

## ***Cardless ATM using AES Algorithm for User Data Security***

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### ***Abstract:***

*Automated Teller Machine (ATM) transactions are secure, efficient and inevitable in order to satisfy our financial obligations. The conventional solution to the usage of ATM laws includes the presence of the Debit card. We realize that in tandem with ATM use, cell phone use has always become an unavoidable phenomenon. Establishing a bridge between such e-gadgets has given rise to an easy and realistic approach to withdrawing cash without the presence of a debit card, which can be referred to as a cardless cash withdrawal. The Fingerprint module is used to validate the customer. Face recognition and fingerprint are used to authenticate the customer. That, along with OTP, requires three types of protection. As Fingerprint and OTP are paired, an ATM computer would be activated by the customer's account.*

***Keywords***— *ATM, GSM Device, OTP, fingerprint sensor, face recognition, AES Algorithm.*

## I. INTRODUCTION

The present-day ATMs are using Pin based security. When we are about to carry out the transaction, the pin number is fed as the input which is encrypted at the client-side and the data is decrypted at the server-side. When the comparison gets satisfied, we can carry out the transaction. As technology is getting improved, the crackers are quickly retrieving the data, and hence the frauds are going on increasing. The data are made available on the cloud [4] so that the transaction time gets reduced. When the data is available in the cloud, data can be easily retrieved for fraudulent activity, which is the biggest drawback. Hence the only way to secure the datum is to replace the computer-generated numbers with the biometric security. The needs for a virtual card or cardless ATM came to our mind after one of the authors left with disappointment at the ATM. He was unable to locate his ATM card from his purse. Hence access to his bank account for bank transactions was denied. When narrated his experience. One major conclusion came to our mind after hours of thought and reasoning as regards the need for an ATM card before one can access his bank account through ATM, and major information

that ATM card contains. Consequently, as a lecturer, researcher, computer/electronic engineer and computer scientist with a keen interest in emerging new technology in electronic business, E-ATM with virtual or no card can be designed to enhance the efficiency of ATM usage. Also, In recent time many lapses (ranging from fraud, stealing, etc.) of ATM usage has been attributed to use of ATM such as card cloning, card damaging, card expiring, cost of issuance and maintenance, accessing customer account by third parties, waiting time before issuance card etc. all these can be a past issue if card less EATM can be designed and implemented in future.

## II. LITERATURE REVIEW

We know that One –Time – Passwords are becoming trendsetters in the business domains. We have proposed a style of cash withdrawal without the involvement of a debit card that can be accomplished using OTP via SMS. As compared to the existing method defined by ICICI bank ltd, our method is simple and effective and would be preferred by all kinds of users. As of now, the proposed method deals with the withdrawal process in the same bank but can be extended for inter-branch transactions. [1] The proposed second level authentication mechanism for ATMs will increase customer satisfaction and also give customers the peace of mind they need considering the high level of security applied to their accounts. Finally, it will limit the financial risks of customers given that they most times [2] The System proposed in [3] is based on AVR microcontroller is found to be more compact, user friendly and less complex, which can readily be used in order to perform several tedious and repetitive tasks. Though it is designed keeping in mind the need for the industry it can be extended for other purposes such as commercial and research applications. Due to the probability of high

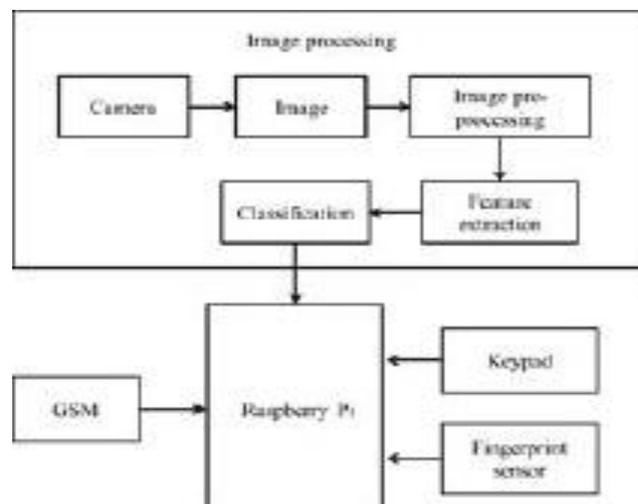
technology (GSM) used this "Protected Cash Withdrawal in ATM Using Mobile Phone" is fully software controlled with less hardware circuit. This System is the base for future systems. Several problems are associated with the use of card such as card cloning, card damaging, card expiring, card skimming, cost of issuance and maintenance, accessing customer accounts by third parties, waiting time before

