

Credit Card Fraud Detection & Prevention System

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ABSTRACT

Due to the increase and rapid development of E-Commerce, use of credit cards for online consumptions has dramatically increased and it caused an explosion in the credit card fraud. As credit card becomes the most standard mode of payment for both online as well as regular purchase, cases of fraud associated with it are also rising. In real life, fake transactions are spread with unaffected transactions and simple pattern matching techniques are not often enough to detect those frauds accurately. Implementation of effective fraud detection systems has thus become imperative for all credit card issuing banks to minimize their losses. Modern techniques based on Artificial Intelligence, Machine learning, Data mining, Sequence Alignment, Genetic Programming, Fuzzy logic etc., has evolved in detecting various credit card fake transactions. A clear understanding on all these approaches will certainly lead to an efficient credit card fraud detection system. This paper define a survey of various techniques used in credit card fraud detection mechanisms and evaluates each policy based on certain design criteria.

Keywords- Fraud Detection, Genetic Programming, Data Mining, Neural Network.

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I. INTRODUCTION

Credit card fraud is nothing but the unauthorised use of any system or offensive activity through the use of physical card or card detail's without any acknowledgement of the cardholder. The credit card is a small plastic card which is given to user for his personal use by bank. With the increased growth in use of credit card transaction; the offensive activities are also got increased. The credit card fraud can be of two types 1. Virtual 2. Physical. In Physical card access when cardholder takes his card physically with him to make a transaction. In such case the offender steal the credit card and as soon as cardholder came to know about card he does the transactions. In virtual kind of cases the offender only has to get the information about the card such as security pin, card number, etc. In such cases the cardholder is not have any idea about such thing that his card is getting miss used as soon as he came to know about this all the money or any other transaction is done by offender. To do such thing the simple tools and technic are used by offender. And to give any kind of information about this all fraud the old technic are used by bank. This is not that much power full and fast and also not effective to

identify fraud. The technic mostly used is outline detection. But in this technic the algorithm which is used in current days are not that much work efficient. So that with this current state the perfect and work efficient algorithm is has to use. So that in this system we are going to use the genetic algorithm with ANN and K- means algorithm to develop a power full and effective system to detect and prevent from fraud.

II. LITERATURE SURVEY

Adaptive pre-processing in evolving data, one of the major assumptions in adaptive learning research, which assumes that data comes already pre-processed or that pre-processing is an integral part of a learning algorithm implying that there is no need for adaptive pre-processing. Three scenarios where decoupling adaptive pre-processing and adaptive learning may be beneficial. Our paper demonstrated that the situations in which decoupling the adaptively of pre-processing and the predictor may benefit the final accuracy. a prototype approach that handles adaptively of pre-processing and adaptively of predictor separately. Case

study with real production data demonstrated that the proposed prototype approach may help to improve the prediction accuracy [1].

a method has been proposed for predicting the internet user's age based on their browsing history using Artificial Neural Network. It establishes suitability of non-linear ANN as predictive tool for internet user population. Final result gives an accuracy of 93.7%. If implemented as a web service, this tool can be used to stop youngsters from accessing censored contents online [2].

a comparative study of nine fraud detection methods based on credit card i.e. Decision Tree, Neural Network, Bayesian Network, genetic algorithm, support vector machine, k nearest neighbour and Artificial Immune System, Hidden Markov Model, fuzzy neural network and fuzzy Darwinian system. All the techniques of credit card fraud detection described in the own strengths and weaknesses [3].

III. CURRENT SCENARIO

In fraud detection we have to take care about how can be the situation will work as a percept from an environment. By which we can get the knowledge about fraud committed. There are many examples in India which shows that how credit card fraud is committed and how current system will work on it. In one case the person who sties in Pune Maharashtra will lost his credit card in train at Mumbai when he came in Pune he found that he lost his card as soon as he call in bank to block his card he understand that the card is used by someone and transactions are done because his cell phone is not in range at that time he dint get any notification.

The same card fraud case was happened in Delhi. In this case the offender call the cardholder as banker and so smartly took all personal information of his and also the secret pin number of card. With the help of all this information the offender committed the online parches from different websites. When the person came to know about all this it was to let already 50000 rupees shopping has committed by the offender. Now from all this only one thing is came to know that all this tools and technic in current days are not any use to detect and prevent from credit card fraud. All this we need is that the batter and effective system which detects and prevent from all such kind of offensive activity.

