Credit card fraud detection using Machine Learning Algorithms

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Abstract— Credit card payment has become very popular today. Credit card is an easiest way to pay directly through your bank account. But we all know that everything have some pros as well as some cons. In the case of credit card, fraudsters are the main intruder. These intruders can access some unauthorised transactions. It is very important to prevent your account transaction from these intruders. In this paper we used three different classification algorithms (BNN, Isolation forest, Random forest algorithm) for fraud detection. In this regard, implementation of efficient fraud detection algorithms using machine-learning techniques, and to assist fraud investigators. we use SMOTE sampling method. The problem of ever-changing fraud patterns is considered with employing incremental learning of selected ML algorithms in experiments In this paper isolation forest, based machine learning approach is utilized to detect credit card fraud. The results show isolation forest based approaches outperforms with the highest accuracy and it can be effectively used for fraud investigators.

Key Words : Machine Learning; Isolation forest, Building a random Forest Model ,BNN.

1. INTRODUCTION

Credit-card fraud is a general term for the unauthorized use of funds in a transaction typically by means of a credit or debit card. Incidents of fraud have increased significantly in recent years with the rising popularity of online shopping and e-commerce. Credit-card fraud can be classified into two different types, card-not-present fraud and card-present fraud. Card-not-present fraud takes place when a customer's card details including card number, expiration date, and card verification- code (CVC) are compromised and then used without physically presenting a credit card to a vendor, such as in online transactions. Card-present fraud occurs when credit card information is stolen directly from a physical credit card. Since 2015, credit card companies have issued chip-payment (EMV) cards to combat card-present fraud. Although this measure has been effective at reducing point-of-sale fraud by 28% within the last three years, card-not-present fraud has risen by 106%, increasing the need for online security to prevent data breaches. Although less than 0.1% of all credit card transactions are fraudulent, analysts predict that credit card fraud losses incurred by banks and credit-card companies can surpass $12 billion in the United States in 2020. Evidently, there is a dire need for robust detection of card-present and card-not-present fraudulent transactions to minimize monetary losses.

Currently, credit-card companies attempt to predict the legitimacy of a purchase through the analyzing anomalies in various fields such as purchase location, transaction amount, and user purchase history. However, with the recent increases in cases of credit card fraud it is crucial for credit card companies to optimize their algorithmic solutions. This paper compares various machine learning and regression algorithmic models to explore which algorithm and combination of factors provides the most accurate method of classifying a credit-card transaction as fraudulent or non fraudulent (normal).

2. PROPOSED SYSTEM

1. The proposed model is introduced to overcome all the disadvantages that arises in the existing system.

2. This system will increase the accuracy of the classification results by classifying the data based on the attacks and others using naive-bayes classification algorithm.

3. It enhances the performance of the overall classification results.

3. METHODOLOGY

1. This work focusing on an application which is use to detect the fraudulent credit card activities on internet transaction. In this peculiar type, the pattern of current fraudulent usage of the credit card has been analysed with the previous transaction. By using the BNN in algorithm of machine learning algorithm.

2. In credit card fraud detection train an auto encoder neural network (BNN) (implemented in keras) in unsupervised or semi-supervised fashion for anomaly detection .

3. The train model will be evaluated on pre label an anomalymized data set.
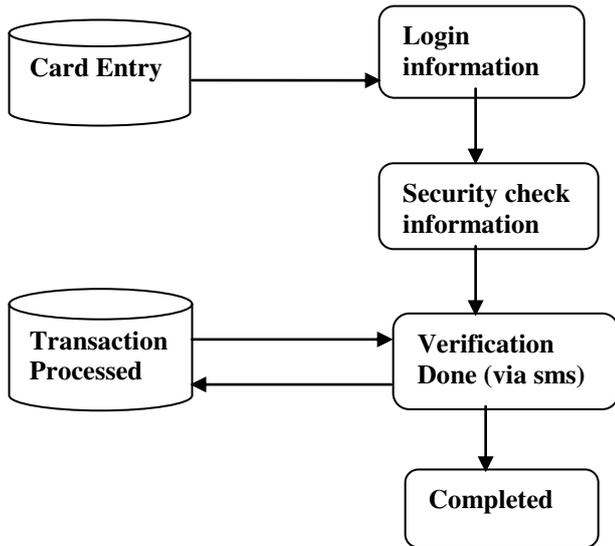
i. Will be using:

ii. Tenser flow

iii. Keras

Fig -1: Architecture for investigation of credit card

4. CONCLUSIONS

This project can be extended for other classification models such as BNN (Biological neural network)for better accuracy results. After implementing algorithm, highest accuracy give Isolation forest, Random Forest Model respectively 100% . And taken very low time is Ada Boost. So, concluding that for fraud detection Ada Boost algorithm is better than other algorithms.

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