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Enhanced Security for ATM Machine with Biometric Technology

Soneria Hardik Champaklal[1], Siba Ram Raut[2]

[1]Information Technology Department, [2]Computer Science & Engineering, Gujarat Technological University

Abstract: This The main purpose of our paper to make ATM transaction more secure and user-friendly. Now days Biometric technology is increasing rapidly. Biometric is used for personal identification. Here we are using Facial Recognition and Fingerprint scanning biometric to provide access to ATM machine. Data of a Facial and Fingerprint are stored in database using the enrollment process through the Bank. Bank provide authentication to the customer that can be access while performing transaction process. If face and fingerprint match are found in data base, then transaction take place. After verification if face and fingerprint does not match transaction will be canceled. Here we are not using any kind of debit card or credit card for transaction we just use only biometric technique. Using face and fingerprint based ATM system user can make secure transaction.
Keywords: ATM, Accessing, Authentication, Embedded System, Biometric, Verification, Facial Recognition Fingerprint, Security

I. INTRODUCTION

The full form of ATM is Automated Teller Machine. It is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions, particularly cash withdrawal, without the need for a human cashier, clerk or bank teller.

ATMIA is the ATM Industry Association, which has a record that close to 3 million ATM's are currently installed worldwide. Along with the growing convenience and feasibility of the ATM's, there is also an increase in the amount of ATM thefts and frauds, which are developing at an alarming rate. In the war of functionality versus security, the functionality wins more often. Security has always been viewed upon as an overhead or afterthought by software developers. But in the case of banking and money transactions, the security should hold highest priority. Increase in daily attacks on ATM and banking security the developers getting on right track and putting security their important aspect in developing.

The multifactor authentication is an approach to authentication which requires the presentation of two or more authentication factors: a knowledge factor ("something only the user knows"), a possession factor ("something only the user has"), and an inference factor ("something only the user is"). After presentation, each factor must be validated by the other party for authentication to occur. In present days the ATM holds only one thing (i.e. PIN) to secure the money saved in the bank if we are not considering the physical attacks. In our paper we are going beyond this level of security to enhance security of the ATM. We introduce the concept of Biometric technology in ATM banking. Our paper will provide the high level of security using face recognition and fingerprint factors for transition without use of any debit card or any PIN number.

Biometric can be used to identify physical and behavioral characteristics of user face and fingerprints. There are many biometric devices like iris detection, face recognition, fingerprint. In our Paper, we are using face recognition and fingerprint biometric. Users face and fingerprint are scanned using biometric trait and stored in database. All face and fingerprints have unique characteristics and patterns. Face and Fingerprint biometric are easy to use, cheap and most suitable for everyone. Characteristics of face and fingerprint vary from person to person. Face and Fingerprint are unique identity of user.

II. RESEARCH METHODOLOGY

Net banking or internet banking system needs more consideration for the development and execution of some reliable security system approach. This requisite needs to plan and develop a competent security system that works very efficiently by which consumers can be validated, verified and granted access to the Internet banking. By using biometric technology, we may decrease all types of frauds including phishing etc. Currently, when financial system is going through very much insecurity, many companies are now started realizing the profit of investment to develop and implement biometric security system.

There are many ways for biometric scanning e.g. retina scan, face recognition, vein geometry, fingerprint identification etc., available and in practice. These can be summarized as:

A. Fingerprint Verification

The fingerprints of any person remains the same throughout the life and no two fingerprints are ever same. But for this, to work accurately it requires clean hands without having any injuries to their prints otherwise it will prevent proper identification.

B. Face Recognition

One of the most flexible methods as it can be done without the person being aware that they are being scanned.

C. Scanning of Retina

The pattern of the blood vessel at the back of every eye is absolutely unique and is never changing. The disadvantage of this system is that it takes around 15 seconds of cautious attention to complete a good scan.

D. Scanning of Hand Geometry

It will work in insensitive working environments. It is not measured as intrusive and often used in industrialized environment.

E. Vein Geometry Recognition

This is also a very good type of security scan. In vein geometry the geometry of veins in a hand is analyzed and identification and authorization can be done on the basis of result.

F. Iris Scanning

This is also very difficult to reproduce and stays the same with your entire lifetime. But obviously it is difficult for children and the sick people.

G. Voice Analyzing

This method of security biometric can be implemented and tested without the person's awareness. From above listed Biometric Scanning techniques there are two techniques which can be used for user verification while making ATM transactions without using debit card or PIN number

III. STEP OF WITHDRAW MONEY FROM ATM MACHINE

It is very easy to use and convenient way to access your bank account. If you're newly get your ATM card from bank and it is not working, don't worry. Some bank takes 24 hours to active their ATM cards. So now you can withdrawal cash from your bank account from almost anywhere Try to use your ATM cards and your ATM's from the same bank, Otherwise some services may not be available if your card and ATM don't match.

