Credit Card Fraud Detection System Using Machine Learning Process

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Abstract

In recent years, machine learning has been widely used for the fraud detection process and achieved favorable performance. According to the Financial sectors have focused attention to recent computational methodologies to provide the credit card fraud problem. Our analysis provides a comprehensive guide to sensitivity analysis of current parameters with regards to words the current performance in credit card fraud detection. It defines only the numerical input variables which the help of the Principal Component Analysis (PCA) transformation. Unfortunately, due to confidentiality issues, we should not provide the original features and more background information to be provided. To predict machine learning model to predict whether a transaction is fraudulent or not by approaching Logistic, Support vector classifier, Random forest algorithms and identify the most important variables that may lead to higher accuracy in credit card fraudulent transaction detection. Additionally, we can compare and discuss the performance of various machine learning algorithms from the bank credit dataset with evaluation classification report from Principal component analysis and identify the confusion matrix and scalar metrics. So, present a framework of the parameter of the Machine learning topologies for the credit card fraud detection is to be enable financial institutions to reduce losses by preventing fraudulent activity to words the bank related process.

1. Introduction

The fraud in credit card transactions is inaccessible and unauthorized usage of an account by others than the owner of that current account. Necessary steps could be taken to stop this type of behavior and the fraudulent practices can be studied to reduce it and to protect against this type of occurrences in the future. In further cases, the Credit Card Fraud can be defined as a process of misusing someone else's credit card for their personal reasons while the card holder and the card issuing Agencies are unknown of the fact that the card is being used by someone else.

The fraud detection mainly involves monitoring of database and the activities of their customers, in order to keep away fraud behaviors, default frauds and interruptions.

This is a relative problem that demands the Communities attention such as machine

learning and Artificial intelligence where we can find the solution to the problem. This type of problem is especially challenging from learning aspect, as it can be described through various factors such as class asymmetry. There is a chance that the transaction patterns even change the statistic property in time and the number of transactions processed should be invalid.

Machine learning mechanisms are equipped to access the authorized transactions and find out the fraud detections. The transaction details will be controlled by the authorities and their representatives contact the account holders to confirm whether the transaction is real or fraud.

2. Literature Review

1) GUI Based Credit Card Fraud Detection processes [1]

In day to day life Credit Card frauds are becoming a major problem and our aim is to overcome this problem before the fraud is happened. There are various methods to find out these frauds Neutral networking, HiddenMarkoff model. This technique involves Net banking login and a onetime registration process. Once the details are being processed with Hidden MarkoffModel, the Fraud Detection system controls the Card holders account details and there by taking fresh style formula into consideration we are able to find the average. Previously we mainly targeted on detecting fraud transactions. But using this formula we are able to find out the details of the fraud happened with accurate details. In initial stage we tried to overcome the fraud by providing necessary credentials about the account to the authority and further they will proceed which is a time taking process. The details of each case will be tested by using Hidden Markoff Model and Genetic formula. By the help of these strategies the averages

should be taken accurately. Previously at particular intervals we have used effective measures to increase the fraud detections. The main cause for this Credit Card frauds is lack of security and lack of knowledge about banking to the user. Even though it is not an effective way of fraud detection it is quite simple way with high ranging performance to find the details of the fraud. Now a days we are using various which are of low security the virtual proposed here is to overcome from these processes.

2) Online Credit Card Detection Using Machine Learning To Rank Approaches [2]

Furtherly by using internet dealing, the payment is formed wherever the cardboard holder doesn't need to physically manufacturing the card to the business person for confirming its originality at the time that associate order is made and payment is underneath method, like for getting associate item through an e-commerce web site via web banking. It's terribly crucial to verify that associate authentic cardholder is so activity a dealing just in case of a card not gift state of affairs to form positive that the transaction is non-fraudulent. Most of the businesses and industries have remodeled their business into on-line services to supply ecommerce, easy accessibility and communication permitting their customers higher potency and accessibility. This evolution is of nice importance since it's attributable towards enhanced potency, and gain however it additionally has its own shortcomings. Along with this evolution comes a bigger chance of threats. One in every of the foremost crucial challenges in creating business on the web is that neither the cardboard nor the cardholder must be gift once the acquisition is being created. This makes it not possible for the business person to verify whether or not the client creating an acquisition is that the authentic cardholder or not. victimization the

MasterCard fraud detection engine that, have planned, MasterCard frauds will be prevented by lease the businessperson attentive to the transactions having a high chance of being deceitful. Victimization data processing technique alongside neural network, the success rate of the system will increase several folds and therefore can solve the aim of aiding the merchants. Though there are existing systems doing a similar factor presently within the market, this technique being developed will significantly target the businessperson facet of the business which is able to be helpful to the merchant by reducing the merchant's losses that he should bear if dealing is deceitful.

