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Credit and ATM Card Fraud Prevention Using Multiple Cryptographic Algorithm

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Abstract: - Along with great increase in credit & ATM Card transactions, credit & ATM card fraud has become increasingly widespread in recent years. The proposed paper work investigates that the efficacy of applying DES & 3-DES algorithm is to prevent the credit card fraud problems. The different techniques & classification methods, i.e. des,3-des, decision trees are tested for their applicability in counterfeit or fake detection. The proposed system provides a useful framework to detect & prevent a fraud & to choose the best model to recognize the credit & ATM card fraud risk. The newer proposals made in this paper are likely to have beneficial attributes in terms of security & authentication for recognition & prevention of of fraudulent patterns. This methodology uses the different security layers before entering the pin no. This authentication mechanism is useful while transaction to secure pin no. or cash card by asking secret question to user for verification in case of credit card & for ATM transactions.T he main objective of this proposed system is that instead of relying on pin no. as a security no. the multiple layers of security is enhanced & implemented by des & 3-des algorithm. So before entering the pin no. the user need to cross all the phases of security. This authentication mechanism is useful while transaction to secure cash card from being cloned via skimmed device& providing more security i.e. only by judging person only by its pin no.

Keywords: - DES Algorithm, 3-DES algorithm Data mining, decision trees, Artificial Intelligence(AI).

I. **Introduction**

In present, scenario when the term fraud comes into a talk, credit card follow in the banks and the financial frauds done by the cash card cloning & various frauds clicks to mind so far. With the great increase in credit cards, ATM CARDS & E- transactions, fraud has increasing excessively in recent years. Fraud detection & prevention includes analyzing of the spending behavior of users/customer order purpose, uncovering, or escaping of undesirable behavior. As credit card becomes the most general mode of payment or both online as well as regular purchase, fraud relate with it are also accelerate. Fraud detection is concerned with not only capturing the deceptive events, but also capturing of such activities as rapidly as possible. The use of credit cards is common in recent day society. Fraud is a millions currency business and it is rising every year. Fraud presents noteworthy cost to our financial prudence measure world wide .current techniques based on Data mining, des ,3des algorithm, Artificial Intelligence (AI) etc. ,has been introduced for detecting & preventing credit/ATM card, CHEQUE book type of fraudulent transactions. This project shows AI, cryptographic techniques whichs are used for fraud prevention there by implementing as/which ask secret, questions i.e.enhancing multiple layers of securityfor wrapping the pin no in previous stages using cryptographic algorithm,by which a fraud can also be prevented. As per as the literature survey & study of paper in the field of artificial Intelligence(AI),Genetic algorithm, Neural network it has been analyzed & observed that the technologies are meant for fraud detection but not for prevention.

Fraud means obtaining services/goods and/or money by wrong means, and is a growing problem all over the world nowadays. Fraud deals with cases involving criminal idea that, mostly, are not easy to classify. Credit & ATM cards are one of the most famous targets of fraud but not the only one; fraud can occur with any type of credit goods, such as private loans, home loans, and retail E- business. After some time there are different types of frauds seen as the Internet is playing very essential role in the online commerce. The transaction of data is the steering wheel of internet armed forces. Today E-commerce relevance is widely used in E-business and various kinds of service industry where all kind of transaction of data is made possible throughout internet. It is one of the best, cheapest and convenient processes for online trade. Privacy and security is the basic concern in this kind of transaction. Privacy is handled by Cryptography but for security we have to apply techniques which are necessary to secure our transaction and the digitized data present in these transaction. Our approach is to enhance information security in the field of E-commerce, E-banking & ATM.

1. TYPES OF FRAUD

A range of types of swindle in this paper include credit cardfrauds, telecommunication frauds, and computer intrusion, liquidation fraud, Theft deceit/counterfeit fraud, Application fraud, Behavioral fraud.