Disadvantages of Current System:

The current system is not that quick and power full to detect such a fraud. The cases are not solved by the bank. The call is not the way to give information about the user activity. The notification by simple text message is not a solution of the thing.

IV. GENETIC ALGORITHMS & NEURAL NETWORK

Genetic algorithms, inspired from natural evolution were first introduced by Holland (1975). Genetic algorithms are an evolutionary algorithm which provides better solutions as time progresses. Fraud detection has been usually in domain of Ecommerce data mining. GA is used in data

mining mainly for variable selection and is mostly coupled with other DM algorithms. Its combination with other techniques has a very good performance. GA is used in credit card fraud detection for reducing the wrongly classified number of transactions. And it is easily accessible for computer programming language implementations which make it strong in credit card fraud detection. But this method has high performance and is quite expensive.

Neural Network –

Fraud detection methods based on neural network are popular. An artificial neural network consists of an interconnected group of artificial neurons .The principle of neural network is motivated by the functions of the brain especially pattern recognition and associative memory . The neural network identify similar patterns, predicts future values or events based upon the associative memory of the learned patterns. It is applied in classification and clustering. The advantages of neural networks over other techniques are that this model learns from the past and thus, improve results as time passes. They can also extract rules and predict future activity based on the current situation.

The two phases of neural network are training and recognition. Learning in a neural network is called training. The NN training methods are supervised and unsupervised. In supervised training, samples of both fraudulent and non-fraudulent records are taken to create models. While unsupervised training simply seeks those transactions, which are more different from the normal one though the unsupervised techniques do not need the previous knowledge of fraudulent and non-fraudulent transactions in database. NNs are best for large transaction dataset.

V. SYSTEM WORK

The Experiment process has four steps.

Step1. Input group of data credit card transactions, every transaction record with n attributes, and standardize the data, get the sample finally, which includes the confidential information about the card holder, store in the data set.

Step2. Compute the critical values, Calculate the CC usage frequency count, CC usage location, CC overdraft, current bank balance, average daily spending

Step3. Generate critical values found after limited number of generations. Critical Fraud Detected, Monitor able Fraud Detected, Ordinary Fraud Detected etc. using Genetic algorithm

Step4. Generate fraud transactions using this algorithm. This is to analyse the feasibility of credit card fraud detection based on technique, applies detection mining based on critical values into credit card fraud detection and proposes this detection procedures and its process.

Genetic algorithm

The initial population is selected randomly from the sample space which has many populations. The fitness value is calculated in each population and is sorted out. In selection process is selected through tournament method. The

Crossover is calculated using single point probability. Mutation mutates the new offspring using uniform probability measure. In elitism selection the best solution is passed to the further generation. The new population is generated and undergoes the same process it maximum number of generation is reached as shown in Fig.1

The basic GA operators are crossover, selection and mutation.

Selection—or survival of the fittest. The key to selection is to give preference to better outcomes.

Mutation—or randomly trying combinations and evaluating the success (or failure) of the outcome.

Crossover—or combining portions of good outcomes in the hope of creating an even better outcome.

give security to the user and it assures the no fraud will be committed by the offender.

VII. REFERENCE

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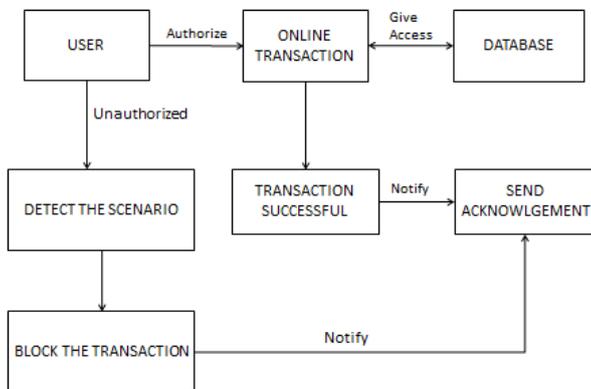


Fig 1: Process Flow of Fraud detection system

Advantages of system:

The system which is proposed is so far the best system to detect and prevent the credit card fraud. In this system there is no need to call the bank to give information about card lost. The less utilization of card will be possible by offender. The security in any transition of card is increased. The cardholder is more secure in both virtual as well as physical attacks. The most work efficient and fastest detection system ever.

VI.CONCLUSION

Credit card use in now days is very common and necessity of each one. But the fraud committed in this system get increased now days so rapidly. The systems which are used to stop this activity are not very effective and useful. So that the technic which is used to stop this all it should be very effective and powerful. So the system purposed by us is very much effective, fast, and accurate. Our system will