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A Comprehensive Review of Machine Learning Techniques for Credit Card Fraud Detection

Tanmay Sayande, Devesh Patil, Durgesh Thakor, Pratik Patil, Prof. Purushottam R. Patil
Department of Computer Sciences & Engineering
Sandip University, Nashik, India
tanmaysayande1113@gmail.com, deveshpatil9923@gmail.com
drgshthakor@gmail.com, pratikpatil5679@gmail.com, purupatil7@gmail.com

Abstract: *This paper presents a comprehensive review of various machine learning techniques employed for credit card fraud detection, highlighting their strengths, limitations, and applications. As the use of credit cards in online and offline transactions increases, so does the risk of fraudulent activities, causing significant financial losses to both consumers and financial institutions. The review covers traditional machine learning algorithms such as Decision Trees, Random Forest, Support Vector Machines, and Logistic Regression, along with advanced techniques like Neural Networks, Ensemble Methods, and Deep Learning models. Furthermore, the paper explores the challenges posed by imbalanced datasets, real-time detection, and the need for high accuracy, while also discussing emerging trends such as the application of hybrid models and anomaly detection methods. By comparing the performance and effectiveness of these algorithms, the paper aims to provide valuable insights into the current state and future directions of credit card fraud detection research.*

Keywords: Credit card fraud detection, machine learning algorithms, deep learning, anomaly detection, real-time fraud detection.

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