

Credit Card Fraud Detection Using Hidden Markov Model-A Survey

Nitu Kumari, S. Kannan and A. Muthukumaravel

Department of MCA, Bharath University,
Selaiyur, Chennai, 73, Tamil Nadu, India

Abstract: Due to a rapid advancement in the electronic commerce technology, the use of credit cards has dramatically increased. As credit card becomes the most popular mode of payment for both online as well as regular purchase, cases of fraud associated with it are also rising. In this paper, we model the sequence of operations in credit card transaction processing using a Hidden Markov Model (HMM) and show how it can be used for the detection of frauds. An HMM is initially trained with the normal behavior of a cardholder.

Key words: Electronic commerce technology • Mode of payment • Hidden Markov Model

INTRODUCTION

An HMM is initially trained with the normal behavior of a cardholder. If an incoming credit card transaction is not accepted by the trained HMM with sufficiently high probability, it is considered to be fraudulent. At the same time, we try to ensure that genuine transactions are not rejected. We present detailed experimental results to show the effectiveness of our approach and compare it with other techniques available in the literature.

Proposed System: Here we are introducing a project for the credit card fraud detection using Hidden Markov Model (HMM). It is done on the basis of the spending profile of the card holder. The usual spending of the cardholder is being checked by the FDS (Fraud Detection system) in the bank. The system checks all the spending of the user. When it turns unusual the method blocks the transaction on the card [5]. And it alerts the bank. It occurs automatically. It doesn't need any man power.

- The main advantage is that the detection occurs much faster than any other method.
- In all the existing systems the real card holder should be checked for the Fraud detection. But in our method there is no need of the physical inconveniences of the card holder. All the checking and the detection occur automatically.
- This project needs no man power for the detection.

Literature Survey: The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out [1-6]. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are:

Economical Feasibility
Technical Feasibility
Social Feasibility

Economical Feasibility: This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited [7]. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

Technical Feasibility: This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources.

This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client [8]. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

Social Feasibility: The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system [9].

Problem Solving: All the existing method to detect the credit card was on the mode like the detection occurs only after the complaint of the card holder about fraud done. It is not a convenient way to avoid the loss happens to the cad holder. After getting the complaint they detected the fraud on the basis of the IP address. For this they need the help of the Cyber crime to detect the fraud and make action on it. It takes so much man power.

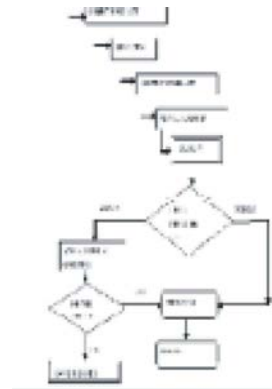
Module Description: Design is multi-step process that focuses on data structure software architecture, procedural details, (algorithms etc.) and interface between modules. The design process also translates the requirements into the presentation of software that can be accessed for quality before coding begins.

Computer software design changes continuously as new methods; better analysis and broader understanding evolved. Software Design is at relatively early stage in its revolution [9].

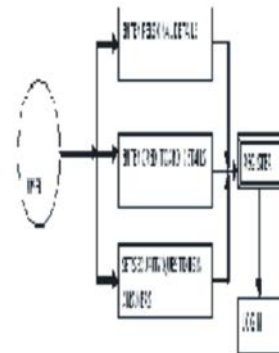
Therefore, Software Design methodology lacks the depth, flexibility and quantitative nature that are normally associated with more classical engineering disciplines. However techniques for software designs do exist, criteria for design qualities are available and design notation can be applied.

Database Design: The database design is a must for any application developed especially more for the data store projects. Since the chatting method involves storing the message in the table and produced to the sender and receiver.

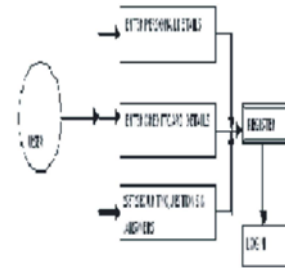
Data Flow Diagram:



Register Module:



Security Module



CONCLUSION

This system has been developed as versatile and user friendly. The performance of this project is proved to be efficient. This project provides flexibility for incorporating new features, which may be necessary. Updating the information is very important for each and every software because every system is dynamic in nature. There is certainly updating for even the website software because the new things maybe added and they have to be modified for meeting the future requirements. Using the Visual Basic.NET concepts for the front-end and SQL-Server 2005 as backend, the system will be modified when required.

Future Enhancement: The "CREDIT CARD FRAUD DETECTION USING HIDDEN MARKOV MODEL" was successfully designed. Every application has its own merits and demerits. The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the existing modules or adding new modules can append improvements. Further enhancements can be made to the application, so that the web site functions very attractive and useful manner than the present one.

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