An Effective Fraud Detection System Using Mining Technique

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Abstract- "Detection of fraud in e-commerce payment system" or "An effective fraud detection system using mining technique" is some more related to Mobile computing. Usage of credit card has increased. As we know credit card has become the most popular mode of payment. Customers can easily purchase goods through online. All amounts is credited or debited through credit card. Online banking is also provided for customers to enable them to easily debit, credit or transfer their amount. Whenever a new customer joins, the administrator check the details provided by the customer and send a mail to the customer giving permission for him/her to access the account. When we are thinking for purchasing some item online, then we've to aware of fraud as well. This Paper tells that during transaction, it detect fraud of card and alerts the customer regarding the fraud. The matter here is how we are able to know about the fraud, during the credit card transaction, it detect the fraud and the false alert is being minimized by using genetic algorithm. Genetic algorithms are the algorithms which aim at obtaining better solutions as time progresses. Sometimes we don't know about the payment page is genuine or not and we submit all the card details, so by doing this the fraud have easily got all the information. We should always be alert while we are going to purchase some item online**.**

Index Terms- Genetic algorithm**,** Data mining, Neural Networks

I. INTRODUCTION

Credit card is becoming one of the most famous target for fraud but this is not the only one fraud that we are talking to reduce. The credit card fraud may happen in so many ways, which is depending on the various types of fraud. It encapsulates bankrupt fraud, counterfeit fraud, application fraud and behavioral fraud. If the person who is buying some item but he has no cash in hand then payment through credit card is one of the method of purchasing goods or services. Credit card is one of the easy and simple methods of offering credit to a consumer. As we know every credit card carries an identifying number for which we can use speeds shopping transactions. In the credit card business, fraud occurs when a lender is fooled by a borrower who's offering to purchase some items and borrower easily believe that the borrower credit card account will provide payment for this purchase. Hence there is no payment will be done, and if the payment is done, then the credit card issuer will reclaim the amount which is paid by him. Today, as we know with the expansion of e-commerce, it is happening on the internet that most of the credit card fraud is conducted. Fraudsters have usually creating problem and affecting business which is controlled by the criminals. Credit card fake is now a common problem in the society which should be avoided so that true customers can enjoy their shopping online. Our project is designed to allow only valid customers, so that malicious customers can be avoided.

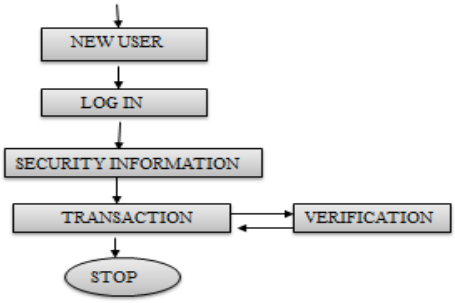

Fig1: Process of using card

II. RELATED WORK

Algorithms are often used as recommended for predictive methods as a means of detecting fraud. One of the algorithm that I'm going to use is based on Genetic programming in which order to establish logic rules which is capable of classifying credit card transactions into suspicious and non-suspicious classes. As we know credit card fraud is an act which is against the law and an act of criminal dishonesty. The purpose of this paper is to study State of the credit card industry, Different types of frauds, how fraudsters attempt to take advantage of loopholes, Impact of credit card fraud on card holders, merchants, issuers. While the exact amount of losses due to fraudulent activities on cards is unknown, according to one survey reports says that the figure for year 2002 probably exceeds $2.5billion.Credit card fake is now a common problem in the society which should be avoided so that a genuine customers can enjoy their shopping online. Our project is designed to allow only valid customers, so that malicious customers can be avoided.

III. IMPLEMENTATION

The user login with the user id and password given to him. Whenever a new user registers, his personal details are verified with the bank database available and an email with his auto generated user id and password is sent to his email id. So next time to login into the website he/she has to check his/her email

for userid and password. Whenever a new product comes into the market the admin updates it in the database. The admin can also view all the products and also the customers. The admin has also provision to update the product stock and product rate. The user can buy any product provided in the website. The product will be delivered within three days. By this we can maintain the customer satisfaction**.** Every time when a customer buys products his/her credit card details are verified to check the amount. Whenever a customer buys product, his credit card is verified each time to see only valid user buys the product. The users are allowed to change their personal details whenever necessary.