issuance expiring or new card. This paper presents the conceptual framework of design, specification, and model of the EATM system that uses no card. The proposed system will use an alphanumeric PIN, and biometric Fingerprint to control access to the ATM. [4] The Automated Teller Machine (ATM) is a self-service machine that dispenses cash and performs some human teller functions like balance enquiry, bills payments, mini statements, Fund Transfer, Cash Deposit and so on. ATM transactions are carried out through the use of a debit/credit card which enables the cardholder(s) to access and carry out banking transactions without a teller [5]. With an ATM, customers can access their bank deposit or credit accounts in order to make a variety of transactions mentioned earlier. If the currency being withdrawn from the ATM is different from that in which the bank account is denominated, the money will be converted at an official exchange rate. Thus, ATMs often provide the best possible exchange rates for foreign travellers, and ATM is widely used for this purpose [6]. One of the continuing challenges for the banking industry is to reduce fraud and security issues. Here we are proposing a cardless security architecture for ATMs using IRIS. Our proposed System provides a unique authentication technique to improve the security of the ATM machine over the present System. Cardless cash Biometric ATM System enables cash withdrawal at an ATM without using the existing magnetic swipe cards which makes it possible to quickly authorize a person to withdraw money. Biometric Automatic Teller Machine (ATMs) seems to be an effective way of preventing card usage and is also a channel to expand our reach to rural and illiterate masses. These BioATMs can talk to the people in their native languages and provide high security in authentication which prevents service users from unauthorized access. In [7], the user is required to authenticate himself with a two-phase security solution by first providing an individual's biometric identification (Thumb/Fingerprint/Iris etc.), followed by Personal Identification Number (PIN), and select the bank branch from the displayed list if applicable. This System also provides an alternative approach to access cash via an OTP (One Time Password) generation on the user's cell phone in case of loss of PIN. It saves time, cost and efforts compared with existing card-based ATMs thereby eliminating the environmental problem of disposing of plastic waste. It also reduces the user's dependency on bank officials in sending money to distant relatives at home and abroad. A new system approach [8] for enhancing security and privacy in biometric applications like face detection, IRIS scan, Fingerprint, voice, signature, etc., in this biometric System card-less operation done by biometric technology for operating ATMs. The proposed model provides high security in authentication which

protects from illegal transactions. By this user is required to authenticate himself with biometric identification and personal identification number. This proposed system is designed for illiterate, semi-literate and literate people. It reduces the problem of an excess number of plastic cards & saves environmental pollution. It saves time, cost, effort compared with a card-based system. Most of the transactions at the Point of Sale (POS) terminals are carried out by payments through Credit or Debit cards. Many leading banks have started the doorstep banking service with the help of micro atm devices. The authentication system presented in [8] uses fingerprint authentication or PIN-based authentication method. Biometric features are unique for every individual and hence can be widely used in fusion for enhancing the security system for micro-ATMs and POS terminals. Financial institutions have registered losses because users are being unprotected of their assets and card information. The ATM security authentication technique presented in [10] is dependent on pin-based verification. Factors such as urgency, memorization of pins, speed of interaction, unintentional pin sharing affect the System diversely. Cards with magnetic chips are easy to clone. This paper presents a comparative study of traditional Pin based authentication technique and a proposed three-factor based authentication technique. The three-factor authentication scheme proposed in this paper integrates Biometric Fingerprint, PIN and QR-Code technologies to provide improved security for ATM authentication.

