

## AUTHENTICATION ON CREDIT CARD PROCESSING

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**Abstract** - Electronic commerce or E-commerce has always been a successful venture for enterprises who made improvement in their business technique to take their business online, providing transaction facility online on web is kind of challenging for users/customers. Though numerous mediums have developed for shopping over wide extent. Credit loan is popular way of purchase. We need to take help of some third party authority to gain credit. We cannot easily trust third party authority without undergoing background test. This necessity give rise to the purchase on credit. Many companies recently flourished in credit businesses. Factors such as cost of resources and land, risk assessment process their criteria and algorithms along with their processing complexities, concern related to security and safety of money. Credit can be granted as virtual money or in the form of physical cash. Ambition should be towards creation of error free credit allocation system with minimum or negligible security concerns.

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**Keywords** - Electronic/E commerce, Merchant e-commerce, Real-time Virtual Credit Card Processing System.

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### I. INTRODUCTION

In the survey of end of June, 2018 it was found that there is huge rise in credit purchase, up to 25% year on year. Further addition of digital payments technique like virtual wallets unified services for payment, which is supported widely due to platform independency. In the traditional way of using has created many issues that it is not safe, some might be using unauthorized credential for the issuing of cards, fake accounts can be made, and it is also seen that merchants are also taking advantage of it. Appearance of credit card may be with resemblance with small PVC plastic card commonly operated for payment to verified merchant by authenticate user. It permits its holder to shop for commodities for which customer guarantees repayment of resources in provide time period. During procurement creation the card is swipe by merchant on cardboard or POS machine. Electronic data of cardholder is recorded in EDC machine, which is further used for processing credit request.

In order to overcome above issues we have come up with the idea of credit card allocation where there will be no human interference that is most of crucial task will be done by machine. We are basically using machine learning algorithm in our project. We are going to use supervised machine learning algorithm, risk assessment analysis.

Stages for credit allocation are:

- Authentication
- Calculating Risk Assessment
- Allocation and Documentation

With above option, accounts applied for credit are authenticate to make sure that the account is active with good CIBIL score. The credit loan can also be granted to buy some properties or any resources.

### II. LITERATURE REVIEW

If we take analysis of last few years there is rapid growth in purchase transaction. Digitalization is big reason for huge growth in online trading platform. Using online services goods and services are exchanged using internet called e-commerce. E-commerce is an online platform, here people shops resources using virtual URL online through internet. Extraction of data is carried out using data mining through relevant sources from paste data collected from surveys. In analytic process we found consistency in relationship and pattern. The detected patterns were frequently used previously from the input data are applied to new subsets of data. The structured details are extracted using algorithms of data mining. Hidden entity relationship and patterns are automatically mapped using data analysis.

Today, we use data to analysis and prediction. Prediction analysis is performed by using machine learning algorithm by generating pattern from the dataset. Historical information is gathered to perform prediction analysis to know future trends. In prediction analysis algorithm previous knowledge and data are used for valuation to predict future possibilities. We can use custom made predication analysis tools and algorithms according to requirement of desired application. Here, unsupervised learning approach is used to train machine to predict future outcome using sample dataset. Nature of new data can be easily predicted by trained ML algorithms.

### III. ENTITIES INVOLVED

Credit allocation and authorization process involves:  
**The client** will request to server for a credit card. Then the server will create a simplified SDK as per client's request. Merchants will consider the SDK and start the process of creating card token.

**The acquiring bank** finds a better way to deal with network associated with responsible authority by making deal with systematic representation of credit flow. After verification and enrolment it will return the card details to merchants. The merchant will return the card token and it will send the response to the client with the help of server. Client will verify if the card is successfully enrolled or not.

A **cardholder** swaps card and starts a credit transaction to buy some commodity from particular merchant. Makes payment with Simplify SDK.

**The merchant** makes use of electronic card swapping machine, payments gateway with authenticated software to transfer the cardholder's details along with transaction id to merchant's bank.

