Fraud Detection In Credit Card Transaction Using Bayesian Network

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Abstract - *Credit card fraud is a wide-ranging term for theft and fraud committed using or involving a payment card, such as a credit card, as a fraudulent source of funds in a transaction. To obtain unauthorized funds from an account. The most of the people can accept cashless shopping for using credit-debit card transaction in the world and also faced a fraud. This project aims to be developed to detect the fraudulent online credit card transactions using Bayesian networks.*

Key Words*:* Credit card transacation, Fraud detection, Security authentication, Mail alert system, Bayesian network, ect.

1. INTRODUCTION

In the general world, every person needs some reliable accessibility to use the systems. It is hard to every person to handle the cash for every transaction. Because it has some crucial given backs to the life, like that cash thefting like that. For all the above-mentioned reasons the secondary type of payment mode is required, one of that is called as credit card transaction.

In a physical-card based purchase, the cardholder presents his card physically to a merchant for making a payment. To carry out fraudulent transactions in this kind of purchase, an attacker has to steal the credit card. If the cardholder does not realize the loss of card, it can lead to a substantial financial loss to the credit card company. In the second kind of purchase, only some important information about a card (card number, expiration date, secure code) is required to make the payment.

Most of the time, the genuine cardholder is not aware that someone else has seen or stolen his card information. The only way to detect this kind of fraud is to analyze the security details given by the original authorized or registered users of this site. Since humans tend to exhibit specific behaviorist profiles, every cardholder can be represented by a set of patterns containing information about the typical purchase category, the time since the last purchase, the amount of money spent, etc. Deviation from such patterns is a potential threat to the system.

1.1 ASP .NET Platform

ASP.NET is a set of Web development tools offered by Microsoft. Programs like Visual Studio .NET and Visual Web Developer allow Web developers to create dynamic websites using a visual interface. Though it often seen as a successor to Microsoft's ASP programming technology, ASP.NET also supports Visual Basic.NET, JScript .NET and open-source languages like Python and Perl.

In order for an ASP.NET website to function correctly, it must be published to a Web server that supports ASP.NET applications. Microsoft's Internet Information Services (IIS) Web server is by far the most common platform for ASP.NET websites. While there are some open-source options available for Linux-based systems, these alternatives often provide less than full support for ASP.NET applications.

1.2 SQL server

MS SQL Server is a relational database management system (RDBMS) developed by Microsoft. This product is built for the basic function of storing retrieving data as required by other applications. It can be run either on the same computer or on another across a network. This tutorial explains some basic and advanced concepts of SQL Server such as how to create and restore data, create login and backup, assign permissions, etc. Each topic is explained using examples for easy understanding. It is a software, developed by Microsoft, which is implemented from the specification of RDBMS. It is also an ORDBMS.It is platform dependent. It is both GUI and command based software. It supports SQL (SEQUEL) language which is an IBM product, non-procedural, common database and case insensitive language.

2. LITERATURE SURVEY

Shivangi Lakhani, Nimesh Patel et al describe "Fraud Detection in Credit Card System Using Web Mining " 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. Various techniques like classification, clustering and apriori of web mining will be integrated to represent the sequence of operations in credit card transaction processing and show how it can be used for the detection of frauds. Initially, web mining techniques trained with the normal behavior of a cardholder. If an incoming credit card transaction is not accepted by the web mining model with sufficiently high probability, it is considered to be fraudulent.

N.Sivakumar, Dr.R.Balasubramanian et al describes "Fraud Detection in Credit Card Transactions: Classification, Risks and Prevention Techniques "Credit card is a plastic-card issued by a bank or non-banking financial company (NBFC) ready to lend money (give credit) to its customer. It is a suitable alternative for cash payment. It is used to execute transactions which are compiled through electronic devices like a card swapping machine, computer with internet facility, etc. Basically, it is a synthetic-card made from a laminated plastic sheet and other materials like paints, magnetic stripe, microchip (IC), gelatin, hologram, etc. It entitles (authorizes) the customers to buy goods and services, based on credit sanctioned to them. It shall be used among a prescribed credit limit. This limit relies on the earning capability.