A. Existing System

Whenever a new user registers, his personal details are not cross checked. Access is provided to him instantly. There is no credit card fake checking. This may allow any user to register and thus allowing malicious users too.

In the part of existing system the fraud is detected when the fraud is done that means the fraud is detected after the complaining of the card holder. So between these periods the card holder have already faced lots of trouble before the investigation finish. As we know in these days lots of online purchase are made so we don't know who is the person and how is using the card online, we can only capture the IP address for verification purpose. So there need a help from the cyber crime to investigate the fraud.

B. Proposed System

In proposed system, whenever a new user registers, his credit card details are cross checked and then only his user id is generated. This allows only correct users to login each time. At the same time credit card details are verified each time whenever a customer buys product. This verification enables only right users to buy products.

In proposed system have not required fraud signatures and is going to detect frauds by considering a cardholder's spending habit.

C. Genetic Algorithm

Genetic algorithms are evolutionary algorithms which aim at obtaining better solutions as time progresses. It has also been used in data mining mainly for variable selection and mostly coupled with other data mining algorithms. During the credit card transaction, the fraud is going to detect and the number of unexpected user alert is being minimized by using genetic algorithm.

- We are going to use the formula $y = ax^4 + bx^3 + cx^2 + dx + e$
- Our "genes" are a, b, c, d and e
- Our "chromosomes" is the array [a, b, c, d, e]
- Our evaluation function for one array is:
- For every actual data point (X, Y), (I'm using capital letter mean "actual data")
- Compute ý = aX4 + bX3 + cX2 + dX +e
- Find the sum of (Y – ý)2 over all X
- The sum is Our measure of "badness" (larger numbers are worse)
    - Example: For [0, 0, 0, 2, 3] and the data points (1, 12) and (2, 22):
- ý = 0X4 + 0X3 + 0X2 + 2X +3 is 2 + 3 = 5 when X is 1
- ý = 0X4 + 0X3 + 0X2 + 2X +3 is 4 + 3 = 7 when X is 2
- (12 – 5)2 + (22 – 7)2 = 72 + 152 = 274
  If these are the only two data points, the "badness" of [0, 0, 0, 2, 3] is 274

D. Neural Networks

Neural network is one of the algorithm that is to be used and often recommended for fraud detection. 'Dorronsoro et al in 1997' has been developed one of the method which is technically accessible online fraud detection system, based on a neural network. However, the main constraint is that data need to be clustered by type of account. Data mining tools, such as 'Clementine' allow the use of neural network technologies, which have been used in credit card fraud.