1.1. Credit Card Fraud: Credit card fraud has been divided into two types: Offline fraud and On-line fraud.

1.1.1. Theft fraud is committed by using a stolen physical card at call center or any other place.

1.1.2. E-fraud is committed via internet, phone, shopping, web, or in absence of card holder

Credit Card Fraud

Wondering United States, with its high number Credit Card

transactions have minimum fraud rate. Ukraine tops the list with staggering 19% fraud rate closely followed by Indonesia at 18.3% fraud rate amongst the high risk countries facing Credit Card Fraud threat, some other countries are Yugoslavia (17.8%), Malaysia (5.9%). and Turkey (9%).Authorized users are permitted for credit card transactions by using the parameters such as credit card number, signatures, card holders address, expiry date etc. The illegitimate use of card or card information without the familiarity of the owner itself and thus is an act of criminal deception refers to Credit card fraud. Credit card fraud detection is quite confidential and is not much disclose freely. Commonly used fraud exposure methods are, rule-induction techniques, decision trees, Support Vector Machines (SVM), LR, ANNs and meta-heuristics such as, k-means clustering, genetic algorithms and nearest neighbor algorithms. Fraud is some kind of human behavior that relate to larceny, misinterpretation, misrepresent, unethical, craftiness false suggestions etc. Sometimes companies deal with millions of external parties, it is cost prohibitive to check the majority of the external parties‟ activities and identity manually. Certainly, for investigating each suspicious transaction, they incur a direct overhead cost for each of them. If in pencil case, business amount is smaller than overhead cost, investigate is not sensible. Transaction involve among banking institutions offering financial transaction services, Logistics company offering various sort of transportation services. These transactions be full of sensitive information in the form of data so there must be a technique which is applied on these financial transactions. So our basic necessity is to achieve these basic goals of information security

A. *Privacy*: Information must be kept secret from unauthorized parties.

B. *Integrity*: Assurance that received data not contains any kind of adjustment, addition, scoring through or rerun.

C. *Authentication*: The assurance that the communication entity is the one that is claimed to be.

E. *Access control*: This service controls that have access to a resource and under what condition access can occurs. The frequent use of plastic cash card is the most sensitive and vulnerable part of transaction system. It leads to the disobedience of all the above security issues and attracts skimmers. But the most important and prominent part is that when the costumer access the ATM machine for transaction.

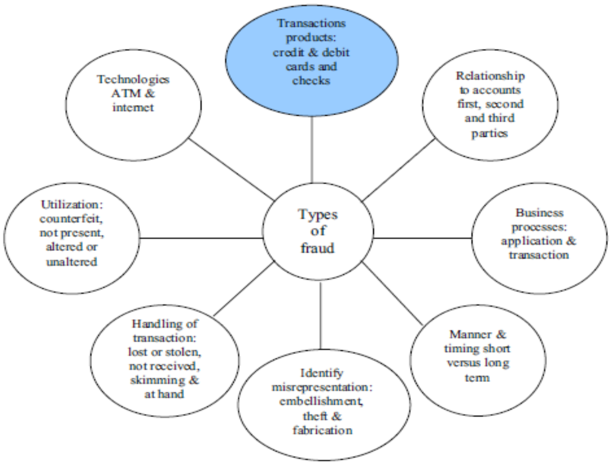

Transactions products: credit & debit cards and checks
Technologies ATM & internet
Relationship to accounts first, second and third parties
Utilization: counterfeit, not present, altered or unaltered
Types of fraud
Business processes: application & transaction
Handling of transaction: lost or stolen, not received, skimming & at hand
Identify misrepresentation: embellishment, theft & fabrication
Manner & timing short versus long term

Fig: variousTransaction & Frauds

CORELATED WORK ON CREDIT CARD SCAM DETECTION

Researchers developed many credit card fraud detection techniques based on data mining loom. **Ghosh and Relley**

(FFNN), which requires long training time. **CARDWATCH:** presented by **Aleskerov**et al. proposed that a neural network based database mining scheme which was a trial product for database mining system developed for credit card fraud detection application and

is concerned that it requires one network per customer. **Amalan Kundu** et al suggested a model BLAST- SSAHA Hybridization technique of credit card fraud by online detection **Rilly** have proposed credit card fraud detection with a three-layer approach, feed-forward neural network

BLAST-SSAHA approach improves the fraud detection by combining both peculiarities as well as misuse detection techniques. **Phua** et al have done a major survey of existing data mining based Fraud Detection System (FDSs). **Chiu** et al have introduced web-services based collaborative scheme for fraud detection in the Banks. The proposed scenario supports the sharing of knowledge about fraud pattern with the participant banks in a heterogeneous and distributed environment. **Abhinav srivastava** et al have proposed Hidden Markov model (HMM) for credit card fraud detection which shows 80% accuracy over a large variation in the input data. **Syeda** et al have enhanced the speed by using equivalent coarse neural network of data mining and knowledge discovery process (KDP) for credit card fraud detection and achieve reasonable speed up to 10 processors only & more number of processors introduces load imbalance problem. Markov Model and time series are not scalable to large size data sets due to their time complexity.

