

Wireless Serial Data Synchronization for Money Transaction Using Multi Account Embedded ATM Card

Prof. Manasa C¹, Vallela Sai Krishna Reddy², Varshitha S Bellad³,
Rohith P⁴, Jeeshan M⁵

¹(Assistant Professor/Department of CSE, Bangalore Institute of Technology, Bengaluru,
Email: manasa244@gmail.com)

^{2,3,4,5} (Department of CSE, Bangalore Institute of Technology, Bengaluru)

Abstract:

The idea behind this work is that to add more than one bank account in an ATM card, so that the user need not carry more cards with them and complication of handling passwords. Here in this one we embedded more than one bank account so that the user can transact as she/he wish with a swipe. In addition to this convenience factor provided by multiaccount ATM we also provide enhance security features for both authorized/unauthorized users. If the card is swiped by the authorized user then he will get access with a help of a Eye Tracking method which is designed with help of haarcascade and facial landmark algorithms. For unauthorized users the wifi module sensor is used. It sends OTP to the authorized user. The OTP is to be entered through keypad by unauthorized user and the amount is provided only if the OTP is matched. The system also provides an option of choosing between several banks. The user can select which bank he desires to perform truncation with. This selection of choice is enabled by programming the keypad.

Keywords —Multiaccount, Authorized, Unauthorized, Eye Tracking, Haarcascade, Facial Landmark, wifi, OTP

I. INTRODUCTION

ATM is an abbreviation of Automated Teller Machine. It is introduced in the year 1959 for encouraging self service in retail banking. This makes people to deposit, withdraw and transfer amount without the help of banking persons and it can be done at anytime and anywhere. At first, the ATM was made to transact for the particular bank customers but later on the ATMs are connected to interbank network, so that it enables people to deposit, withdraw and transfer amount from the ATM machines not belonging to that particular bank (i.e.) any one can access any banks ATM machine to carry out their transactions. ATMs rely on authorisation of a financial transaction by the card issuer or other authorizing institution via the

communication network. This is often performed through an ISO 8583 messaging system. Many bank charges ATM usage fees from the customers for the transactions. At present every customer has an individual ATM card for each and every bank in which he/she maintains account. So handling the cards, their passwords play a major role here. So to overcome these difficulties we embedded more than one bank account of the user in a single ATM smart card, so that the user can swipe the card and can select the bank from which he/she are interested to carry out transaction.

II. EXISTING SYSTEM

An automated teller machine (ATM) or cash machine is an electronic device that allows a bank's customers to make cash withdrawals and check

their account balances without the need of human teller. Many ATMs also allow people to deposit cash or cheques, transfer money between their bank accounts, top up their mobile phones prepaid or even buy postage stamps.

In most modern ATMs, the customer identifies him or herself by inserting a plastic card with magnetic strip or plastic smart card with a chip that contains his or her account number. The customer then verifies his or her identity by entering a passcode (i.e.) personal identification number (PIN) of four digits. If the number is entered incorrectly several times consecutively (usually three), most ATMs will retain the card as a security precaution to prevent an unauthorized user from discovering the PIN by guesswork and so on. Moreover there is a limitation in transaction for the other bank customers in using the ATM of some other bank crossing the limit they have to pay transaction fees.

2.1 Objectives

The main objectives of this project are:

Operate different bank accounts instead of having individual card. Designing a System for tracking Face and Eye using Camera by Using Haarcascade technique detecting the movement of eye and calculating it.

This work is to design the system and to train the system for detecting face region and eye region within the image that is captured by the camera.

III. PROPOSED SYSTEM

In this proposed system we are an Embedded multi account ATM card. The idea behind this multiaccount ATM card is that the customers can use a single ATM card to operate different bank accounts instead of having individual card for each bank account and maintaining their pin's, carrying the cards safely which is a tedious process at present scenario. The technology behind the product of the service is that adding all the user bank accounts to a multiaccount ATM card. In this if the authorised user swipes his/her smart card in the ATM machine, then it request for authentication in the server side. After the user is authenticated

with his Eye Tracking process, then it displays the list of all banks that the user is having account. Now the user can select the bank from which he/she is willing to perform transaction. If the unauthorised user want to get access then it requires (owner of ATM card permission required) an OTP which is send to the owner mobile. So by entering the OTP it can get access and asks to select the bank from which he/she is willing to perform transaction. OTP is generated wifi module sensor. By these two methodologies except owner no other person know the password of ATM card and there is no chance to get hack because the owner is to get access via EyeTracker.