### III. P ROPOSED S YSTEM

Proposed System analyzed what the problem people faced in the existing technology. The Multifactor Authentication (MFA) method provides more complexity to the user. This project helps to overcome the problem of complexity and provides the easiest way to secure the ATM transaction. Block diagram of the proposed system is as shown in figure 1. Camera and Fingerprint modules are used for authentication of the user. Whenever a person enters an ATM camera captures an image and displays information about him. When face and Fingerprint are



matched, then an OTP is sent to the user, which along with Fingerprint and face recognition comprises three levels of security. When OTP is matched, then the customer's account will open an ATM.

Fig 1: The architecture of the proposed System

*Image processing* : Input to the System is the image captured by a camera. Pre-processing images commonly involves removing low-frequency background noise, normalizing the intensity of the individual particles images, removing reflections, and masking portions of images. Image pre-processing is the technique of enhancing data images prior to computational processing. Feature extraction involves reducing the number of resources required to describe a large set of data. When performing analysis of complex data one of the major problems stems from the number of variables involved. Feature extraction is a general term for methods of constructing combinations of the variables to get around these problems while still describing the data with sufficient accuracy. Image classification refers to the task of extracting information classes from a multiband raster image. The resulting raster from image classification can be used to create thematic maps. Depending on the interaction between the analyst and the computer during classification, there are two types of classification: supervised and unsupervised.

#### IV. CONCLUSION

The adoption of the ATM as an electronic banking channel has positively impacted the banking industry worldwide because it is beneficial and convenient for bank customers. The advent of ATM fraud has however been a menace for many banks all over the world and many banks now aim to eradicate fraud costs to the bank. The proposed system can provide a practical and workable solution that addresses the requirements of the regulatory authority of the banks. The adopted technology of the proposed system is also cheaper to deploy than the biometric authentication technique because it utilizes the components of the existing System. The model can also provide for high withdrawal limits to cater to the demands of a cash-focused customer base. In general, it will positively impact the banking industry and society by reducing the rising levels of crimes that are associated with ATM transactions.

#### REFERENCES

- [1] Nischay Kumar Hegde Sharath K R, Cardless ATM Cash Withdrawal: An alternate and straightforward Approach (IJCSIT)  
International Journal of Computer Science and Information Technologies, Vol. 7 (1), 2016, 126-128
- [2] Madhuri More 1, Sudarshan Kankal2, Akshaykumar Kharat3, Rupali Adhau, "CARDLESS

AUTOMATIC TELLER MACHINE (ATM) BIOMETRIC SECURITY SYSTEM DESIGN USING HUMAN FINGERPRINTS", International Journal of Advance Engineering and Research Development Volume 5, Issue 05, May -2018, 2348-6406.

[3] Harshad Joshi, Priyanka Keche, Isha Padiya "GSM Based Anti-theft Transaction System", International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering Vol. 4, Issue 1, January 2015 Copyright to IJAREEIE 10.15662/ijareeie.2015.0401015 144

[4] Alebiosu M. Iyabode, Yekini N. Nureni, Adebari F. Adebayo, Oloyede A. Olamide, "Card-Less Electronic Automated Teller Machine (EATM) With Biometric Authentication", International Journal of Engineering Trends and Technology (IJETT) – Volume 30 Number 2 – December 2015

[5] Pranav Gebad1, Prof. N. A. Dawande International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5, Issue 7, July 2016 ATM Transaction without Debit Card

[6] Nachiket Sainis1, Reena Saini "Biometrics: Cardless Secured Architecture for Authentication in ATM using IRIS Technology" International Journal of Innovative Research in Computer and Communication Engineering Vol. 3, Issue 6, June 2015

[7] Neenu Preetam. Harsh Gupta "Cardless Cash Access Using Biometric ATM Security System", International Journal of Enhanced Research in Science Technology & Engineering, Vol. 3 Issue 11, November-2014, Page | 13

[8] Priya Sharma, Pawan Kumar Chaurasia, "Proposed Algorithm for Secured Transaction using 3-Tier Architecture", International Journal of Computer Sciences and Engineering Open Access Research Paper Vol.-6, Issue-6, June 2018 E-ISSN: 2347-2693

science, Pune-41.