

A Machine Learning Approach for Detecting Credit Card Fraudulent Transaction

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The world is reaching a cashless society with the increment of non-cash transactions. E-commerce has become an essential factor in every organization in global trade. Since financial institutions co-operate with billions of online transactions per day, identifying fraudulent transactions has become a challenge. This research was mainly focused on identifying the best intelligent adaptive authentication technique for credit card fraud detection. Areal-world transaction dataset of European credit cardholders and a synthetic dataset were used to extract the historical transactional patterns using Artificial Neural Network (ANN). Different classification algorithms, Logistic Regression, Decision Tree, Random Forest and XGBoost were also used for a comparative analysis to classify a real-world dataset. Among all, ANN and XGBoost have shown the highest performance in the binary classification of fraud and legitimate transactions. ANN has shown an accuracy of 99.94% and high adaptability in handling large datasets, by giving zero misclassification of fraud as a legitimate transaction by reducing the risk to its minimum.

Keywords: *fraud detection, ANN, adaptive authentication, random forest, decision tree, XGBoost, logistic regression*