CREDIT CARD FRAUD DETECTION

Retaining highly lucrative clients is often a bank's top priority in terms of commercial objectives. But for several institutions, banking fraud represents a serious danger. This is a problematic situation for both banks and customers in terms of significant financial losses, trust, and reputation. Machine learning-based credit card fraud detection in the banking sector is not just a trend, but also a requirement for them to set up proactive monitoring and fraud protection procedures. These institutions are using machine learning to cut down on time-consuming manual reviews, pricey chargebacks and penalties, and rejections of valid transactions. In this study, we use machine learning models to identify fraudulent credit card transactions.

We experimented with a variety of solutions to the problem of class imbalance, concentrating on SMOTE as one of the processing stages to improve classification performance. Additionally, the data is checked for skewness before being divided into train and test datasets. Several classification models, including Logistic Regression, KNN, XGBoost, SVM, Random Forest, and Decision Tree, have been employed. We then performed hyperparameter tuning to obtain the best accuracy. By examining the model's performance at each classification level, the ROC curve is used to gauge the model's robustness. To find the best models for the specific issue, accuracy, precision, F1 score, and recall have been computed.

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