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A Review of Anomaly Identification in Finance Frauds Using Machine Learning Systems

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Abstract: *The growing prevalence of digital financial payments has caused fraud in financial services to significantly increase globally. Artificial learning-based abnormality to identifying anomalies must be used because traditional fraud detection methods are not very adaptable to contemporary dishonest methods. This review examines various machine learning methodologies, including deep learning, techniques for detecting fraud using autonomous, freestanding, and semi-supervised learning methods in banking, insurance, stock market processes, and digital payment transactions. The study highlights challenges associated with imbalanced data distributions and adversarial attacks, which impact detection performance and interpretability. Furthermore, the paper explores current developments in the integration of transparent artificial intelligence with graph-based anomaly identification technologies to improve fraud detection systems' transparency and credibility. The constraints of the investigation are evaluated in order to guide the creation of contemporary counterfeiting detection platforms that use several machine learning techniques for enhanced accuracy, real-time processing, and privacy preservation. The findings provide insights into designing robust fraud detection systems aligned with banking institutions' requirements, ensuring enhanced financial security and compliance.*

Keywords: Anomaly Detection, Financial Fraud, Machine Learning, Fraud Detection, Credit Card

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