CREDIT CARD FRAUD DETECTION USING MACHINE LEARNING

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Abstract: **Credit card transactions have become common location these days and so are the frauds related to it. One of the most commonplaces to carry out fraud is to acquire the card facts illegally and use it to make on line purchases. For credit card businesses and merchants, it's far in-viable to detect these fraudulent transactions among heaps of regular transactions. If enough statistics is gathered and made available, device mastering algorithms may be implemented to remedy this problem. In this work, popular supervised and unsupervised device getting to know algorithms were implemented to discover credit card frauds in an enormously imbalanced dataset. It was found that unsupervised machine learning algorithms can cope with the skewness and give nice classification results**

Index Terms - **Component, formatting, style, styling, insert.**

I. INTRODUCTION

Machine Learning is the study of computer systems that learns from the data and experience. Machine Learning is the application of artificial intelligence that provides machines the ability to learn and develop from past data. With the help of machine learning, we can observe the past data and make decisions. There are many types of machine learning methods like supervised learning, unsupervised learning, reinforcement machine learning. Credit card is the essential need for the online transactions, for online shopping and many more things. But on other hand there is a risk that fraud can happen with card at any-time, anywhere. There are no constant patterns for frauds, because of that reason the good credit card fraud detection system should be developed to avoid the frauds. So here we are using machine learning for identification and detection of fraud..

Motivation:

II. The motivation for doing this project is firstly to identify different types of credit card fraud, and secondly to review alternative techniques that have been used in fraud detection. The huge annual financial losses incurred by card issuers due to fraudulent use of their card products. We address this problem by proposing the use of a dynamic machine learning method in an attempt to model the time series inherent in sequences of same card transactions. Fraudsters learn about new technology that allows them to execute frauds through online transaction. Fraudsters assume the regular behavior of consumers and fraud patterns change fast, this motivates us to detect frauds in credit cards and reduce number of fraudulent transactions

RELATED WORK OR LITERATURE SURVEY

[1]"Bank Fraud Detection Using Support Vector Machine"

With the advancement of communications and computing, bank fraud is becoming more prevalent in terms of both types and amounts. In this paper, we examine the various types of fraud to which banks are vulnerable, as well as data mining tools that enable early detection of data that has already been accumulated in a bank.

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[2] Real-time Credit Card Fraud Detection Using Machine Learning.

Credit card fraud occurs frequently and results in significant financial losses. The number of online transactions has increased dramatically, with online credit card transactions accounting for a large portion of these. As a result, banks and financial institutions place a high value on credit card fraud detection software.

[3] Credit Card Fraud Detection - Machine Learning methods
The algorithms used in the experiment were Logistic Regression, Random Forest, Naive Bayes and Multilayer Perceptron.It should focus on different machine learning algorithms such as genetic algorithms, and different types of stacked classifiers, alongside with extensive feature selection to get better results. Results show that each algorithm can be used for credit card fraud detection with high accuracy. Proposed model can be used for detection of other irregularities.

[4]Performance Evaluation of Machine Learning Algorithms for Credit Card Fraud Detection

Credit card transactions have become commonplace in recent years, as have the frauds that go along with them. Obtaining card information illegally and using it to make online purchases is one of the most common methods of fraud. It is impossible for credit card companies and merchants to detect these fraudulent transactions among thousands of legitimate transactions.Credit cards are widely used as a payment instrument by both online and offline buyers due to their ease of use and ability to borrow money

EXISTING SYSTEM AND DISADVANTAGES

Now a days, credit card has become a popular payment method in online shopping for goods and services. Since, the fraudsters have tried to falsely adopt normal behaviour of users to make their own payment. Due to this problems most research on credit card fraud detection has focused. The credit card fraud detection problem includes modelling past credit card transactions with the knowledge of the once that turned out to be fraud. This model then used to identify whether a new transaction is fraudulent or not. Fraud detection systems differ from a classification task because in existing system only small set of supervised samples are provided by the human investigators and they checks only few alerts. Also, labels are the majority of transactions are available only several days later after customers have report unauthorized transactions.

Disadvantages:

- There is no guarantee that the predicted result is correct.
- Time consuming process.