**The acquiring bank / credit processor** routes transaction information captured by the issuing bank of cardholder using a secured network.

**The card issuer** gains transaction id from the acquiring bank and responds by either approval or rejection of transaction request after validation, past transaction details as well as CIBIL score of cardholder is also considered before sanctioning credit amount. Cardholder should have sufficient account balance to make purchase.

**The card issuer** generates back a token as an acknowledgement to acquiring bank. A copy of token is also sent to merchant's gateway for authentication. Intention behind this model is to achieve transparency between merchant and cardholder.

**The card association** deducts money from credit authority that is from the account of issuing bank and the same amount is credited to the acquiring bank associated with merchant. This cycle is performed for every purchase. Orders and invoices are generated to keep documentation, for exchange of credit.

**The card holder** will be notified that the transaction is confirmed. They will be responsible credit loan repayment to credit issuing bank according to invoice generated, for their purchase order interest and additional service to transaction charges as per agreement made while issuing credit.

#### IV. WORKING

**Key Players:** Merchant, Cardholder, and their respective banks acquiring and issuing are involved in the process right from credit allocation to repayment of credit loan.

**Cardholder:** Cardholder is simply a customer holding a credit card through which he / she can shop and purchase products now and can pay its amount on

installments in nearer future.

**Merchant:** Merchants are nothing but shopkeepers or business holder who sells commodities or services. Merchant uses POS (Point of Sale) or EDC (Electronic Data Capture) to make sale and record customers details and process their request for credit loan. This details are recorded at merchant's acquiring bank and then later sent to issuing bank of cardholder to grant loan on credit after validation of purchase order by performing some background verification.

**Acquiring Bank:** An acquiring bank is also known as merchant's bank, which is licensed to grant credit. Visa, Credillio are well known example of credit card Company working globally. Acquiring banks deals with merchants and provide them required resources to perform credit operations. Eligibility of cardholder is calculated using risk assessment algorithm base on CIBIL score and income source. Merchant gets fund from acquiring bank as credit loan is sanction after validation process by both banks.

#### V. FLOWCHART

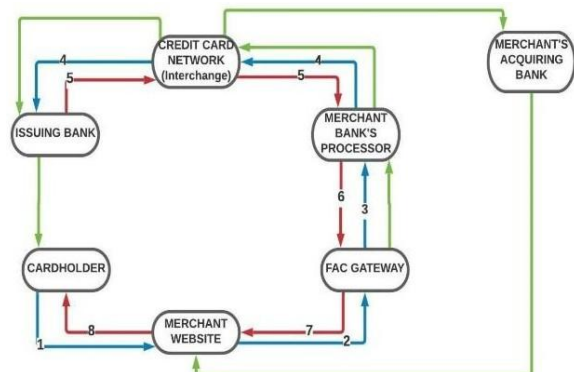


Figure 1: Phases involved in Credit Card Processing

#### VI. DATA ANALYSIS

Following are some algorithms that can be used for processing of dataset.

**Artificial Neural Network:** ANN is network of various independent nodes or algorithm operated together to think and work like human. In simple words it is training of machine to behave like human. In our project we are using ANN to identify entities like income range, age and source of income and fetch this details to the classifier algorithms.

**The Random Forest:** Random forest is supervise learning approach. Output is already known in supervised algorithm. Regression problems can be solved using random forest. This approach can also deal with classification problems. Training speed is quite good, large volume of data can be easily processed. Due to this feature bulk training is

possible in random forest. Apart from this errors in the algorithm can be detected quiet efficiently. Random forest is a classifier algorithm used to extract useful details from random customer.

**SVM:** Effective results can be obtained in classification based problems having odd or nonlinear structure using Support Vector Machine model. Salient feature of this algorithm is better fitting of data. SVM is also a classifier algorithm used to collect details per requirement.

**Gaussian NB (Naive Bayes):** Concept of conditional probability is used here to give better results. It can cover large datasets. Mostly, deals with real time data prediction. This algorithm has high recommendation due to more accuracy. This algorithm does the conditional analysis of data extracted by SVM and random forest and calculate its comparative performance and predict risk.

