Credit Card Fraud Detection Using Machine Learning

D. Tanouz, R. R. Subramanian, D. Eswar, G. V. P. Reddy, A. R. Kumar and C. V. N. M. Praneeth, "Credit Card Fraud Detection Using Machine Learning," *2021 5th International Conference on Intelligent Computing and Control Systems (ICICCS)*, 2021, pp. 967-972, doi: 10.1109/ICICCS51141.2021.9432308.

Abstract :Credit card is the commonly used payment mode in recent years. As the technology is developing, the number of fraud cases are also increasing and finally poses the need to develop a fraud detection algorithm to accurately find and eradicate the fraudulent activities. This research work proposes different machine learning based classification algorithms such as logistic regression, random forest, and Naive Bayes for handling the heavily imbalanced dataset. Finally, this research work will calculate the accuracy, precision, recall, f1 score, confusion matrix, and Roc-auc score.

pros:Better approach for imbalance data set

Cons: Difficulty in practical use.

URL:https://ieeexplore.ieee.org/document/9432308

Credit card fraud detection using Machine Learning Techniques:

J. O. Awoyemi, A. O. Adetunmbi and S. A. Oluwadare, "Credit card fraud detection using machine learning techniques: A comparative analysis," 2017 International Conference on Computing Networking and Informatics (ICCNI), 2017, pp. 1-9, doi: 10.1109/ICCNI.2017.8123782.

Abstract—Financial fraud is an ever growing menace with far consequences in the financial industry. Data mining has played an imperative role in the detection of credit card fraud in online transactions. Credit card fraud detection, which is a data mining problem, becomes challenging due to two major reasons – first, the profiles of normal and fraudulent behaviors change constantly and secondly, credit card fraud data sets are highly skewed. The performance of fraud detection in credit card transactions is greatly affected by the sampling approach on the dataset, selection of variables and detection technique(s) used. This paper investigates the performance of naïve bayes, k-nearest neighbor and logistic regression on highly skewed credit card fraud data. Dataset of credit card transactions is sourced from European cardholders containing 284,807 transactions. A hybrid technique of under-sampling and oversampling is carried out on the skewed data. The three techniques are applied on the raw and preprocessed data. The work is implemented in Python. The performance of the techniques is evaluated based on accuracy, sensitivity, specificity, precision, Matthews correlation coefficient and balanced classification rate. The results showed optimal accuracy for naïve bayes, k-nearest neighbor and logistic regression classifiers are 97.92%, 97.69% and 54.86% respectively. The comparative results show that k-nearest neighbor performs better than naïve bayes and logistic regression techniques.

pros:More accuracy

cons:Not sure for imbalance dataset

URL: https://ieeexplore.ieee.org/abstract/document/8123782

Card Fraud Detection Using Machine Learning

R. Sailusha, V. Gnaneswar, R. Ramesh and G. R. Rao, "Credit Card Fraud Detection Using Machine Learning," *2020 4th International Conference on Intelligent Computing and Control Systems (ICICCS)*, 2020, pp. 1264-1270, doi: 10.1109/ICICCS48265.2020.9121114.

Abstract—Credit card fraud detection is presently the most frequently occurring problem in the present world. This is due to the rise in both online transactions and e-commerce platforms. Credit card fraud generally happens when the card was stolen for any of the unauthorized purposes or even when the fraudster uses the credit card information for his use. In the present world, we are facing a lot of credit card problems. To detect the fraudulent activities the credit card fraud detection system was introduced. This project aims to focus mainly on machine learning algorithms. The algorithms used are the random forest algorithm and the Adaboost algorithm. The results of the two algorithms are based on accuracy, precision, recall, and F1-score. The ROC curve is plotted based on the confusion matrix. The Random Forest and the Adaboost algorithms are compared and the algorithm that has the greatest accuracy, precision, recall, and F1-score is considered as the best algorithm that is used to detect the fraud.

pros:More accuracy on prediction

Cons: Implementation problems

URL:https://ieeexplore.ieee.org/document/9121114

Real-time Credit Card Fraud Detection Using Machine Learning

A. Thennakoon, C. Bhagyani, S. Premadasa, S. Mihiranga and N. Kuruwitaarachchi, "Real-time Credit Card Fraud Detec Using Machine Learning," *2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence)*, 2019, pp. 488-493, doi: 10.1109/CONFLUENCE.2019.8776942.

Abstract²Credit card fraud events take place frequently and then result in huge financial losses [1]. The number of onlir transactions has grown in large quantities and online credit card transactions hold a huge share of these transactions. Therefore, banks and financial institutions offer credit card fraud detection applications with much value and demand. Fraudulent transactions can occur in various ways and can be put into different categories. This paper focuses on four main fraud occasions in real-world transactions. Each fraud is addressed using a series of machine learning models an the best method is selected via an evaluation. This evaluation provides a comprehensive guide to selecting an optimal algorithm with respect to the type of the frauds and we illustrate the evaluation with an appropriate performance measu Another major key area that we address in our project is real-time credit card fraud detection. For this, we take the use c predictive analytics done by the implemented machine learning models and an API module to decide if a particular transaction is genuine or fraudulent. We also assess a novel strategy that effectively addresses the skewed distribution data. The data used in our experiments come from a financial institution according to a confidential disclosure agreeme

Keywords— credit card frauds, fraud.

Pros: Novelty in the paper

cons:Using the resources in the market

URL: https://ieeexplore.ieee.org/document/8776942/authors#authors