ONLINE PAYMENT FRAUD DETECTION

Presented by:

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AGENDA

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PROJECT STATEMENT

- ✓ In today's digital age, online payment fraud has become a significant concern for financial institutions and e-commerce platforms.
- ✓ The ability to detect fraudulent transactions accurately and efficiently is crucial for maintaining trust and security in online transactions.
- ✓ The problem at hand is to develop a machine learning-based system that can effectively identify and flag fraudulent transactions in real-time, thus minimizing financial losses and protecting users from fraudulent activities.

PROJECT OVERVIEW

- ✓ Develop machine learning models for accurate fraud detection.
- ✓ Implement a real-time processing system for analyzing incoming transactions.
- ✓ Ensure scalability to handle increasing transaction volumes.
- ✓ Adapt models to evolving fraud patterns.
- ✓ Maintain a balance between fraud detection accuracy and user experience.

WHO ARE THE END USERS?

- ✓ **Financial Institutions:** Banks, credit card companies, and other financial institutions are primary end users as they are responsible for processing transactions and bearing the financial risks associated with fraudulent activities.
- ✓ **E-commerce Platforms:** Online retailers and e-commerce platforms utilize payment systems to facilitate transactions. They are end users of fraud detection systems to protect their businesses from losses due to fraudulent transactions.
- ✓ **Payment Service Providers:** Payment service providers offer payment processing solutions to merchants. They may use fraud detection systems to safeguard their payment infrastructure and maintain trust with their clients.
- ✓ **Consumers:** While not directly involved in implementing the fraud detection system, consumers benefit from its existence as it helps protect their financial assets and personal information from fraudulent activities.

SOLUTION AND ITS VALUE PROPOSITION

Solution:

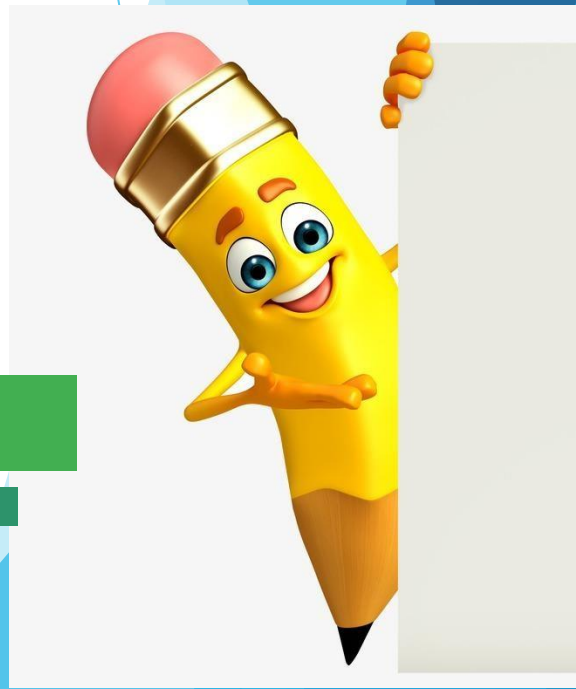
- ✓ Our solution offers a comprehensive online payment fraud detection system powered by advanced machine learning algorithms and real-time processing capabilities. By seamlessly integrating cutting-edge technology with robust security measures, we provide a reliable defense against fraudulent activities in digital transactions.

Value Proposition:

1. **Unmatched Accuracy:** Leveraging state-of-the-art machine learning algorithms, our solution ensures high precision in detecting fraudulent transactions, minimizing false positives and negatives to safeguard financial assets effectively.

2. **Real-time Detection:** With lightning-fast processing capabilities, our system identifies fraudulent activities as they occur, enabling prompt intervention and mitigation to prevent financial losses and protect users.

3. **Scalability and Adaptability:** Designed to handle large volumes of transaction data and evolving fraud patterns, our solution offers scalability and adaptability, ensuring continued effectiveness and reliability in dynamic environments.



