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Credit card fraud detection

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ABSTRACT

In today's world, due to rapid increase of technology may countries in the world encouraging cashless transactions. Credit cards are easiest and fastest mode of payment both in offline as well as online transactions. So, the credit cards are becoming more popular mode of transaction in modern day life. This also increases fraud cases in credit card transactions. Peoples and companies face huge amount of loss of money due to this increasing case of fraud transactions. This also affect liability of the bank systems and service providers. This is why it becomes very important to detect fraud transactions and avoid financial loss. The good thing is fraud tends to occur in pattern so the machine learning algorithms can help us to predict them. Our objective is to reduce tedious work of fraud detection process with the help of machine learning and data science.

Keywords— Credit card, fraud detection, machine learning, data science.

1. INTRODUCTION

In modern day life credit cards are generally used for shopping both in online and offline mode. With increase in uses of credit cards, fraud transactions are also increasing. Credit card fraud happens either with the theft of the physical card or with the important data associated with the account, such as card account number or other information that necessary available. As per the United States Federal Trade Commission report till the mid-2000s the theft rate of identity was holding stable, but it got increased by 21% during 2008. According to the Nilson Report, worldwide losses from card fraud rose to US\$21 billion in 2015, up from about US\$8 billion in 2010. By 2020, that number is expected to reach US\$31 billion. Detecting fraud is beneficial for both the parties i.e. service providers like bank and costumers, so that the customers of credit card companies are not charged for items that they did not purchase

and it also helps to increase trust of the customers on the banking system and service providers.

The scam usually occurs when someone accesses your credit or debit card numbers from unsecured web sites or via an identity theft scheme to fraudulently obtain money or property. Due to its recurrence and the harm it may cause to both individuals and financial institutions, it is crucial to take preventive measures as well as identifying when a transaction is fraudulent. Fraud detection involves monitoring the activities of populations of users in order to estimate, perceive or avoid objectionable behavior, which consist of fraud, intrusion, and defaulting. This is a very relevant problem that demands the attention of communities such as machine learning and data science where the solution to this problem can be automated.

We collected dataset of credit card transactions from Kaggle which contains 284807 transactions these transactions were made by European cardholders in September, 2013. Dataset contains only numerical inputs which are PCA transformed. This are transactions made by cardholders in two days. As fraud tends to happen in pattern data science algorithms can become best solution. Objective of this project is to detect fraudulent transactions by training various models and analyzing the results obtained from training process. We tend to implement various fraud detection algorithms and choose the best algorithm among them. Along with this we will explore the use of data visualization techniques common in data science, such as parameter histograms and correlation matrices, to gain a better understanding of the underlying distribution of data in our data set.

2. LITERATURE SURVEY

In the history multiple supervised and unsupervised algorithms are implemented to detect the fraud. But our aim is to tackle main challenges related with the database such as large number

of transactions, high imbalance of data and data availability as it is highly sensitive information so generally financial authorities are not always ready to share. Secret Markov Model is one of the mathematical methods for engineers and scientists to overcome the specific sorts of problems. Notes that bank card scams can be identified during purchases using the Hidden Markov Model. We are intended to improve accuracy as no model is 100% accurate for detecting frauds.

It has been really challenging tasks for banks to detect frauds day by day as fraudsters are really intelligent persons, they always use new methods to do frauds. They are really skilled persons in the digital life so that fraud detection systems should be updated time to time. Due to emerging technology in the banking sector fraud detection is also become major important as it is very serious issue related to security so this domain will have vast scope in future so we have chosen this topic for research work. Main objective of this project is to automate fraud detection system using machine learning with the help of purposed system we can detect fraud transactions in easy, fast and effective way.

3. METHODOLOGY

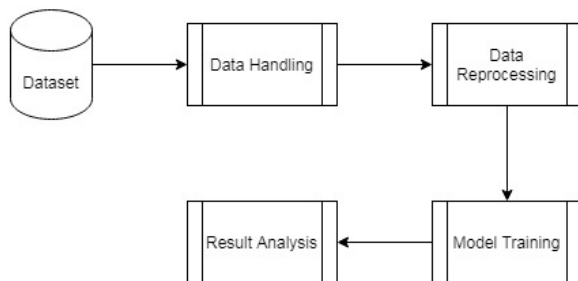


Fig.1. Flow Diagram

The above given diagram shows flow of the model. It consists of five stages from collecting data to final results. In first stage data is collected about credit card transactions from legal sources and then some data handling steps carried out for

understanding additional information about the data. In data preprocessing data is transformed and encoded in such a way that machine can easily parse it or it can be easily interpreted by the machine learning algorithm then this cleaned data is used for model training. In model training model is trained over processed data using various machine learning techniques. Finally, results are analyzed for better performance of the system.

4. CONCLUSION

In this paper, we purposed a system which can beneficial for classifying fraudulent and non-fraudulent entries from data. The system is faster and efficient, works on Python coding language and able to detect credit card frauds in real world situations.

5. FUTURE SCOPE

This system fulfilling basic requirements of the project so it is at the basic stage we can improve performance of the system by implementing various data science techniques.

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