3. Proposed System

Basic methods to detect the frauds in the credit card system. Comparisons are made with various machine learning algorithms should used in it, such as Logistic regression, Decision trees, and Random forest should be done in it.
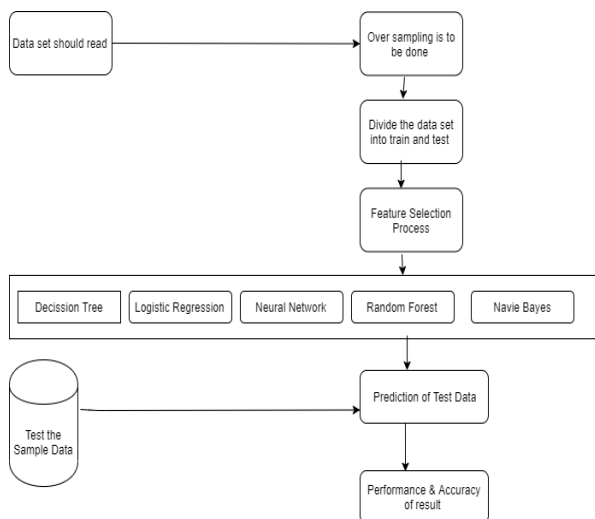

Figure 1: Proposed System

Advantages

➢ The goal of this problem is to predict the status of the credit card fraud detection in credit card transaction of test dataset as accurate as possible.

➢ A time limit can be set for the applicant to check whether his/her credit transaction can be fraud or not and to provide quick, immediate and easy way to choose the deserving applicants.

To reduce the risk factor by selecting the safe person so that we can save lots of bank efforts and assets by this process.

4. Result and Discussion

Table 1: Performance analysis for seven different algorithms

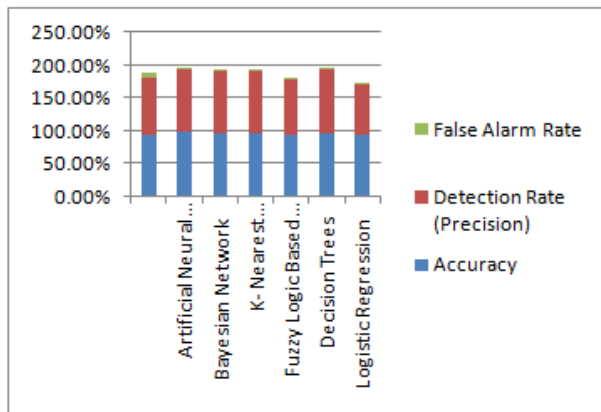| Techniques	Accuracy	Detection Rate (Precision)	False Alarm Rate
Support Vector Machine (SVM)	95.65%	86.45%	6.20%
Artificial Neural Networks (ANN)	98.71%	98.68%	0.22%
Bayesian Network	96.52%	96.04%	1.50%
K- Nearest Neighbour (KNN)	96.15%	95.84%	1.88%
Fuzzy Logic Based System	94.20%	85.84%	1.25%
Decision Trees	96.93%	97.52%	3.19%
Logistic Regression	93.70%	76.80%	3.90%

Figure 2: Average execution time of the algorithm

Result

Now a day's fraud detection techniques are highly improved in order to reduce we are implemented multiple machine learning algorithm techniques are implemented to reduce the fraud detection process. Mostly the fraud detection process should done in bank related sectors. To reducing the fraud detection process, we have improved some security features are implemented in this process. And finally it shows the '0' means fraudulent transactions & '1' means Non fraudulent transactions. Accordingly, we find the transaction process is safe or not by executing the machine learning algorithms techniques.

5. Conclusion

In this Current paper, Machine Learning technique are used for the Logistic regression process, Decision Tree and Random forest algorithm should be done in it, In order to identify the Fraud process should be used in the Fraud detection process in the Credit card system. Sensitivity, Specificity, Accuracy and it shows the error rate should be used to calculate the performance of the proposed system process. The accuracy of logistic regression, Decision tree and random forest classifier are 91.0, 92.3, and 96.5 respectively. By developing all these three processes should found according to the random forest classifier is better than the Logistic regression and decision tree process should done.

Reference

[1] Credit Card Fraud Detection Based on Transaction Behaviour -by John Richard D. Kho, Larry A published by Proc. of the (2017).

[2] Research on Credit Card Fraud Detection Model Based on Distance Sum – by Wen-Fang YU and Na Wang published by (2009) International Joint Conference on Artificial Intelligence.

[3] Credit Card Fraud Detection through Par enclitic Network Analysis By Massimiliano Zanin, Miguel Romance, Regino Criado, and Santiago Moral" published in (2018).

[4] "Credit Card Fraud Detection: A Realistic Modeling and a Novel Learning Strategy" published by IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS in (AUGUST 2018)

[5] "Credit Card Fraud Detection-by Ishu Trivedi, Monika, Mrigya, Mridushi" published by International Journal of Advanced Research in Computer and Communication Engineering in (January 2016).

[6] Kalaiselvi N, Mahalakshmi S and Padmavathy J, karthiga Joyce.B Credit Card Fraud Detection Using Learning To Rank Approach in the year(2018)

[7] Marc Rippen, Harry Braunstein and Craig Nelson Interactive Multitask Credit Card Technology in (2007).

[8] Wei Li, Xuemei Wu and Yayun Sun Credit Card Customer Segmentation and Target Marketing Based on Data Mining in (2018).