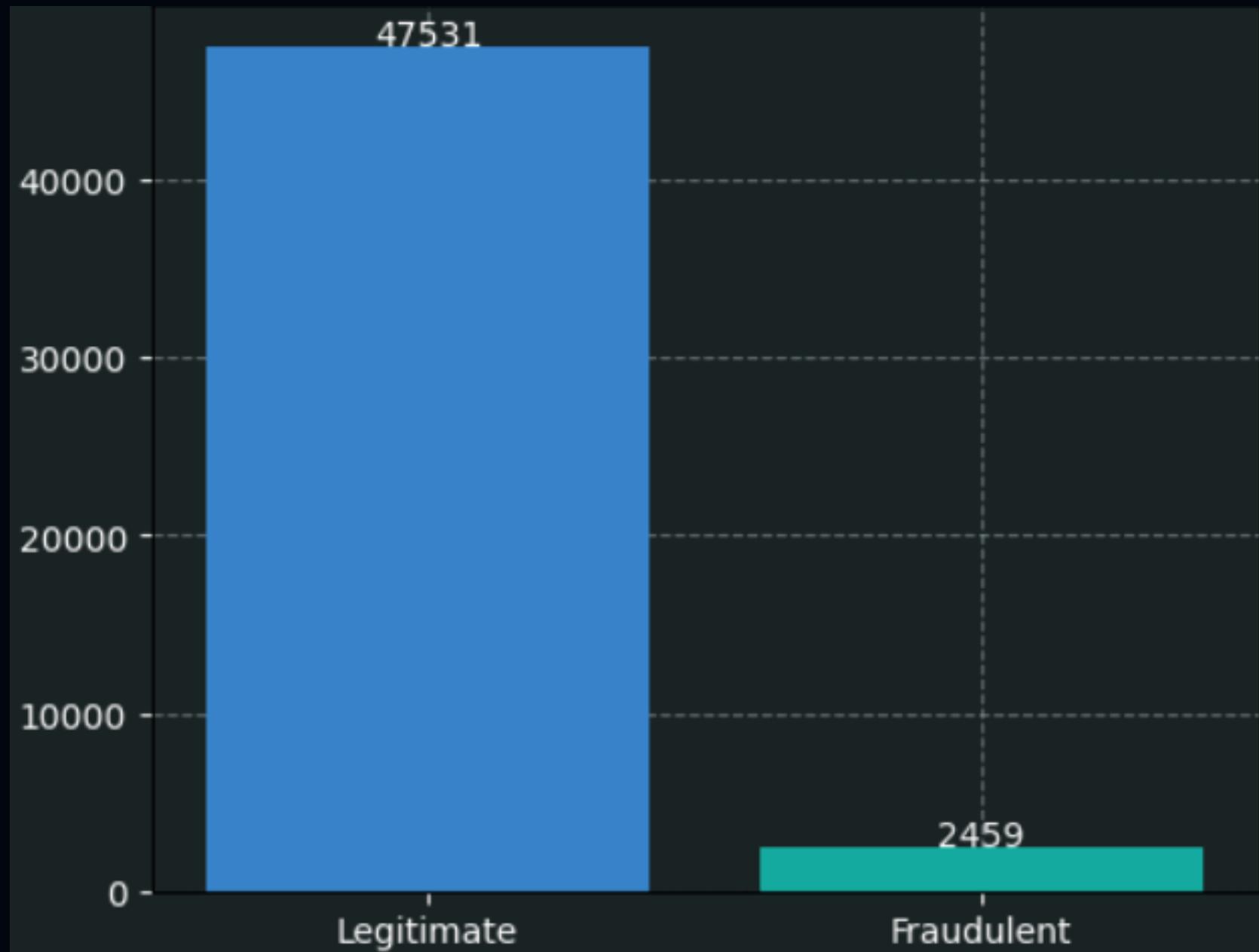


Only 5% of transactions are fraudulent



Congruent with real world cases where the majority of transactions are actually legitimate.