3.1 System Architecture

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

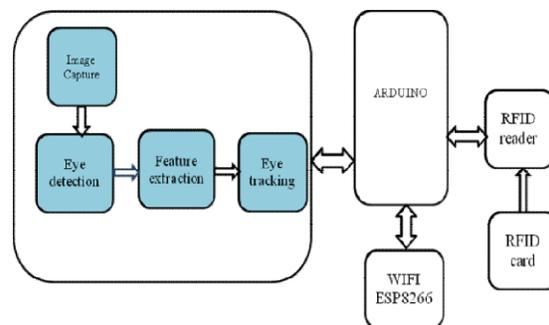


Fig1: Architecture of the proposed system

The RFID reader will read the card and the unique password which is set by the bank. This password is sent to OpenCV where the password is stored and then the password is entered through the eye movement and eye blinking or with OTP generation from wifi sensor. Further the authentication process will be done based on the generated password and the entered password.

IV. METHODOLOGY

4.1 Multibank user Access

The user scans the RFID tag which uses symmetric encryption algorithm with RFID reader.

The RFID component communicates with the Arduino (where multiple bank accounts are stored in the database) using the UART (Universal Asynchronous Receiver Transmitter) protocol. UART main purpose is to transmit and receive serial data. Instead of clock signal, the transmitting UART adds start and stop bits to the data packet being transferred.

4.2 Unauthorized authentication

The unauthorized user when he/she wants to access the transaction, first scans the card. The owner of the account gets the OTP from the bank. This OTP method is done through the Wifi ESP8266 module. Finally the unauthorized person gets the OTP from the owner, further transactions are carried out

4.3 Eye detection

Eye detection module is used to detect the eye region in the input image. Image that is captured from the camera is sent to eye detection module where the haarcascade algorithm is used to detect the face in the image and in that face region the eye region will be detected. The specific window location is sent to next module.

Haar cascade algorithm: This algorithm is used to detect the face and eye region in the image

4.4 Feature Extraction

The output of the above module is taken as input in this module. Based on the window location of the face the key facial structures of the face i.e., eye, nose, mouth, ears would be found and the specific (x,y) co-ordinates would be given to the facial

structures starting from 1 to 68. Then the co-ordinates of the left and right eye will be used to draw the polygon over the eye region.

Facial landmark detector algorithm: This is used to detect and label the facial landmarks of the image.

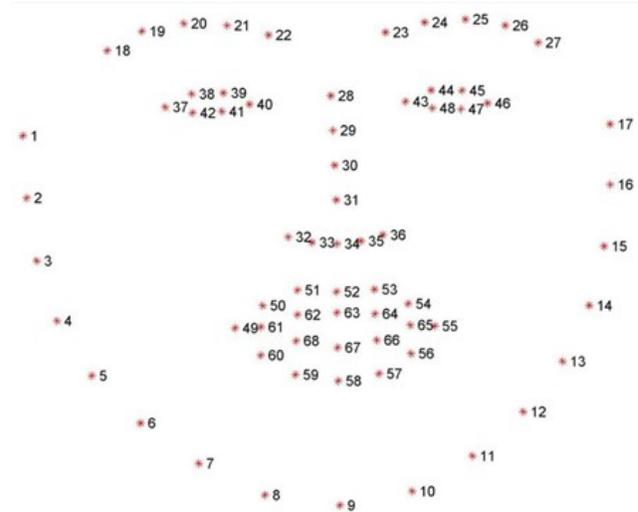


Fig 2: 68 Facial landmark points

4.5 Eye Tracking

Eye tracking is used to track the eye movement and to detect the eye blinking for updating the password. The co-ordinates of the eye will be used to find the midpoint of the eye and through the midpoint the horizontal and vertical line will be drawn based on these lines the tracking of the eye movement will update password.

V. RESULTS

5.1 Authorized user Transaction

Firstly user swipes the card then the LCD displays whether the user wants to continue as the authorized or unauthorized. After selecting as the authorized user then it gets to the password entry through the eye tracker. If password valid then allows to select the list of multiple banks.