Fan et al recommend the application of distributed data mining in credit card fraud detection and improve the efficiency of highly distributed databases and detection system as this approach uses Boosting algorithm name Ada Cost. Ada Cost uses large number of classifiers and requires more computational resources during detection. **Brause** et al combine advanced data mining techniques and neural network algorithms**. Stolfo** et al intimate a credit card fraud detection system using various meta- learning techniques to learn models of fraudulent credit card transactions**.** To achieve high fraud finding along with low forged alarm **Elkan** et al suggest Naïve Bayesian approach for credit card fraud detection. Further, **Elkan and Witten** presents that NB algorithm is very effective in many real world data sets as well as extremely capable in linear attributes. Bayesian networks were faster and accurate to train but are slower when applied to new instances/occurrence In a online system **Vatsa** et al. have currently proposed a game- theoretic approach to credit card fraud detection. . **Wen-Fang** have recommended a research on credit card swindle detection model which is based on outlier detection mining on distance sum, which shows that it can detect credit card fraud better than anomaly detection based on clustering. **Jianyun** et al have shows outline for detecting falsified transactions. In his paper work describes an FP tree based method to effectively create user profile for finding of fraud. however on the other hand, this method doesn"t be familiar with atypical patterns i.e. short term behavioral changes of genuine card holders. Today, some of the existing credit card fraud detection techniques which use labeled data to train the classifiers are unable to detect new kinds of frauds. Supervised learning has some drawback, that they require human involvement to optimize parameters. On another hand, decision tree do not require any parameter setting from the user and can build faster compared to other techniques.

