Credit Card Fraud Detection Using Machine Learning

Anuja kalekar[1], Arachana Sakat[2], Srushti Mohite[3], Prof. S. D. Pandhare[4]

[1, 2, 3] Dept of Computer Science & Engineering
[4]Assistant Professor, Dept of Computer Science & Engineering
[1, 2, 3, 4] Sahakar Maharshi Shankarrao Mohite Patil Institute of Technology and Research, Akluj, Solapur, Maharashtra, (India)

Abstract- In today's world the Credit card fraud is the biggest issue and now there is need to combat against the fraud Detection. "Credit card fraud Detection is the process of cleaning dirty money, thereby making the source of funds no longer identifiable." On daily basis, the financial transactions are made on huge amount in global market and hence detecting fraud money activity is challenging task. As earlier is introduced to detect the suspicious activities but it is applicable only on individual transaction not for other bank account transaction. To overcome issues of fraud detection we propose Machine learning method using "Structural Similarity" to identify common attributes and behavior with the other bank account transaction. Detection of Credit card fraud detection transaction from large volume dataset is difficult, so we propose case reduction methods to reduces the input dataset and then find pair of transaction with other bank account with common behavior and attributes.

Keywords- Credit Card Fraud Detection, Structural Similarity, Dataset

I. INTRODUCTION

Credit card fraud scrub as much as 5% of the world's GDP (Gross Domestic Product) every year. Combating credit card fraud using AI is to detect the suspicious activities. Combating credit card fraud typically requires most entities that complete financial transactions to keep thorough records of their clients' accounts and activities. If they come across any information that appears to be suspicious, they are required to report it to the government for further investigation. In this Transaction records is check to detect credit card fraud activity if the suspicious data is detected. Here we use Artificial Intelligence and Machine Learning Algorithm to detect the suspicious activities and solve it by training the data of that activity. We are using supervised and unsupervised algorithm techniques.

II. LITERATURE REVIEW

The goal of data analytics is to delineate hidden patterns and use them to support informed decisions in a variety of situations. Credit card fraud is escalating significantly with the advancement of modernized technology and became an easy target for frauds. Credit card fraud has highly imbalanced publicly available datasets. In this paper, we apply many supervised machine learning algorithms to detect credit card fraudulent transactions using a real-world dataset. Furthermore, we employ these algorithms to implement a super classifier using ensemble learning methods. [1]

With the rapid development of Internet finance, the convenience of electronic transfer and the rapid expansion of credit card business, the use of credit cards in daily life is becoming more and more widespread. The risks associated with credit card frauds of all types are related to major issuing cards and all Cardholders have caused serious economic, credit, and other threats. With the alarming increase in the number of credit card fraud transactions in the world, the continuous refurbishment of credit card fraud tactics has mainly manifested itself in the fraudulent use of other people's credit card transactions and malicious overdrafts, the forgery of credit card fraud, and the use of obsolete credit cards fraud, etc., resulting increasing losses . Methods to identify credit cards effectively, quickly and accurately has become a hot topic in recent research.[2]

Currently, enterprise systems have been focusing on expenditure services through credit card broadly because it is convenient and quick to pay for products and services. Thus, this research emphasizes on the fraud detection of credit card payment by using the machine learning technique called RUSMRN. The proposed method adopts three base classifiers which are MLP, NB and Naïve Bayes algorithms. In addition, it can analyze the correctness to work with the unbalance datasets. Therefore, this research is focusing on the information of the credit card company of Taiwan for collecting data of customer behaviors in credit card payment. After that, it has brought the information to make prediction for correctness whether it has the risks in payment. The result

shows that the proposed method can achieve the best classification performance in terms of accuracy and sensitivity. [3]

ASSUMPTIONS AND DEPENDENCIES

- User must require the python.
- User has to install the pycharm on his pc.
- User has to login to the system.
- User has to their account details and receivers account details

FUNCTIONAL REQUIREMENTS

System feature

1. Database: The Personal details of sender and receiver also account details of sender and receiver stored in database.
2. User: User do the registration on the system for transaction, also user has account details of their own accounts and receiver accounts. user do the money transaction and then system keep the details of the sender and receiver.
3. System: Pre-processing on the dataset. Also apply machine learning to train the machine. and detect the accounts details which will connected with the credit card fraud.

EXTERNAL INTERFACE REQUIREMENT

1. User interfaces

User of the system will be provided with Graphical User Interface, there is no command line interface for the functions of the product.

2. Hardware interfaces

Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system. As for e.g. WAN – LAN, Ethernet Cross-Cable.

3. Software interfaces

PYTHON: Python uses high-level, interpreted, object-oriented scripting language. Python is designed to be highly readable. Other languages uses punctuation and fewer syntactical constructions but whereas python uses English keywords frequently. As it is interpreted language processing of program is done at runtime. In Python program is processed at runtime by the interpreter. During executing the program there is no need of compilation. It is user friendly for PERL and PHP users.

Compare to other languages programming in python is easy to interact and interpretation.Python supports encapsulation technique within objects as it is Object-Oriented.

Python supports wide range of applications such as WWW browsers to games.

Pycharm are usually developed in the python language.

4. Communication interfaces

The system can use the HTTP protocol for communication over the Internet and for the intranet communication will be through TCP/IP protocol suite.

III. METHODOLOGY

System Architecture

- Transaction data are given as an input.
- Next step is preprocessing on dataset.
- Next step is Feature selection.
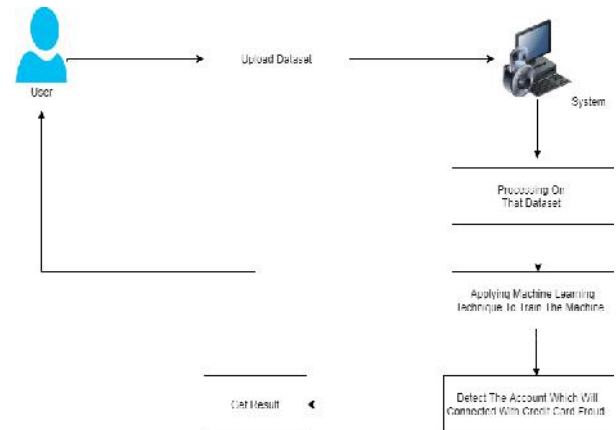- NN classifier is used to detect fraud in transaction.

Fig. System Architecture

IV. CONCLUSION

The proposed ML framework aims to find potential money-laundering groups among a large number of financial transactions. In order to improve the efficiency of the framework, case reduction methods such as matching transaction detection and balance score filter are used to narrow down the list of potential ML accounts. Next by taking advantage of structural similarity, we can identify and group potential credit card fraud accounts. Our preliminary

experimental results show a high degree of accuracy in detection of ML accounts.

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