Credit Card Fraud Detection

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***Abstract*—"Fraud detection is a set of activities that are taken to prevent money or property from being obtained through false pretenses."Fraud can be committed in different ways and in many industries. Credit card frauds are easy and friendly targets. E-commerce and many other online sites have increased the online payment modes, increasing the risk for online frauds. Increase in fraud rates, researchers started using different machine learning methods to detect and analyse frauds in online transactions. 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.**
Lots of mony are lost due to credit card fraud every year. There is a lack of research studies on analyzing real-world credit card data owing to confidentiality issues. In this paper, machine learning algorithms are used to detect credit card fraud. To evaluate the model efficacy, a publicly available credit card data set is used. The System prediction level & accuracy of fraud detection is not 100 precent accurate ,So there is a chance of getting fraud.
Then, a real-world credit card data set from a financial institution is analyzed. In addition, noise is added to the data samples to further assess the robustness of the algorithms. The experimental results positively indicate that the majority voting method achieves good accuracy rates in detecting fraud cases in credit cards.

Keywords— Credit Card, AI , Machine Learning , Python

I. INTRODUCTION

A credit card is a thin handy plastic card that contains identification information such as a signature or picture, and authorizes the person named on it to charge purchases or services to his account - charges for which he will be billed periodically. Today, the information on the card is read by automated teller machines (ATMs), store readers, bank and is also used in online internet banking system.

They have a unique card number which is of utmost importance. Its security relies on the physical security of the plastic card as well as the privacy of the credit card number.

There is a rapid growth in the number of credit card transactions which has led to a substantial rise in fraudulent activities. Credit card fraud is a wide-ranging term for theft and fraud committed using a credit card as a fraudulent source of funds in a given transaction.

Generally, the statistical methods and many data mining algorithms are used to solve this fraud detection problem. Most of the credit card fraud detection systems are based on artificial intelligence, Meta learning and pattern matching. The Genetic algorithms are evolutionary algorithms which aim to obtain the better solutions in eliminating the fraud. A high importance is given to develop efficient and secure electronic payment system to detect whether a transaction is fraudulent or not. In this paper, we will focus on credit card fraud and its detection measures.A credit card fraud occurs when one individual uses other individuals' card for their personal use without the knowledge of its owner.

When such kind of cases takes place by fraudsters, it is used until its entire available limit is depleted. Thus, we need a solution which minimizes the total available limit on the credit card which is more prominent to frauds. And, a Genetic algorithm generates better solutions as time progresses. The complete emphasis is given on developing efficient and secure electronic payment system for detecting the fraudulent.

II. LITERATURESURVEY

Fraud act as the unlawful or criminal deception intended to result in financial or personal benefit. It is a deliberate act that is against the law, rule or policy with an aim to attain unauthorized financial benefit.

Numerous literatures pertaining to anomaly or fraud detection in this domain have been published already and are available for public usage. A comprehensive survey conducted by Clifton Phua and his associates have revealed that techniques employed in this domain include data mining applications, automated fraud detection, adversarial detection. Unconventional techniques such as hybrid data mining/complex network classification algorithm is able to perceive illegal instances in an actual card transaction data set, based on network reconstruction algorithm that allows creating representations of the deviation of one instance from a reference group have proved efficient typically on medium

sized online transaction. The fraud detection is a complex task and there is no system that correctly predicts any transaction as fraudulent. The properties for a good fraud detection system are:

1. Should identify the frauds accurately.
2. Should detect the frauds quickly.
3. Should not classify a genuine transaction as fraud.

Outlier detection is a critical task as outliers indicate abnormal running conditions from which significant performance degradation may happen. Techniques used in fraud detection can be divided into two: 1) Supervised techniques where past known legitimate/fraud cases are used to build a model which will produce a suspicion score for the new transactions. 2) Unsupervised are those where there are no prior sets in which the state of the transactions are known to be fraud or legitimate.

III. PROBLEM STATEMENT

The Credit Card Fraud Detection Problem includes modeling past credit card transactions with the knowledge of the ones that turned out to be fraud. This model is then used to identify whether a new transaction is fraudulent or not. Our aim here is to detect 100% of the fraudulent transactions while minimizing the incorrect fraud classifications.