Mrs. Poonam M. Deshpande1 Prof. Abul Hasan Siddiqi2 Dr. Khursheed Alam3 Mr. Khinal Parmar 4 et al describes "Applications of Data Mining Techniques for Fraud Detection in Credit-Debit Card Transactions" the purpose of any fraud detection system is to produce a score that reflects the probability that a particular transaction is fraudulent given some set of evidence. In other words he says that we want to find the probability of fraud given the evidence. However, by profiling the historic (training) data this will only tell us the probability of the evidence given it is fraud. Bayes tells us how to use these so called a priori probabilities to compute the desired posterior probability.

Sunil S Mhamane et al describes "Use of Hidden Markov Model as Internet Banking Fraud Detection". In this paper they explained about how Fraud is detected using Hidden Markov Model also care has been taken to prevent genuine Transaction should not be rejected by making use of one time password which is generated by server and sent to Personal Mobile of Customer.

Pankaj Richhariya et al describes "A Survey on Financial Fraud Detection Methodologies". The paper details as follows. Owing to levitate and rapid escalation of E-Commerce, cases of financial fraud allied with it are also intensifying and which results in trouncing of billions of dollars worldwide each year.

3. EXISTING SYSTEM

Fraudulent online credit-debit card transactions made after the complaint of the cardholder. The cardholder faced a lot of trouble before the investigation finish. And also as all the transaction is maintained in a log and need to maintain a huge data. Now a days lot of online purchase are made so we don't know the person how is using the card online, we just capture the IP address for verification purpose. So there need help from the cybercrime to investigate the fraud.

4. PROPOSED SYSYTEM

The detection of the fraud use of the card is found much faster that the existing system. The original cardholder is provided with email id verification for every transaction. Thus, the log is maintained for the fraud detection. The log, which is maintained, will also be a proof for the bank for the transaction made. We can find the most accurate detection using this technique. This reduce the tedious work of an employee in the bank.

4.1 Advantages

- The detection of the fraud use of the card is found much faster that the existing system.
- In case of the existing system even the original cardholder is also checked for fraud detection. But in this system no need to check the original user as we maintain a log.
- The log, which is maintained, will also be a proof for the bank for the transaction made.
- We can find the most accurate detection using this technique.
- This reduce the tedious work of an employee in the bank

5. ARCHITECTURE DIAGRAM

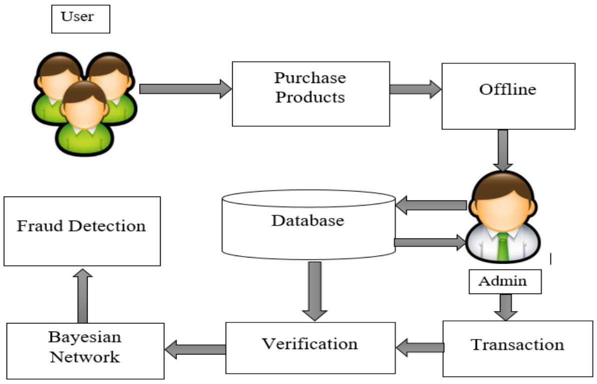


Fig -1: Architecture diagram

5.1. Module Description

There are five modules define in the system.

- Login
- Renewal card
- Security Asuthentication

- Transaction
- Verification
- Bayesian Network
- Fraud Detection

Login Module

The user can register and login the web page and Admin maintain the details for user. User can purchase the products.

Renewal Card

In this module, the customer gives there information to enroll a new card. The information is all about there contact details. They can create their own login and password for their future use of the card.

Security Authentication

In Authentication Form module presents site visitors with a form with username and password fields. If the user enters a valid username/password combination they will be granted access to additional resources on website. Which additional resources they will have access to can be configured separately.

Transaction Module

The user can insert the number. Process the transaction.

Verification Module

The original cardholder is provided with mobile OTP and email id verification for every transaction and also the user is made to answer questions.

Bayesian Network

We can find the most accurate fraud detection using Bayesian technique.

Fraud Detection

Finally detect the fraud. The log, which is maintained will also be a proof for the bank for the transaction made.