CLASS DISTRIBUTION



The data analysed consisted of 49990 transactions after data cleaning



There is a 45 072 difference between the two classes



Significant imbalance was rectified through undersampling and synthetic sampling methods

CLASS DISTRIBUTION



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FRAUD LOSS



TOTAL FRAUD LOSS

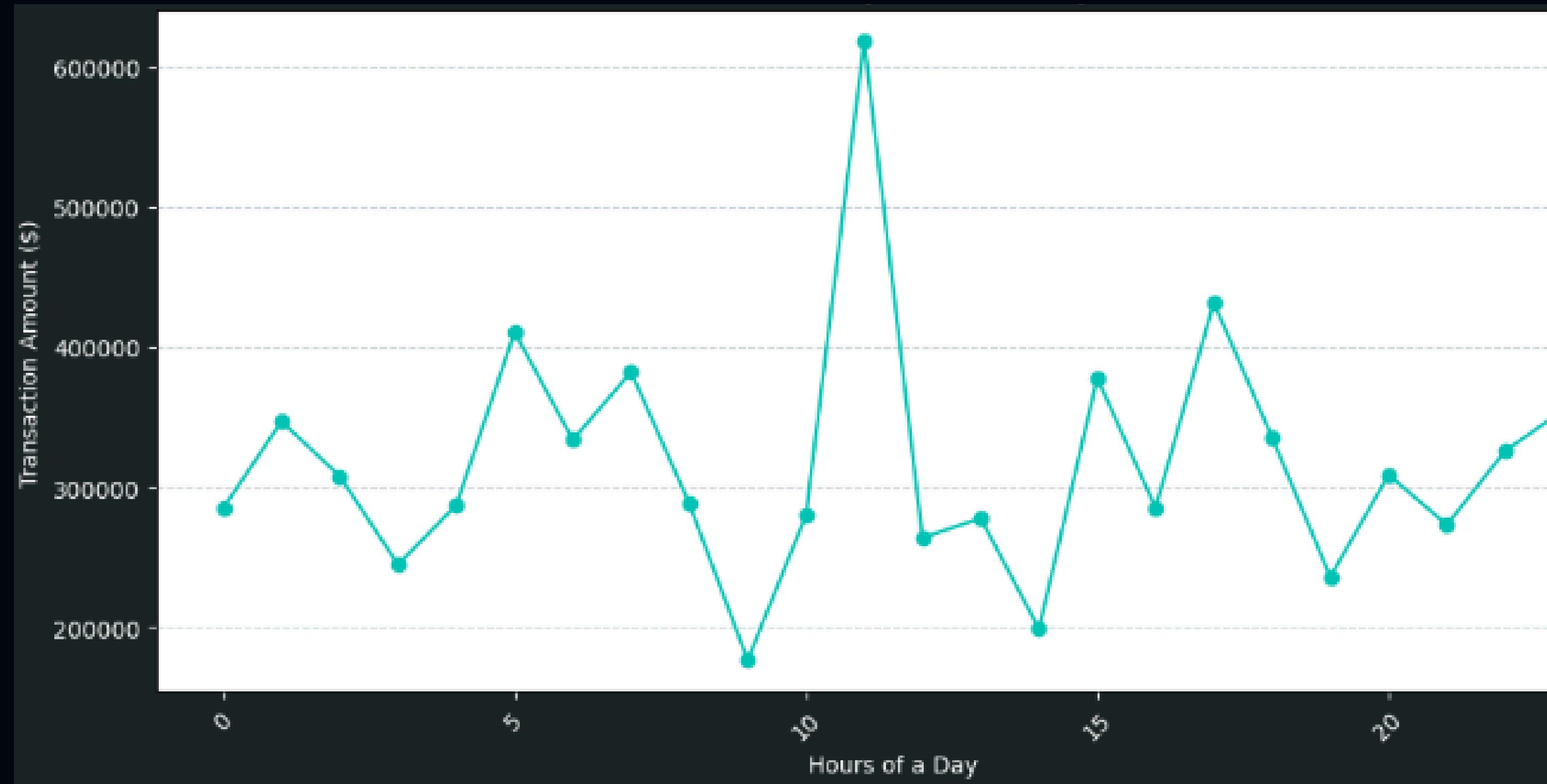
\$7 629 239.49



AVERAGE FRAUD
LOSS PER HOUR

\$317 884.98

FRAUD LOSS



MACHINE LEARNING MODELS



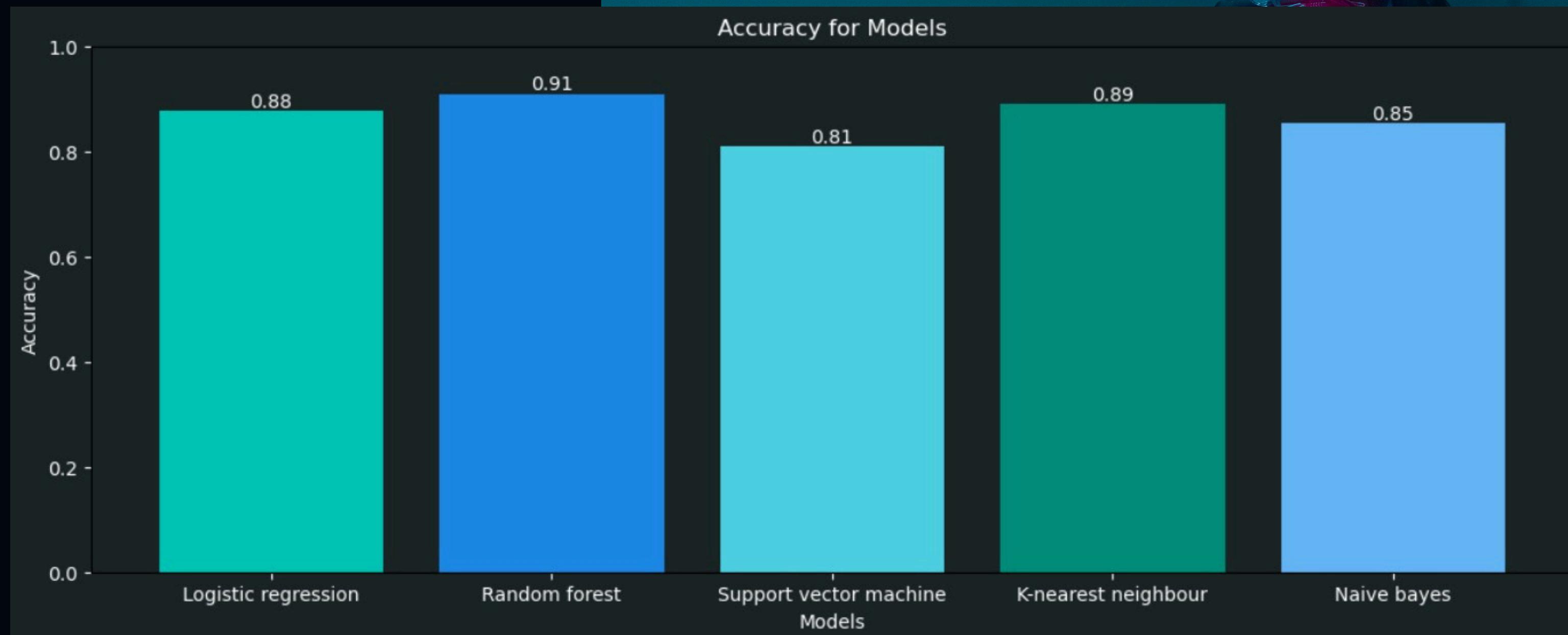
MODEL PERFORMANCE

F1-SCORE

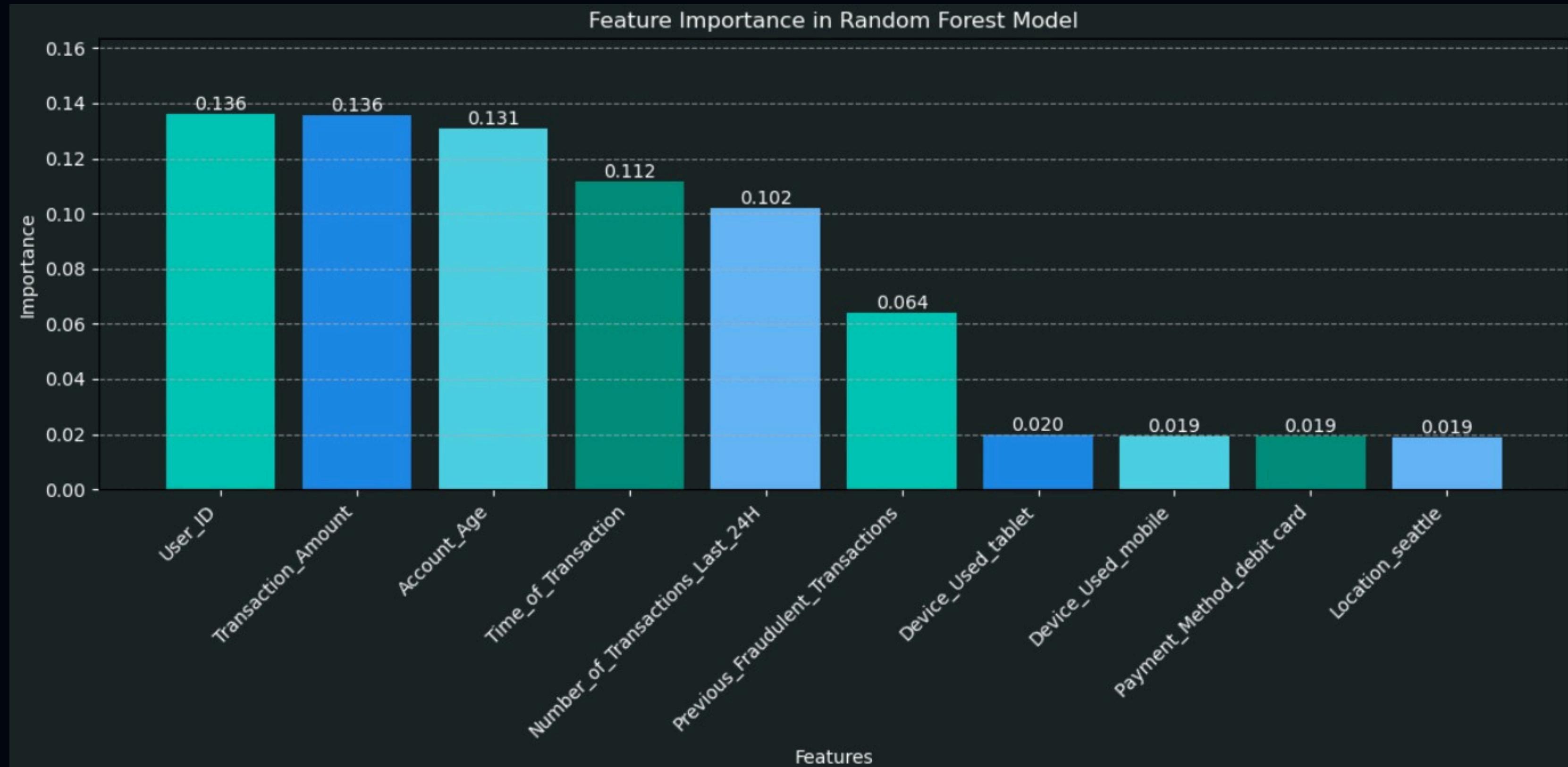


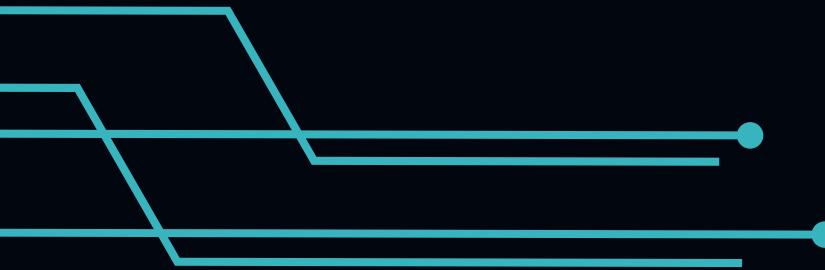
MODEL PERFORMANCE

ACCURACY



FINAL MODEL





FINAL MODEL

RANDOM FOREST



F1-SCORE

Effectiveness at identifying legitimate transactions whilst balancing false alarms and fraudulent transactions

90%



ACCURACY

Overall correctness of the model across all transaction classes

91%



PRECISION

The model's reliability at avoiding false alarms

87%



RECALL

The model's ability to detect fraudulent transactions

86%



THANK YOU