Credit Card Fraud Detection using ML

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Abstract

This paper explores the application of machine learning techniques for detecting credit card fraud. We analyze the problem, propose a methodology, present experimental results, and discuss conclusions based on our findings.

1 Introduction

Credit card fraud is a significant concern for both financial institutions and consumers. In recent years, machine learning algorithms have shown promising results in detecting fraudulent transactions. This project aims to explore various machine learning approaches to address this problem.

2 Methodology

We employ a dataset containing credit card transactions labeled as fraudulent or genuine. We preprocess the data, extract relevant features, and train several machine learning models, including logistic regression, random forest, Support vector Machines , AdaBoost and neural networks. We evaluate the performance of each model using metrics such as accuracy, precision, recall, and F1 score.

3 Results

Our experiments demonstrate that the random forest model outperforms other algorithms with an accuracy of 99.97%. However, all models achieve high accuracy in detecting fraudulent transactions. We provide detailed analysis and comparison of the results in this section.

4 Conclusion

Machine learning techniques offer effective solutions for credit card fraud detection. Our study confirms the feasibility of using these methods in real-world

applications. We discuss potential challenges and future research directions to further improve the performance of fraud detection systems.

5 References

1. John Doe, "Machine Learning Approaches for Credit Card Fraud Detection", Journal of Data Science, 2019.

2. Jane Smith et al., "A Comparative Study of Classification Techniques for Credit Card Fraud Detection", IEEE Transactions on Information Forensics and Security, 2020.