6. RESULT AND OUTPUT

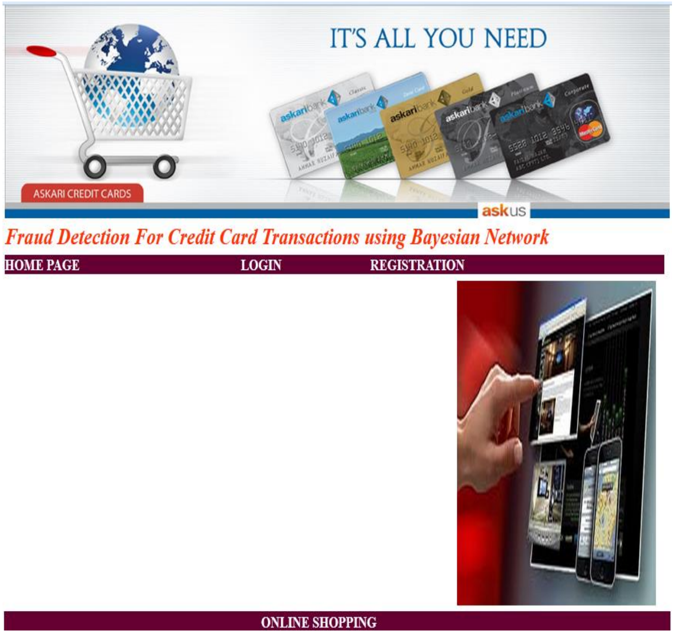
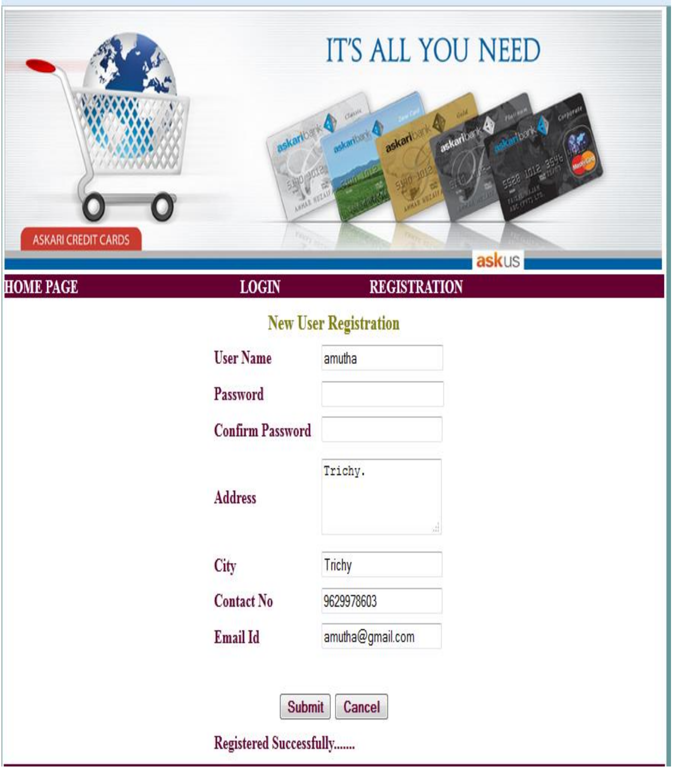


Fig 2: Home Page



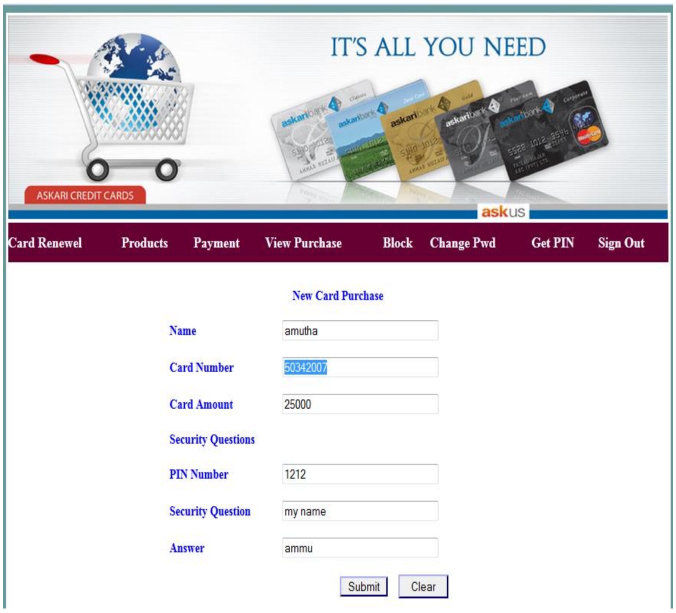
New User Registration

User Name	amutha
Password	
Confirm Password	
Address	Trichy.
City	Trichy
Contact No	9629978603
Email Id	amutha@gmail.com

Submit Cancel

Registered Successfully.......

