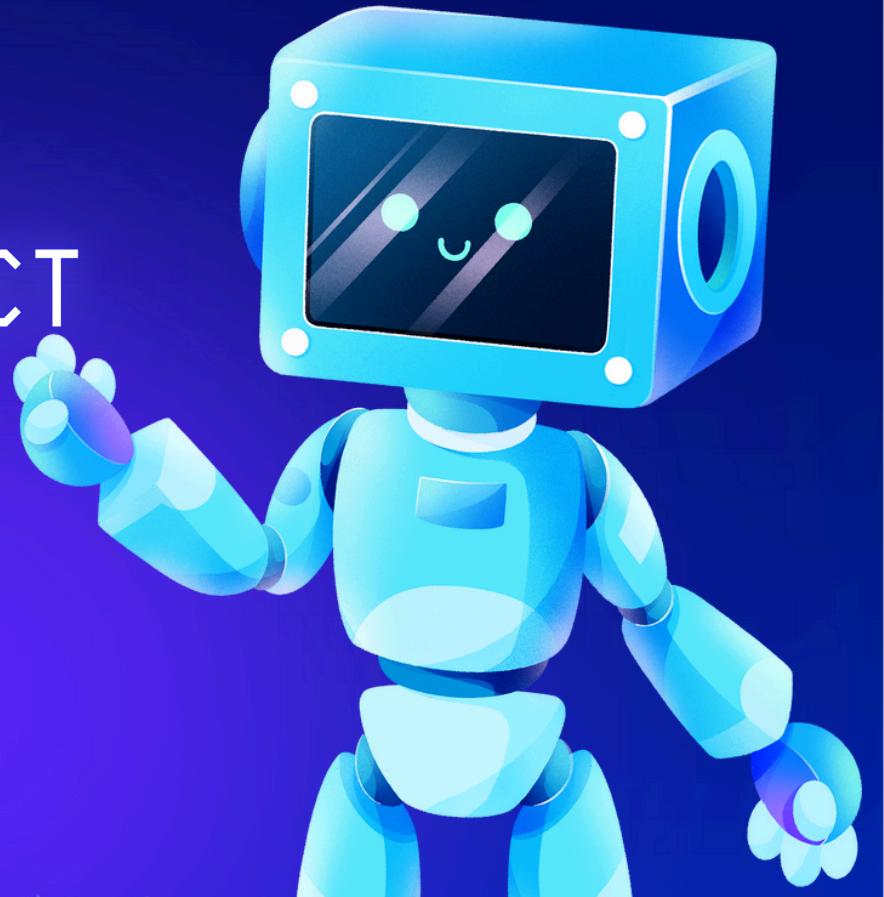


# CREDIT CARD FRAUD CAPSTONE PROJECT

By Serena Hy





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# INTRODUCTION

**Significance of Fraud Detection:** Credit card fraud poses a significant threat to financial security and consumer trust, necessitating advanced detection systems.

**Current Challenges:** Traditional systems fail to keep pace with sophisticated cybercriminals, leading to significant financial losses and eroded trust.

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## Welcome to My Capstone Presentation

Overview of the project dedicated to enhancing fraud detection using advanced neural network models.



# PROJECT OBJECTIVES



## MAIN GOAL

Develop an advanced neural network-based system for real-time fraud detection in credit card transactions.



## STRATEGIC IMPORTANCE

Enhance fraud detection capabilities to reduce financial risks and restore consumer trust.



## OPERATIONAL EFFICIENCY

Aim the streamline operations by integrating the fraud detection system seamlessly with existing IT infrastructure, minimizing disruptions and maximizing response speed.

# METHODOLOGY



## Data Collection

Gather and preprocess data from reliable sources, ensuring quality and relevance for model training.



## Model Development

Design and implement a neural network to identify patterns indicative of fraudulent activity.