II. Research Challenges

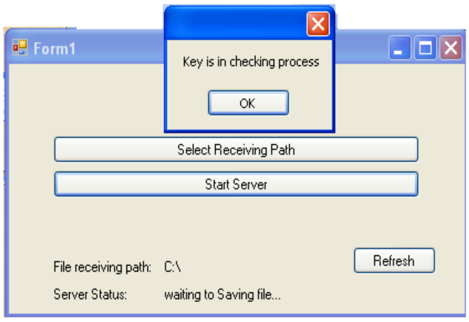
The advance approach used in identify a credit card fraud mainly include neural network, data mining, ,,AI, inherent algorithm, game theory and support vector machine.[1] Artificial neural networks (ANN) have been considered for credit card fraud detection by Ghosh and Reilly Aleskerov et al. and Dorronsoro et al. . Ghosh and Reilly carried out a feasibility study for Mellon Bank to determine the effectiveness. Majority of the FDSs as described above show a lot of variation in their precision. The main dispute identified by most of them is that the vastness of the transactions flagged as fraudulent by the FDSs are in fact genuine. A significant amount of instant and money is exhausted by bankers in investigating a large quantity of genuine cases. It also causes customer nuisance and potential disappointment. In credit card application, since occurrence of fraud is sparse, it involves detecting a relatively rare event from a very large collection of routine transactions. Meta-learning is a common strategy that provides a means for combining and integrating a number of separately academic model. A meta-learning structure allows financial institutions to share their model of fraudulent transactions by exchanging classifier agent. [2]Stolfo et al. suggest a meta-learning technique to learn patterns of fraudulent credit card transactions. They apply four base classifiers such as ID3, CART, and RIPPER and use the class-combiner strategy [5] to select the best classifier for learning. It has been made known that learning with Bayes gives good accuracy. [3]Prodromidis describe an artificial intelligence based approach that combines inductive learning algorithms and meta-learning methods to build accurate classification models for electronic fraud detection. The field of game theory has also been explored for credit card fraud detection. [4]Liu and Li suggest a game-theoretic approach for prediction of attacks on IDS protected systems and a specific prediction model for credit card fraud. Vatsa et al. have modeled the interaction between an attacker and an FDS as a repeated game between two players, each trying to maximize its payoff. Such game-theoretic models make a number of assumptions, like availability of strategies, actions and payoffs to both the players, which are not often applicable in put into practice. For example, it is somewhat unusual for a bank to publicize its strategy for fraud detection. Some survey papers have been published which categorize, compare and summarize articles in the area of fraud detection. Phua et al. did an extensive survey of data mining based FDSs and presented a comprehensive report. Kou et al. have reviewed the various fraud detection techniques including credit card scam, telecommunication swindle as well as computer intrusion detection. Bolton and Hand describe the tools available for statistical fraud detection and areas in which fraud detection technologies are most commonly used. Majority of the FDSs as described above show a lot of variation in their accurateness. The main confront identified by most of them is that the bulk of the transactions flagged as fraudulent by the DSs are in fact genuine. A large amount of time and money is spent by bankers in investigating a large number of legal personal belongings. It also causes customer bother and potential dissatisfaction. In credit card application, since occurrence of fraud is sparse, it involves detecting a relatively rare event from a very large collection of routine business. Axels son has keen out that due to the base-rate misleading notion problem; the factor limiting the performance of an intrusion detection system is not the ability to identify intrusive behavior correctly but its ability to minimize false sound the alarm. While collapse to detect a fraud causes direct loss to the company, follow up actions needed to pursue false alarms also tend to be costly. Any devise option that attempt to improve the rate of accurate detection of fraud, usually causes a rise in the false alarm as well. One of the motivations of our present research is to address this challenge. It is well known that every cardholder has a certain shopping behavior, which establishes an activity profile for him. Almost all the existing fraud detection techniques try to capture these behavioral patterns as rules and check for any violation in subsequent transactions. However, these rules are largely sluggish in nature. As a result, they become useless when the cardholder develops new patterns of behavior that are not yet known to the FDS. The goal of a consistent detection scheme is to learn the deeds of users dynamically so as to minimize its own loss. Thus, systems that cannot develop or " skilled", may soon become old-fashioned resultant in large amount of false sound the alarm. A impostor can also challenge new types of attack which should still get detected by the FDS. For example, a fraudster may aim at deriving maximum benefit either by making a few high value purchases or a large number of low value purchases in order to evade detection. Thus, there is a need for developing fraud detection systems which can integrate multiple evidences including patterns of genuine cardholders as well as that of fraudsters.

[5]Recent research for Credit Card Fraud Detection using HMM was done by Abhinav Ssrivastava, Amlan kundu,shamik sara l,Arun mujumdar. A Hidden Markov Model is a double surrounded stochastic process with two hierarchy levels. It can be worn to model much more complex stochastic processes while compared to a traditional Markov model. HMM has a constrained set of state govern by a set of fruition prospect. In a particular state, an upshot or inspection can be generated according to an associated probability distribution. It is only the conclusion and not the state which is perceptible to an external spectator. But there were several problems related to the fraud detection using HMM (Hidden Markov Model). For the credit card fraud detection problem, DST is more relevant as compared to other fusion methods since it introduces a third option: „„unrevealed", which is the Hidden Markov Model & it doesn‟t supports the same. Moreover it provides a rule for computing the confidence measures of three states of knowledge: fraud, fraud and suspicious (unknown) based on data from new as well as old evidence. Furthermore, in DST, evidence can be associated with multiple possible events unlike traditional probability theory where evidence is associated with only one event. This makes DST far more superior the HMM for credit card racket detection. Recently.

[6] Khayati Chaudhari,Jyoti yadav, Bhawna mallick GCET, noida:A review for fraud detection technique:
This represent a clarification to fraud detection by monitoring spending behavioural patterns of customers & avoided it by implementing CARD WATCH , FDS & HMM except of cost based model which is further implementable. [7] Linda delemaire (uk), join pointon(uk).This presents a framework for detecting fraud in personal loans & home loans & bankruptcy fraud.using a learned information from decision trees & genetic algorithm it can be further expanded for implementing suspicious scorecard on real datasets & its evaluation.

III. **Proposed work**

In the proposed system multiple level of security is developed for making the pin no more secured so logical level security is enhanced more by asking secret questions in case of credit card in case of ATM cards to implement it cryptographic algorithms are used .In addition to this the DES,3-DES are used so that a single file can be transferred from client to server by encryption decryption process in any format so that the in between user cannot hack the details,which is the additional advantage of this project work.

