

Credit Card Fraud Detection Using Machine Learning Algorithms

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Abstract

This study aims to explore the relationship between machine learning-based fraud detection techniques and the accuracy of identifying fraudulent Credit Cards transactions. In today's digital world, Credit Cards are vital for fulfilling various financial needs, making effective fraud detection methods essential to safeguard both customers and financial institutions. These institutions require reliable fraud detection models to ensure customers can use their Credit Cards securely for transactions like purchasing goods, renting properties or making loan payments. Banks and financial institutions rely on these methods to safeguard their customers and protect their assets. By leveraging machine learning algorithms like Random Forest, Decision Trees, Adaptive Boosting, and Gradient Boosting to analyze Credit Cards transaction data, aiming to distinguish fraudulent transactions from legitimate ones. The predictive models evaluate metrics such as accuracy, precision, recall, and F1 score to enhance fraud detection accuracy. Focusing on European Credit Cards data, this study compares multiple machine-learning algorithms to find the most effective algorithm for accurately identifying fraudulent transactions.

Keywords: Credit Cards Fraud, Machine Learning Algorithms, Prediction, Confusion matrix.