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FRAUD DETECTION IN BANKING DATA USING MACHINE LEARNING

Abstract

Fraud detection in banking is a crucial area of concern for financial institutions, as fraudulent activities can result in significant financial losses and damage to reputations. With the rapid growth of digital transactions, online banking, and mobile payments, fraudsters have become increasingly sophisticated in their methods, making it more challenging to identify and prevent fraudulent activities using traditional techniques. Traditional fraud detection systems, which rely on predefined rules and manual oversight, are often ineffective in adapting to evolving fraud patterns, as they struggle to detect complex schemes in real-time.

Machine learning (ML) has emerged as a powerful solution to enhance fraud detection by leveraging data-driven models to identify suspicious activities. By analyzing vast amounts of historical transaction data, ML models can uncover hidden patterns, detect anomalies, and automatically flag potentially fraudulent transactions. This automated approach is more efficient and scalable, enabling financial institutions to stay ahead of fraudsters. Various machine learning algorithms, such as decision trees, random forests, support vector machines (SVM), and neural networks, are commonly applied to develop fraud detection systems.

The integration of machine learning into fraud detection not only improves accuracy but also allows for real-time monitoring, reducing the time it takes to identify and respond to fraudulent activities. This introduction explores how machine learning techniques are transforming fraud detection in banking and the advantages they offer over traditional methods.

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