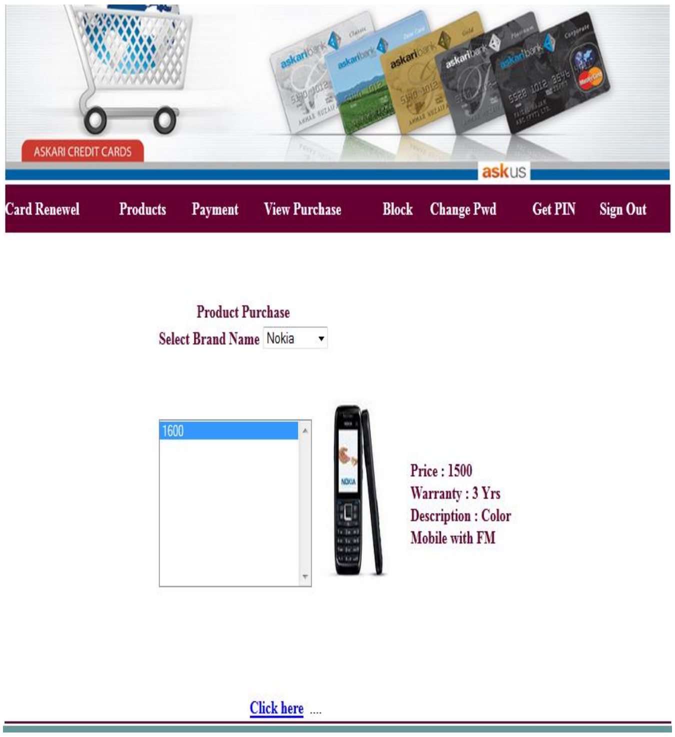
Fig 3: New User Registration



New Card Purchase

Name	amutha
Card Number	50342007
Card Amount	25000
Security Questions	
PIN Number	1212
Security Question	my name
Answer	ammu