A.   Insert Card
B.   Select your Language
C.   Enter your PIN
D.   Transaction Type
E.   Account Type
F.   Enter Amount
G.   Take Money
H.   Another Transaction
I.   Ending your Session
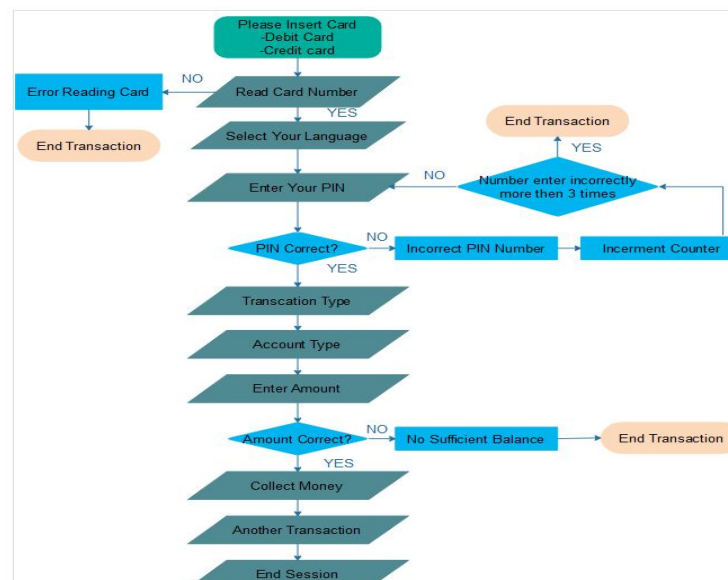

Fig. 1 A Flowchart for withdraw money from ATM machine using cards

IV. RESULT AND DISCUSSION

The Following steps about the sequence of events which will provide for the ATM with Biometric Technology

A.   Face Recognition
B.   Select Bank for Withdraw (Click on Bank LOGO)
C.   Select your Language
D.   Enter your Fingerprint
E.   Transaction Type
F.   Account Type
G.   Enter Amount
H.   Take Money
I.   Another Transaction
J.   Ending your Session
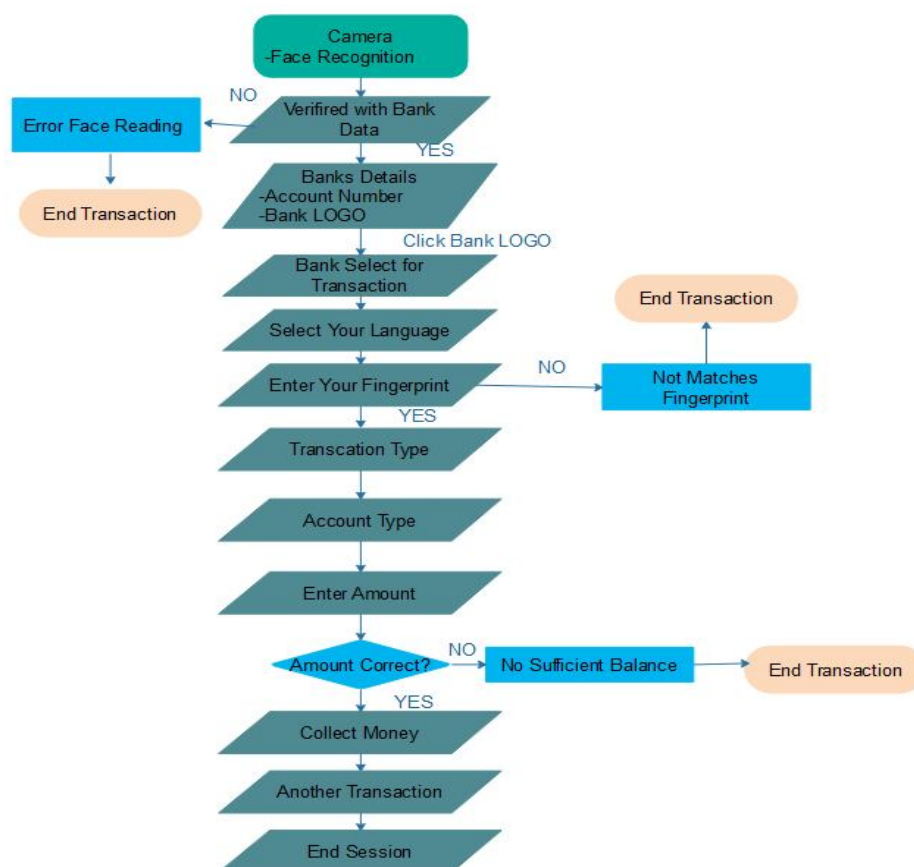

Fig. 2 A Flowchart for withdraw money from ATM machine using Face recognition & Fingerprint

When you open account in bank at that time your biometric information like face and fingerprint are store in bank database. Now this Face and Fingerprint are using in ATM for transaction without any debit card and credit card. First process in ATM camera your Facial recognition if it not verified with bank data end your transaction and if it verified then your different Banks Account Detail where your accounts are open display with Account number and particular Bank Logo after click on Bank Logo your Bank is selected for transaction then next process of select language after select language enter your fingerprint for security purpose if it matches with bank data then a next process for transaction.

V. CONCLUSIONS

These security controls enable the banks to reduce fraudulent transactions, reduce legal risks and achieve regulatory compliance, cardholder trust & confidence. It could enhance trust and confidence which could result more usability of ATM.The above approach made in this paper isn't feasible in context of time and availability of particular tasks. As a future work, it could be providing more security and a user friendly environment developed.

VI. ACKNOWLEDGMENT

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