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IV. USE OF HMM FOR CREDIT CARD FRAUDDETECTION

An FDS runs at a credit card issuing bank. Each incoming transaction is submitted to the FDS for verification. FDS receives the card details and the value of purchase to verify whetherthe transaction isgenuine ornot. The types ofgoods thatareboughtinthattransactionarenotknowntotheFDS.It tries to find any anomaly in the transaction based on the spending profile of the cardholder, shipping address, and billing address, etc. If the FDS confirms the transaction to be malicious,itraisesanalarm,andtheissuingbankdeclinesthe transaction.Theconcernedcardholdermaythenbecontacted and alerted about the possibility that the card is compromised. In this section, we explain how HMM can be used for credit cardfraud detection.

V.PROPOSEDSYSTEM

Our Project main purpose is to making Credit Card Fraud Detection awaring to people from credit card online frauds. the main point of credit card fraud detection system is necessary to safe our transactions & security. With this system, fraudsters don't have the chance to make multiple transactions on a stolen or counterfeit card before the cardholder is aware of the fraudulent activity. This model is then used to identify whether a new transaction is fraudulent or not. Our aim here is to detect 100% of the fraudulent transactions while minimizing the incorrect fraud classifications.

The following diagram shows the complete SystemArchitecture:

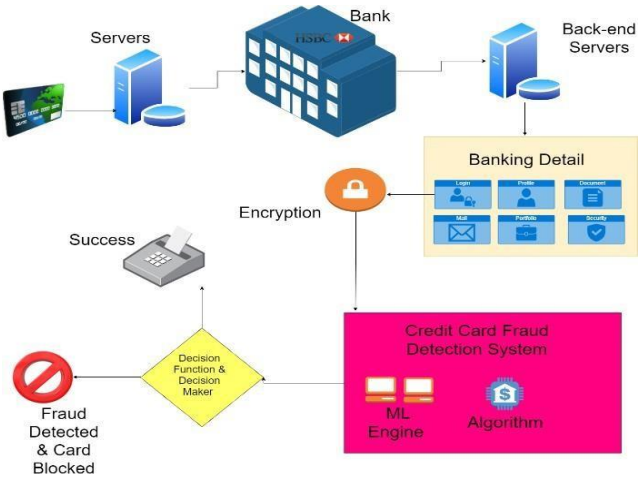

Fig. System Architecture Diagram

With the help of following block diagram we can understand the functionalities of a Credit Card Fraud Detection The following diagram shows the complete Block Diagram:

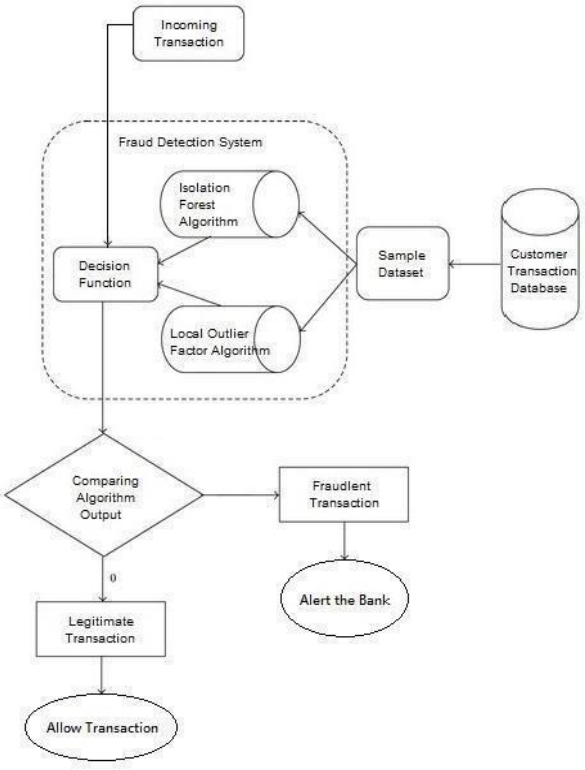

Fig. Block diagram for Credit Card FaudDetection.

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