Fig 4: Renewal Card Purchase



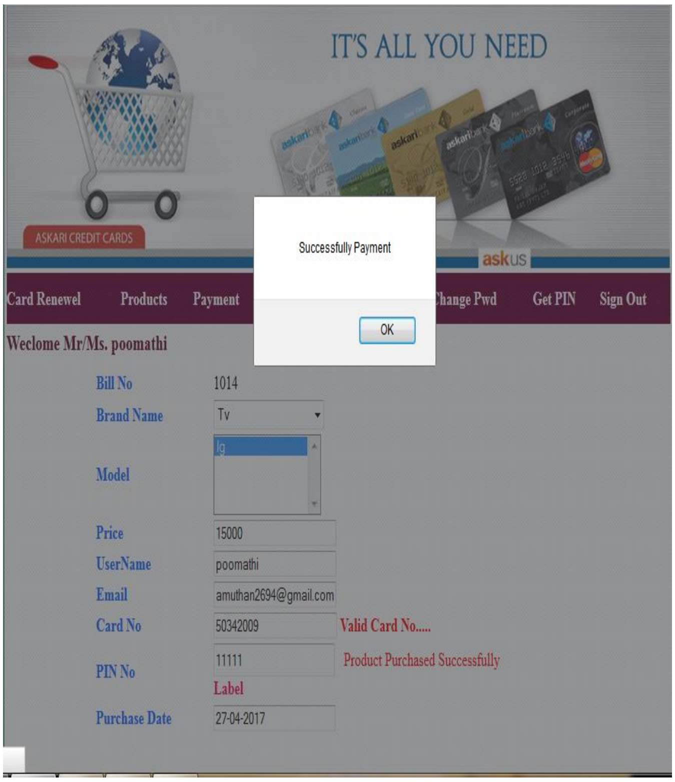
Product Purchase

Select Brand Name Nokia

1600

Price : 1500
Warranty : 3 Yrs
Description : Color Mobile with FM

Fig 5: Product Purchase

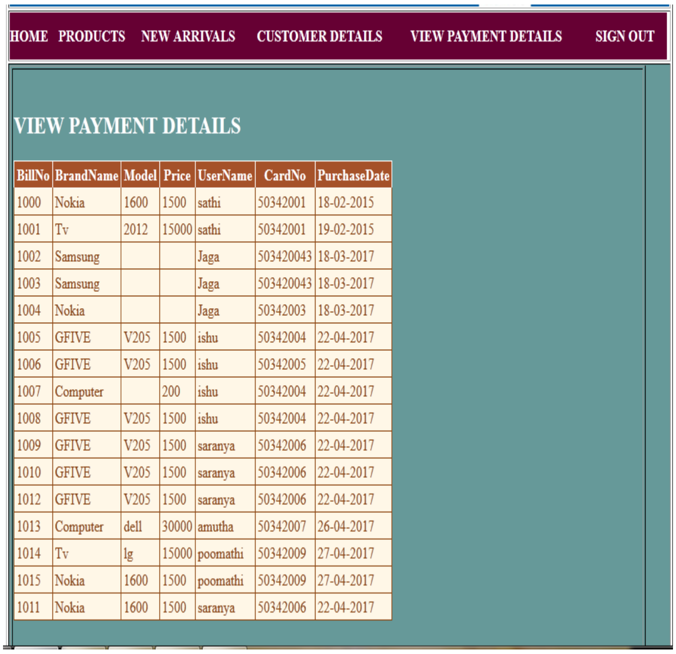


Successfully Payment

Weclome Mr/Ms. poomathi

Bill No	1014	
Brand Name	Tv	
Model	lg	
Price	15000	
UserName	poomathi	
Email	amuthan2694@gmail.com	
Card No	50342009	Valid Card No.....
PIN No	11111 Label	Product Purchased Successfully
Purchase Date	27-04-2017	

Fig 6: Send Mail Process



VIEW PAYMENT DETAILS

BillNo	BrandName	Model	Price	UserName	CardNo	PurchaseDate
1000	Nokia	1600	1500	sathi	50342001	18-02-2015
1001	Tv	2012	15000	sathi	50342001	19-02-2015
1002	Samsung			Jaga	503420043	18-03-2017
1003	Samsung			Jaga	503420043	18-03-2017
1004	Nokia			Jaga	50342003	18-03-2017
1005	GFIVE	V205	1500	ishu	50342004	22-04-2017
1006	GFIVE	V205	1500	ishu	50342005	22-04-2017
1007	Computer		200	ishu	50342004	22-04-2017
1008	GFIVE	V205	1500	ishu	50342004	22-04-2017
1009	GFIVE	V205	1500	saranya	50342006	22-04-2017
1010	GFIVE	V205	1500	saranya	50342006	22-04-2017
1012	GFIVE	V205	1500	saranya	50342006	22-04-2017
1013	Computer	dell	30000	amutha	50342007	26-04-2017
1014	Tv	lg	15000	poomathi	50342009	27-04-2017
1015	Nokia	1600	1500	poomathi	50342009	27-04-2017
1011	Nokia	1600	1500	saranya	50342006	22-04-2017

Fig 7: View Payment Details

7. CONCLUSION

For all the above things, this is the perfect place for the cardholder to manage their card in a secured way, and handle the transactions in a consistent manner. The security part presented in this site is efficient, and user-friendly manner, because of this fraud can be easily identified and the users or cardholders feel free to access their card. The process available in this site is clearly defined, and clearly analyzed, so users can use this site in a gradual manner without any hesitation. Thus the entire project of "Credit Card" is clearly tested, all the modules are working correctly, as well as the output is verified.

Future Work

This system is focused on improving the performance and adding more special features with regard with the current system. We are focusing on implementing support for multiple cards handling process between each database, which would improve the overall performance and also in addition we are trying to globalize the process, in which the data can be dispatched along different environments. The card handling concepts can be improvised through mobile technologies with certain advanced logs. Once the user missed the card the system has to provide a future to lock the card by using their mobile phones

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