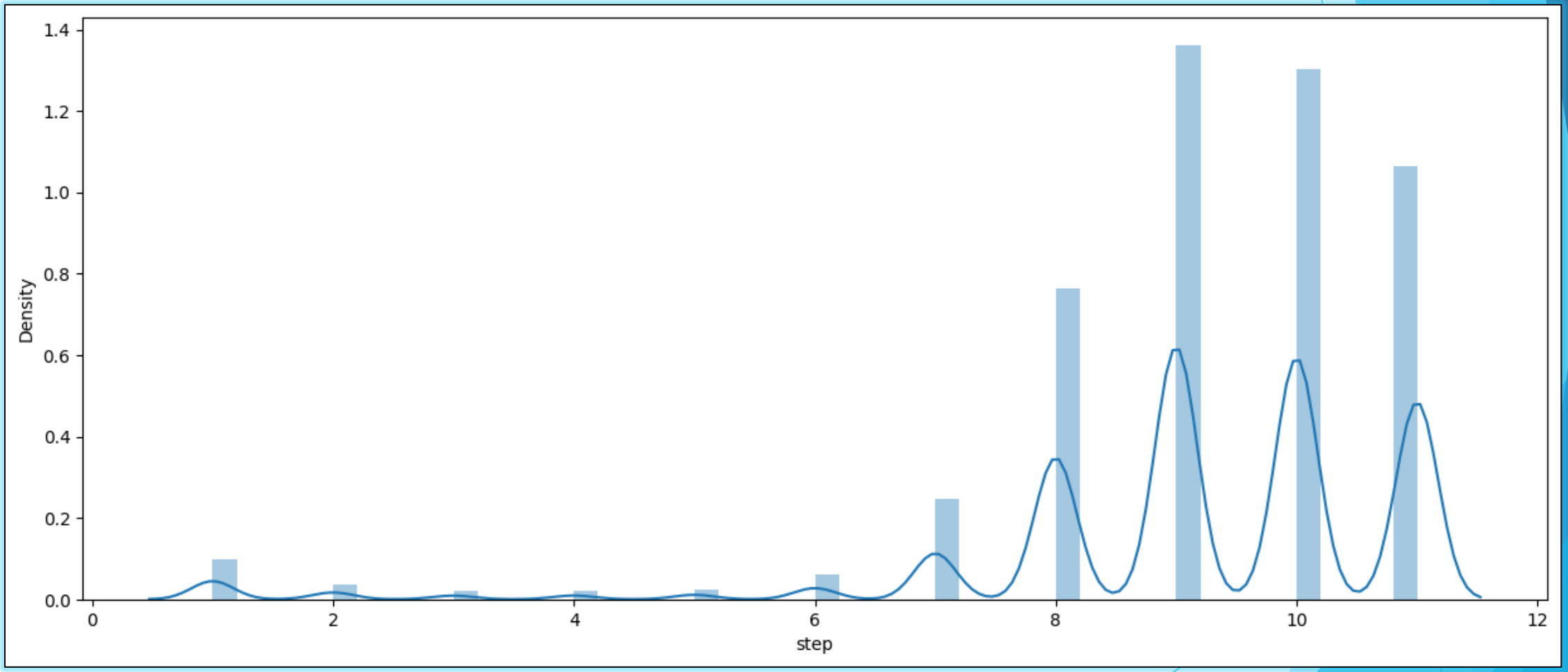
THE WOW IN YOUR SOLUTION

1) Empowering Trust in Digital Transactions:
Our solution pioneers a sophisticated approach to online payment fraud detection, ensuring utmost security and confidence in digital transactions. By seamlessly integrating cutting-edge machine learning algorithms, real-time processing capabilities, and meticulous model evaluation techniques

2) User-Centric Design:
With a keen focus on user experience, our solution strikes a perfect balance between robust fraud detection and frictionless payment experiences. Whether it's financial institutions, e-commerce platforms, or consumers, our system safeguards all stakeholders while maintaining seamless transaction flows.

3) Scalable and Agile:
Built to scale with evolving transaction volumes and fraud patterns, our solution offers unmatched scalability and adaptability. Through continuous monitoring and refinement, our models stay ahead of emerging threats, ensuring long-term effectiveness and reliability.

DATA VISUALIZATION



MODELLING

- ✓ **Algorithm Selection:** Choose appropriate machine learning algorithms based on the problem and data characteristics. Options include logistic regression, decision trees, random forests, gradient boosting machines, support vector machines, and neural networks.
- ✓ **Training:** Split the dataset into training and testing sets, train the selected models on the training data, and optimize model performance through techniques like hyperparameter tuning.
- ✓ **Ensemble Methods:** Experiment with ensemble methods like bagging, boosting, or stacking to combine multiple models for improved accuracy and robustness.

RESULTS

```
LogisticRegression() :
Training Accuracy :  0.9545627779522318
Validation Accuracy :  0.9545627779522318

XGBClassifier(base_score=None, booster=None, callbacks=None,
              colsample_bylevel=None, colsample_bynode=None,
              colsample_bytree=None, device=None, early_stopping_rounds=None,
              enable_categorical=False, eval_metric=None, feature_types=None,
              gamma=None, grow_policy=None, importance_type=None,
              interaction_constraints=None, learning_rate=None, max_bin=None,
              max_cat_threshold=None, max_cat_to_onehot=None,
              max_delta_step=None, max_depth=None, max_leaves=None,
              min_child_weight=None, missing=nan, monotone_constraints=None,
              multi_strategy=None, n_estimators=None, n_jobs=None,
              num_parallel_tree=None, random_state=None, ...) :
Training Accuracy :  1.0
Validation Accuracy :  1.0

SVC(probability=True) :
Training Accuracy :  0.8615163812330411
Validation Accuracy :  0.8615163812330411

RandomForestClassifier(criterion='entropy', n_estimators=7, random_state=7) :
Training Accuracy :  1.0
Validation Accuracy :  1.0
```

THANK YOU