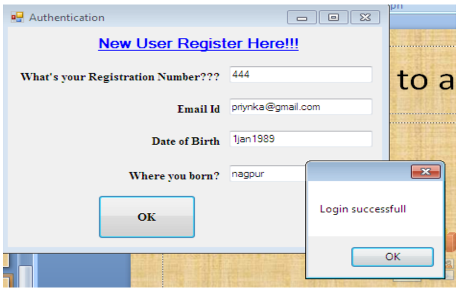


Key is in checking process

File receiving path: C:\

Server Status: waiting to Saving file...

Fig: file transfering



What's your Registration Number??? 444

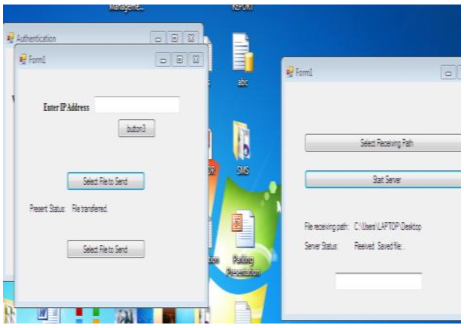
Email Id priynka@gmail.com

Date of Birth 1jan1989

Where you born? nagpur

Login successfull

Fig:file authentication process



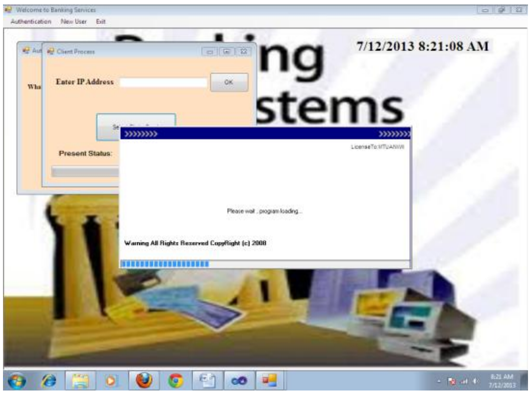
Enter IP Address

Present Status: File transfered

File receiving path: C:\Users\LAPTOP\Desktop

Server Status: Received Saved file...

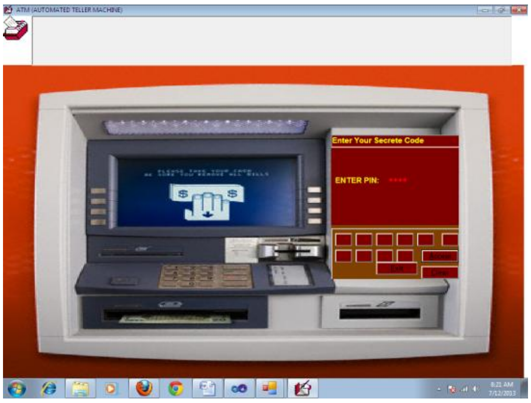
Fig:file transfer process



Please wait , progam loading...

Warning All Rights Reserved CopyRight (c) 2008

Transferring file and ATM transaction



ENTER PIN: ****

Fig: customer end to enter pin no after crossing security layer questions

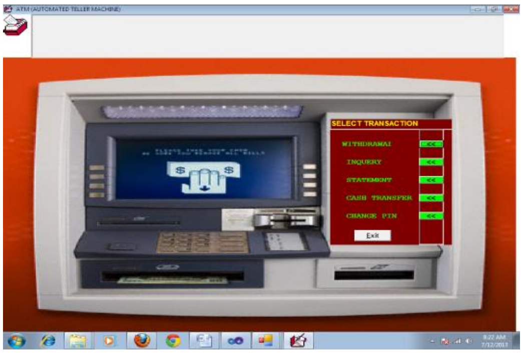


Fig: options of ATM facility

IV. Conclusion

In this project, we will propose a system which will find the exact user not only by its security pin no. for banks transaction but by asking secret question in case of credit card for judging the original user identification for ATM CARDS .To implement this cryptographic algorithm, des,3-des is used so that the multiple layer of security is applied for wrapping the pin no. Additionally any remote user can also transfer any file from source to destination by selecting the proper path an can save the file at its own destination which are shown in snapshots the transferring process is fully secured as cryptographic techniques are applied for the same.

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