**Genetic Algorithm (GA):** This algorithm is based on principles of natural evolution. Binary representation methodology is used here to map data. Data is mapped according to fitness index. Strong and weak entities are categorized on the approach of fittest survival, here data with high quality index.

**K-Nearest Regression:** K-Nearest neighbor learning approach provides maximum throughput with minimum computational resources. It can handle data with correlation. Comparison and correlation results in more informative output.

Libraries use for Machine Learning (ML) Algorithm are as follows:

**Pandas:** Machine learning approach is incomplete without pandas library. Comma Separated Value (CSV) and excel files can be read using pandas. Pandas have wide scope in data mining.

**Seaborn:** Boxplot, heatmap graphs are available in this library for representation of data. Here algorithms can be imported externally like KNN, classifiers etc. Graphical approach is used for data visualization.

**Scikit-learn:** SVC, Classifiers, etc. classes of different algorithms can be imported here. This is built on NumPy.

**Matplotlib:** Two dimensional (2D) graphs are specialty of Matplotlib library. Comparative analysis can be effectively done with 2D data representation.

## VII. RESULTS

Our model ensures that the process of issuing credit card will fast and quick. Now a days, credit card became a everyday life tool but its consists of

personal information which can be misused by third party. So we created a model which ensure that this kind of misused will be prevented. And further adding to this the system will detect the unauthorized users. All the features that we mentioned ensures that the model is reliable.

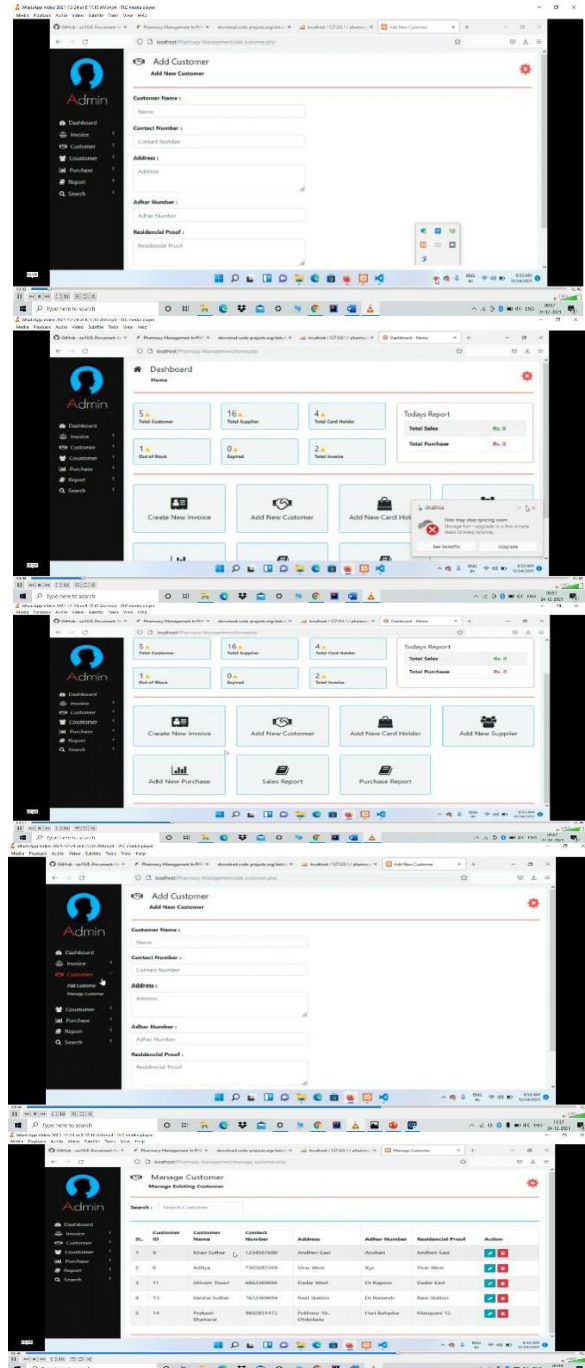


Figure 2: Glimpses of Credit Card Authentication

## VIII. CONCLUSION

Credit risk assessment draws conclusion from available data having qualitative with quantitative approach related to individual transition request put forward by each cardholder. Credit assessment deals

with evaluation of credit flow, identification and verification of both communication party, authorization and authentication of recorded details, associated to each isolated environment.