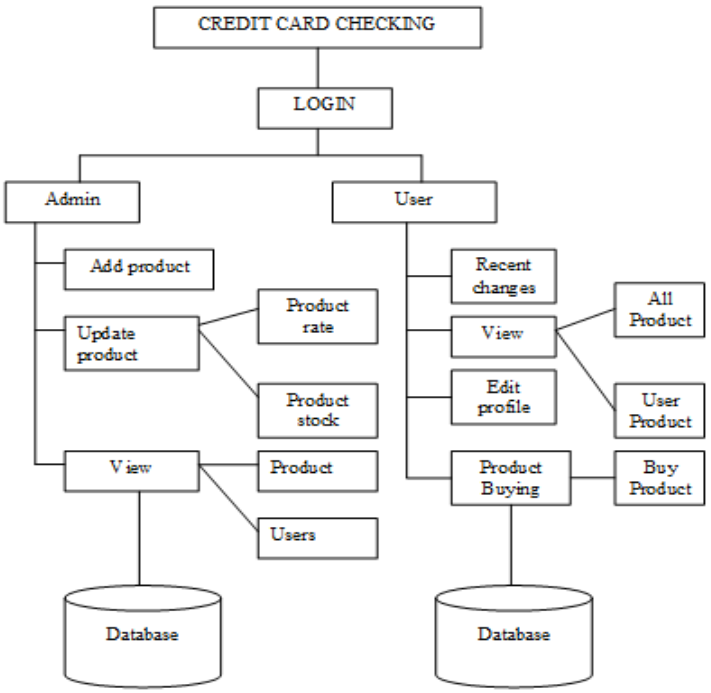

Fig2: System Flow diagram

IV. RESULTS AND DISCUSSION

The implementation of this application is shown in one system,it is prepared in Windows 7 OS with the help of .NET technology with C# language,HTML used for designing part,with the help of SQL query the result will come and we are using mining techniques for the stored database for retrieving the actual and useful information.

C# is one of the families of languages Microsoft has designed to be part of its .NET framework. This paper gives a comprehensive introduction to C#. C# is part of the .NET Common Language Infrastructure (CLI). The CLI is a framework that enables the multiple .NET languages to talk to each other, and is specifically designed for strongly type's languages.

Table1: **Below table shows the studies of investigation of different statistical techniques in credit card fraud**

Study	Country	Method	Details
Bently et al. (2000)	UK	Genetic programming	Logic rules and scoring process
Bolton & Hand (2002)	UK	Clustering techniques	Peer group analysis and break point analysis
Quah &Sriganesh (2007)	Singapore	Neural networks	Self-Organizing Map (SOM) through real-time fraud detection system.
Zaslavsky & Strizkak (2006)	Ukraine	Neural networks	SOM, algorithm for detection of fraudulent operations in payment system

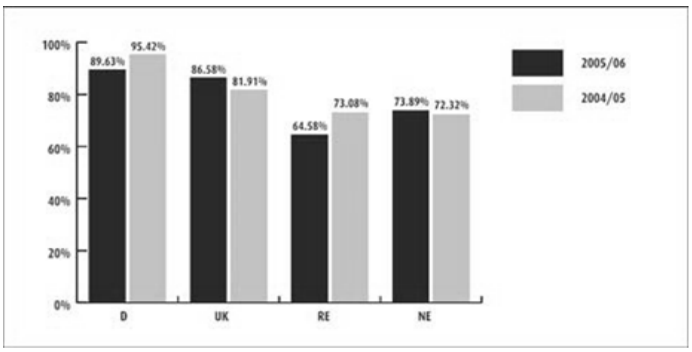

Fig3. Success rates for credit card transactions by consumer country, in all shops

Table2: Methods of Credit Card Fraud and their percentage of occurrence

Method	Percentage
Lost or Stolen card	48%
Identity theft	15%
Skimming (or cloning)	14%
Counterfeit card	12%
Mail intercept fraud	6%
Other	5%

V. CONCLUSION AND FUTURE WORK

As card business transactions increase, so global networking presents as many new opportunities for criminals as it does for businesses. While offering numerous advantages and opening up new channels for transaction business, the internet has also brought in increased probability of fraud in credit card transactions. The good news is that technology for preventing credit card frauds is also improving many folds with passage of time. Reducing cost of computing is helping in introducing complex systems, which can analyse a fraudulent transaction in a matter of fraction of a second. It is equally important to identify the right segment of transactions, which should be subject to review, as every transaction does not have the same amount of risk associated with it. The next step in this research paper is to focus upon the implementation of a 'suspicious' scorecard on a real data-set and its evaluation. The main tasks is to build scoring models to predict fraudulent behavior, taking into account in the fields of behavior that relate to the different types of credit card fraud identified in this paper, and to evaluate the associated ethical implications. The method proves accurate in deducting fraudulent transaction and minimizing the number of false alert. Genetic algorithm is a novel one in this literature in terms of application domain. If this algorithm is applied into bank credit card fraud detection system, the probability of fraud transactions can be predicted soon after credit card transactions. And a series of anti-fraud strategies can be adopted to prevent banks from great losses and reduce risks.

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