ADVANCED SYSTEM AND ADVANTAGES

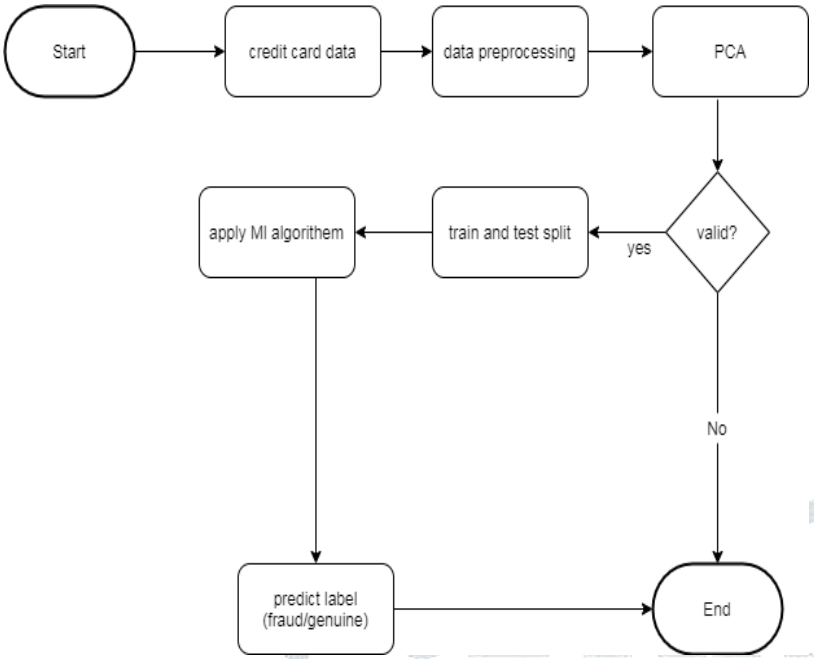
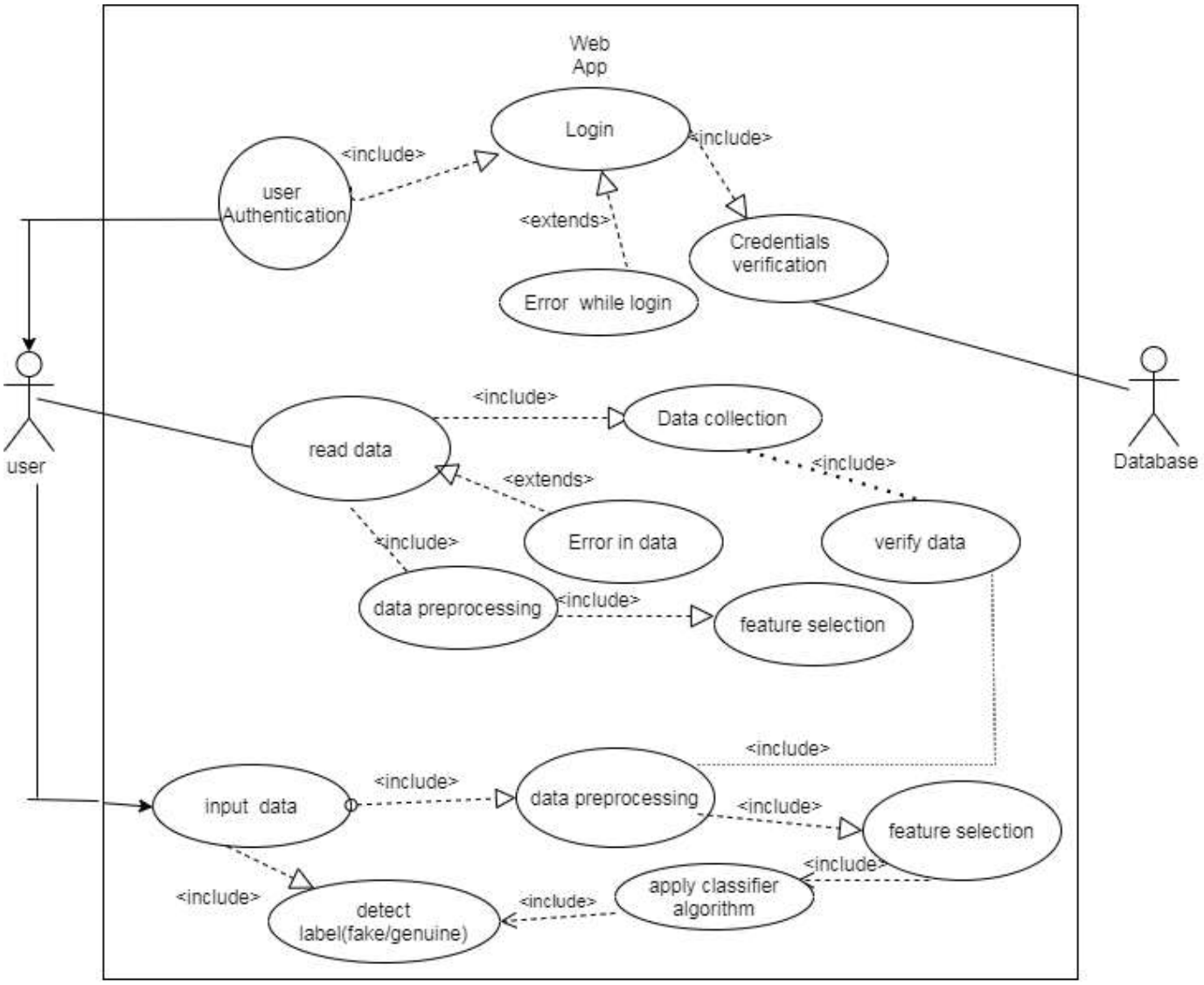