### FUTURE SCOPE

The process of activating credit card is hectic as we have to visit banks for the activation. We will be providing this facility on our system with real-time image recognition which ensures the fundamentals of process. And also this will provide more security to the process and prevents the frauds. So the activation of credit cards will be on the system only, through a real-time image recognition system that can ensure safety and prevent unauthorized access.

### REFERENCE

- [1] Rami M. Jomaa, Md. Saiful Islam, Hassan Mathkour, Saad Al-Ahmadi "A Multipayer System to Boost the Robustness of fingerprint authentication against presentation attacks by fusion with heart signal ," Journal of King Saud University, Riyadh, vol 2, pp 1-3, 2022.
- [2] Frank van der Horst, Joshua Snell, Jan Theeuwes, "Enhancing Banknote Authentication by Guiding Attention to Security Features and Manipulating Prevalence Expectancy," A Article on Cognitive Research: Principles and Implications, Netherlands, vol 6, pp 1-5, 2021.
- [3] Siddharth Bhatore, Lalit Mohan, Raghu Reddy, "Machine Learning Techniques for Credit Risk Svaluation: A Systematic Literature Review," A Journal of Banking and Financial Technology, Ambala, vol 4, pp 1-5, 2020.
- [4] Vinay Arora, Rohan Singh Leekha, Kyungroul Lee, Aman Kataria, "Facilitating User Authorization from Imbalanced Data Logs of Credit Card Using Artificial Intelligence," A conference held on Thapar Institute of Engineering and Technology, Patiala, vol 20, pp 1-13, 2020.
- [5] Josh Lauer, "Plastic Surveillance: Payment Cards and the History of Transactional Data, 1888 to present," A Article on Journal Indexing and Metrics, Durrham, vol 3, pp 1-3, 2020.
- [6] Maad M. Mijwil, Israa Ezzat Salem, "Credit Card Fraud Detection in Payment Using Machine Learning Classifiers," A conference held on Baghdad College of Economic Sciences University, Baghdad, vol 8, pp 1-4, 2020.
- [7] S. Vaithyasubramanian, "Authentication using Robust Primary PIN (Personal Identification Number), Multifactor Authentication for Credit Card Swipe and Online Transactions Security," Article Published in International Journal of Advanced Computer Science and Applications (IJACSA), Chennai, vol 11, pp 1-4, 2020.
- [8] Laetitia Etienne, "A Framework to Detect Presentation Attacks," A Thesis publish in Kennesaw State University , Chennai, vol 11, pp 1-4, 2020.
- [9] Devika S. P., Nisarga K. S., Gagana P. Rao, Chandini S. B., Rajkumar N, "A Research on Credit Card Fraudulent Detection System," A Monthly Journal of Computer Science and Information Technology, Mysuru, vol 8, pp 1-4, 2019.
- [10] T Dhikhi, Ajay Rana, Anurag Thakur, Karan Kapoor, "Credit Card Transaction Based on Face Recognition Technology," Journal of Physics: Conference Series, Chennai, vol 8, pp 1-4, 2019.
- [11] Paul A. Grassi, Ray A. Perlner, James L. Fenton, William E. Burr, Justin P. Richer, Naomi B. Lefkpviz, Yee Yin Choong, Jamie M. Danker, Marry F. Theofamos, "Digital Identity Guidelines Authentication and Lifecycle Management," A conference paper NIST Special Publication, Chennai, vol 8, pp 1-4, 2017.

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