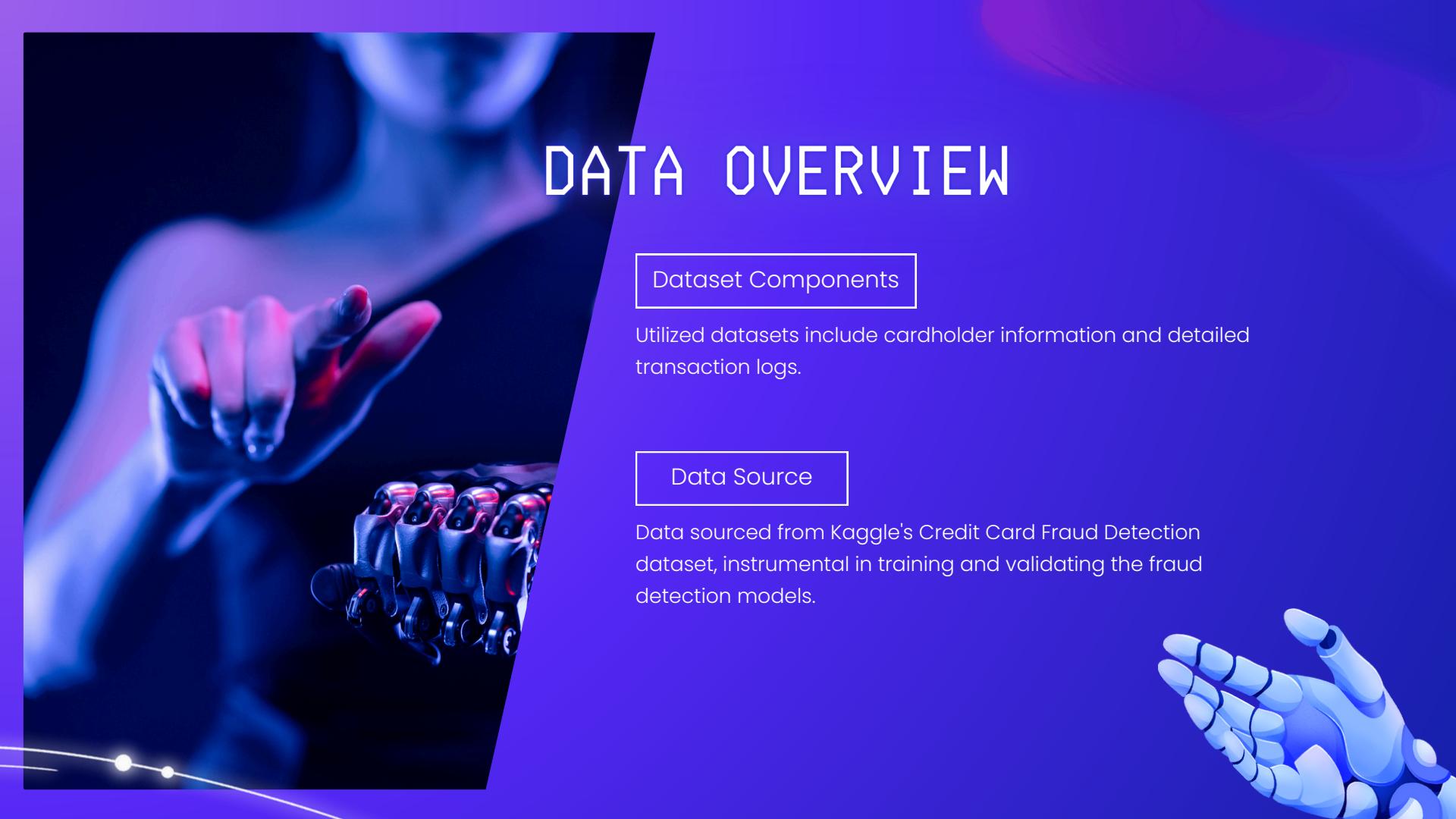
## Model Training

Train the model on preprocessed data, optimizing for accuracy and efficiency.



## Development and Monitoring

Deploy the model into production, continuously monitor its performance, and make necessary adjustments based on feedback and evolving fraud tactics.



# DATA OVERVIEW

## Dataset Components

Utilized datasets include cardholder information and detailed transaction logs.

## Data Source

Data sourced from Kaggle's Credit Card Fraud Detection dataset, instrumental in training and validating the fraud detection models.

# PROJECT SCOPE



## CONTINUOUS LEARNING

The model is designed to continuously learn and adapt to new data, ensuring it remains effective against evolving fraud techniques.

## INCREASED EFFICIENCY

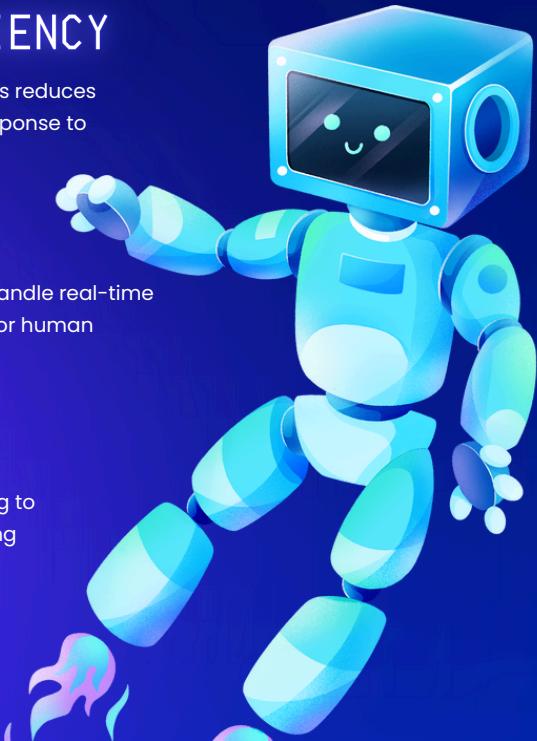
Automation of fraud detection processes reduces manual review times and speeds up response to fraudulent activities.