Figure: Advance System Architecture

shows the system architecture of the credit card fraud detection system. In above architecture there are mainly five layers of control are present in fraud detection system. First layer that is terminal layer checks the security for all the transactions. This layer is used when any transaction is initialized. Security checks like correct PIN code, number of attempts, valid usernameavailable balance, validity of credit card are performed by this layer. After checking all valid checks the transaction will proceed further otherwise it will denied. Then transaction blocking rules are the rules which are defined for secure transaction. These rules use the few information available when the payment is requested, without analysing historical records or cardholder profile. If there is internet transactions initialized Credit Card Fraud Detection using Machine Learning on a website which is unsecured then deny the transaction request. Transactions blocking rules are designed so that it should guarantee real-time operations and avoid blocking many genuine transactions. Scoring rules are also expert-driven models that are expressed as if-then statements. An example of scoring rule can be IF previous transaction in a different continent AND less than one hour from the previous transaction THEN fraud score = 0.95. Scoring rules can be subjective as they can be designed differently. Data Driven Model (DDM) is purely data driven and adopts a classifier or another statistical model to estimate the probability for each vector being a fraud. It is expected that fraudulent patterns should be detected from this layer. Only a limited number of alerted transactions are reported to the investigators, which represent the final layer of control. Investigators are the professionals experienced in analysing credit card transactions and are responsible of expert-driven layers of fraud detection system. Any card that is found victim of a fraud is immediately blocked, to prevent further fraudulent activities and this task is performed by investigators. Using this system architecture, transaction is detected as fraud or normal.

Use Case Diagram:



Advantages:

1) Allows cross platform compatibility.
2) Easy Implementation.
3). Distributed Architecture.
4). Increases performance rate.
5). Achieve optimized results..

CONCLUSION AND FUTURE WORK

We formalise a real world FDS framework that meets realistic working conditions. In a real-world scenario, there is a strong alert-feedback interaction that has to be explicitly considered feedbacks and delayed samples should be separately handled when training a FDS. Aggregating two distinct classifiers is an effective strategy and that it enables a promoter adaptation in concept drifting environments. Feedbacks play a central role in the proposed learning strategy, which consists in separately training a classifier on feedbacks and a classifier on delayed supervised samples, and then aggregating their posteriors to identify alerts

The findings obtained here may not be generalized to the global fraud detection problem. As future work, some effective algorithm which can perform well for the classification problem with variable misclassification costs could be developed

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