Fig 8: Withdrawing money from particular bank

5.2 Unauthorized userTransaction

Here Instead of Eye Tracker we need to get access through the OTP which is generated by wifi module. After that we can follow the same transaction steps which is shown in fig 8.

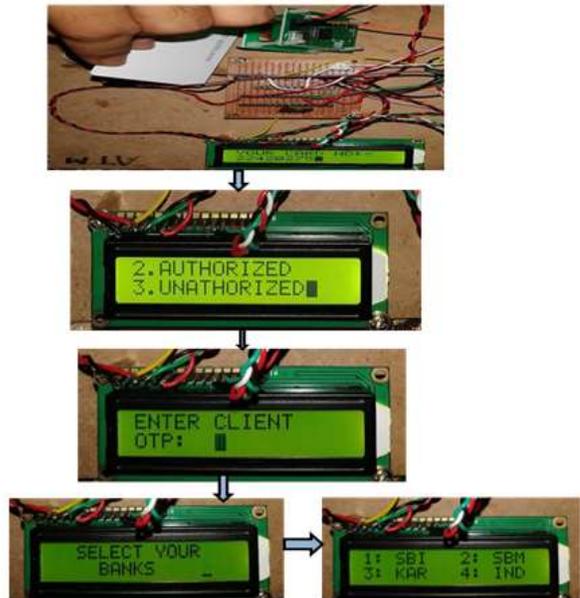


Fig 9: unauthorized user transaction with help of authorized user.

VI. CONCLUSION

The system we are using for handling multiple accounts here is more efficient than existing system. This Reduces transaction cost of handling multiple accounts of a single user. This make banking system more efficient than the existing system. Using this the users can perform transactions for all his bank Accounts using single smart ATM card with Enhanced security system such as OTP (one time password) and Eye recognition. Thus the user can manage his multiple accounts in various banks with the help of this single smart card which provides access and reduces the complex of managing more than one ATM card and passwords. This also leads to reduce cost of transaction charges that were on the customers for making transaction and decrease in their production of smart cards for each every account the user has. By implementing this ATM fraud i.e. skimming etc., can be avoided.

VII. FUTURE SCOPE

Future research will help to do away with PINs completely and dwarf ATM card authorization by introducing palm and finger vein authentication which is fast, accurate and difficult to fake. Since more than one bank accounts being added, the existing PIN security are not sufficient enough, so we can use a biometric scan in the smart card i.e. multi component card So that the user holds the card such that the face recognition on the biometric scan reader while he swipes the registered card and the image is authenticated at the real time. No one other than the user and their family can use the card. Only if the face matches the user can enter his PIN number otherwise the transaction will not be allowed until the user is authenticated.

VIII. REFERENCES

- [1] ATM Transaction Security Using Fingerprint Recognition by Mithun Dutta, KangkhitaKeam Psyche and Shamima Yasmin,2018.
- [2] Face Recognition based new generation ATM machine by DARun Kumar, M.AhmedAskar, A Ajay, R Ar
- [3] Highly Secure Multiple Account Bank Affinity Card-A Successor For ATM Card, Farha Kouser, Nagaratna, Pavithra VR, Bhavya Sree, Ravikiran,2018.
- [4] Secure Internet Banking Application"- Alain Hiltgen,ThorstenKramp.
- [5] Real-time Eye Tracking for Password Authentication, MehrubeMehrubeoglu, Vuong Nguyen,2018.
- [6] Enhancing Micro-ATM and POS terminals Authentication System Using Advanced Biometric Techniques, Priya tawde, Dr. G Prasanna Lakshmi,2017.
- [7] Smart ATM security system using FPR, GSM, GPS Bharati M, Nelligani, N V, Uma Reddy, Nitin Awasti,2016.
- [8] Facial recognition using sensors in ATM Jaganiga M, Vaitheswari S, RasitraR, Lakshmi S,2018.
- [9] Multi bank ATM family CardKSridharan,K G yuvaraaj,K C Rahul, S D Ashok kumar, 2017.
- [10] Cardless Automatic teller machine biometric security system design using human Fingerprints, Madhuri More, Sudarshan Kankal, AkshayKumarKharat, Rupali Adhau,2018.
- [11] ATM security using eye and facial recognition system, Sakshi Shrimal, Nishant Shrimal,2018.
- [12] Chip-and-PIN: Success and challenges in reducing Fraud from Federal Reserve Bank of Atlanta