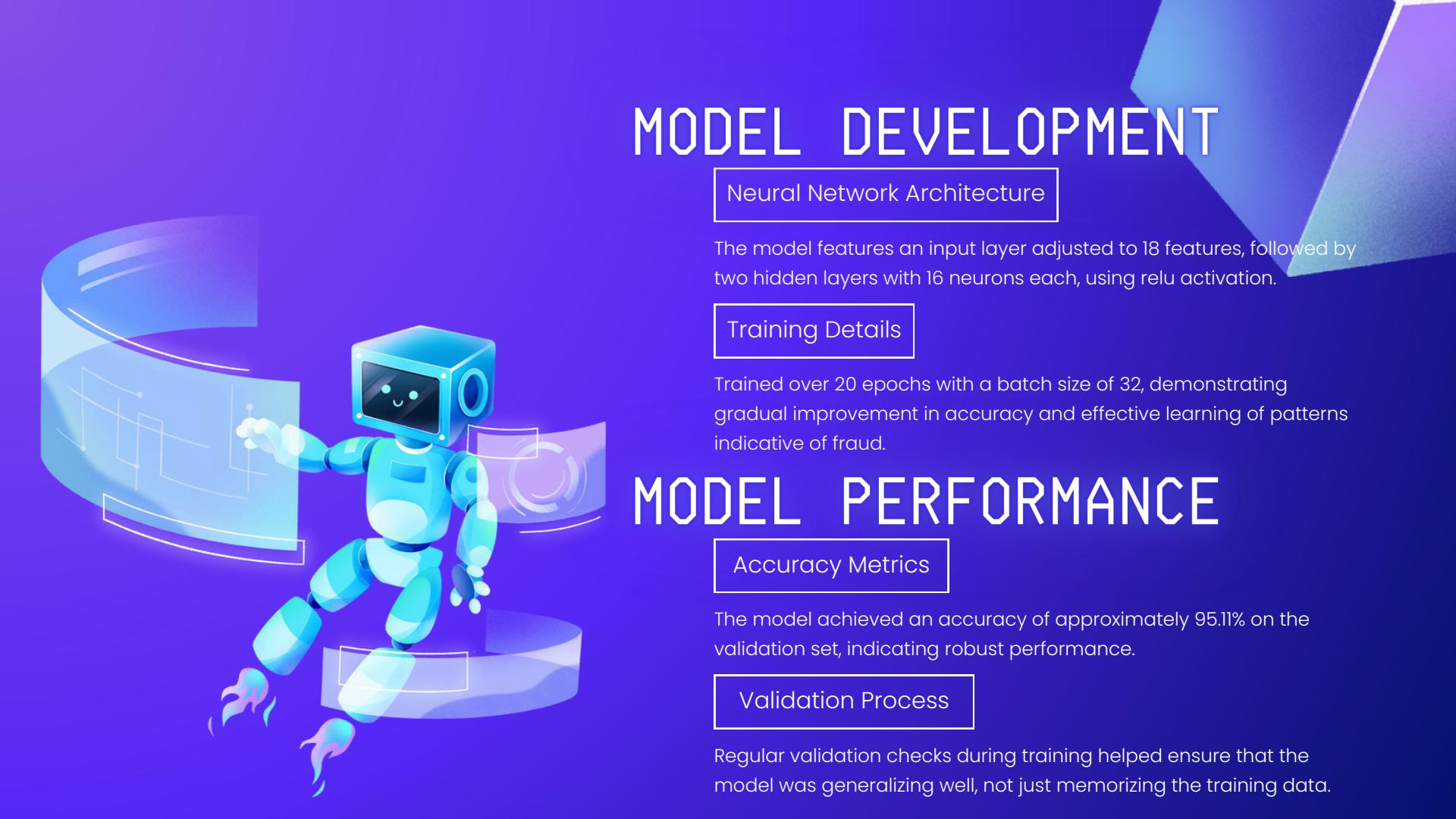
## AUTOMATION

Integrates fully automated systems to handle real-time transaction monitoring, reducing need for human intervention.

## ENHANCED ACCURACY

Leverages advanced algorithms and deep learning to improve the precision of fraud detection, minimizing false positives and negatives.





# MODEL DEVELOPMENT

## Neural Network Architecture

The model features an input layer adjusted to 18 features, followed by two hidden layers with 16 neurons each, using relu activation.

## Training Details

Trained over 20 epochs with a batch size of 32, demonstrating gradual improvement in accuracy and effective learning of patterns indicative of fraud.

# MODEL PERFORMANCE

## Accuracy Metrics

The model achieved an accuracy of approximately 95.11% on the validation set, indicating robust performance.

## Validation Process

Regular validation checks during training helped ensure that the model was generalizing well, not just memorizing the training data.



# INSIGHTS AND FINDINGS

01

## **Effective Fraud Detection:**

The model successfully identifies fraudulent transactions, significantly reducing the risk of financial loss.

02

## **Insightful Data Analysis:**

Data visualizations revealed key spending patterns and anomalies, providing deeper insights into fraud behavior.

# RESULTS AND ACHIEVEMENTS

01

## Project Impact

The advanced fraud detection model significantly enhances Company ABC's capabilities, effectively reducing fraud incidents and financial losses.

02

## Future Enhancements

Future iterations could explore incorporating additional data layers and improving real-time processing capabilities.

THANK YOU!

