

ENHANCEMENT OF ATM TRANSACTION BY IMPLEMENTING FINGERPRINT RECOGNITION

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Abstract - In this modern life we are using ATM (Automated Teller Machine) to withdraw and transfer cash. This will make the transaction in systematic and secured manner. The account holder need not to wait in the bank and we can save time. In ATM machines, the account holder will use ATM card to withdraw the money and it is verified by PIN number. In this case if the entered pin is correct, we can withdraw or transfer the money. In other case, if the PIN is wrong, the framework will give number of attempts to enter the valid PIN. After the three attempts, the ATM card will be blocked. Again he/she should go to bank to fill the formalities to withdraw or transfer the money. This become more complex in emergency need. To reduce this complexity, we can implement Fingerprint recognition in ATM machine to do all kind of transaction. We can use a person's unique mark biometric which is safe, secured transaction between the bank and the account holder. By using Enrolment process, the database will store the data of the fingerprint through the bank. If the fingerprint is matched in the database, transaction takes place or else cancelled. Therefore, in proposed system we are implementing fingerprint recognition to access ATM machines which is safe transaction and reduces complexity.

Key Words: Fingerprint, ATM, PIN, Biometrics, framework.

1. INTRODUCTION

Many researches and examines have been conducted to develop the systems which supports card-less transactions. Now-a-days these are getting very popular and are very much in trend in which the users can make use of their personal devices such as mobile phones to make the transactions through online making it cashless. Although the technology has developed so much that people can sit at home and make the transactions there are some people who don't have the accessibility to the smart phones and internet connection and really depend on ATM transactions. As we know that generally in ATM (automatic teller machine) the unique PIN given to the users is used for the verification. The users whoever visits the ATM must be identified and verified. Hence authentication process becomes an important activity in order to improve and intensify the

security level. The major problems faced by the users in ATM terminals are shoulder-surfing attack, card cloning and PIN sharing. Shoulder-surfing attacks also known as observation attacks are the most common threat for ATM authentication [1]. In such cases, attackers who wants to know the confidential information of the user simply tries to view the procedure of the entry of the pin by the authorized users. The attackers can also execute shoulder-surfing by standing in the queue behind the verified user and looking at the entry of the PIN by the user. Sometimes the attackers can also install a small camera on the ceiling of the ATM terminal at the point-of-services in order to record the pin entries of the users. Every year the credit and debit card frauds and burglaries are increasing due to the identity extortion. The attackers may also use a card skimming in order to know the confidential information of the user which can be installed in the ATM machines. Such devices can easily be fitted at the card slot of the ATM machines and it records the card information whenever the user swipes or inserts the card in the card slot. Additional there are scamming techniques using fake terminals, credit card cloning and remote relay which make the process of the user protection harder [1-4]. Therefore, a PIN authentication protocol for ATM by using the mobile application the smart phone is used in order to improve and increase the security level. Image processing techniques can also be used for the authentication process when the user exceeds the maximum of three attempts of entering the PIN.

2. EXISTING SYSTEM

In this modern world, now a days public needs to work smart and make their work easy in all the fields. Since keeping this agenda in the minds, the technology is developing to make work easy. Before the people's has to stand in a queue for withdrawing their money in bank, which was very difficult for the people and consumes more time. So to avoid these difficulties and to save time ATM came into existence and made easy to withdraw their money anywhere by inserting ATM card. But it also had disadvantage, the ATM card password can be hacked or stolen by any other person and knowing the password of ATM that person can withdraw the money. Such problems made the people's to

feel insecurity. So this existing system is advantage and disadvantage also when the third party is involved [5].



Fig-1: Account holder is entering the PIN



Fig-2: Account holder using the ATM card

3. PROBLEM STATEMENT

The disadvantage of the existing system is the account holder should wait in the queue to withdraw or transaction of time. It is of time consume. Some person may forget the PIN and keep the ATM card elsewhere. To recover this the account holder must go all way to the bank to pin recovery and apply application to the new ATM card. This is waste of time and not secured manner.

The main purpose of the proposed system is to get rid of going to bank and fill the formalities for the transaction. To prevent the account holder to carry the ATM card. Instead we can use the fingerprint scanner to do the transaction.

4. METHODOLOGY OF PROPOSED SYSTEM

The proposed system says that the account holder using ATM will uses his fingerprint recognition The client will insert the ATM card and enters the pin to withdraw or transaction of money. In this case if the account holder enters the invalid PIN for many times, an instant message will be displayed on the ATM machine. The display shows the message "You have entered wrong PIN. So now you can give the enrolled fingerprint recognition for verification. If the fingerprint matches with the database, then verification is successful, then create your own PIN in ATM center. Now enter the new PIN and continue the transaction. This is how the proposed system works in a secured manner. fig.3 will show the activity block involved in the proposed system.

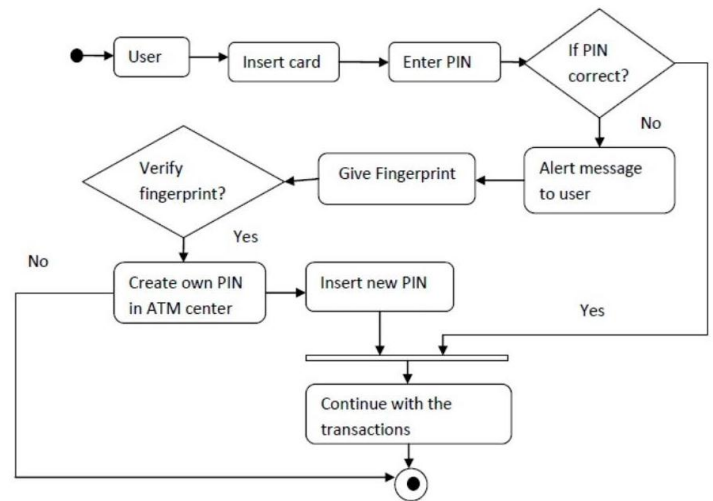


Fig-3: Activity of Proposed System

Table -1: Performance rate of ATM

USER	FINGERPRINT RECOGNITION	ATM PIN	TRANSACTION	RATE OF PERFORMANCE
USER1 (using biometric)	YES	NO	SUCCESS	100
USER2 (using PIN)	YES	NO	SUCCESS	100
USER3(PIN used by others with the permission of the owner)	NO	YES	SUCCESS	100
USER4(unknown person involved)	NO	YES (FAILED)	X	100

5. HARDWARE COMPONENTS

The system solution designed below incorporates fingerprint scanner with the already existing system for identification of the client or the person who comes to the ATM to avoid any kind of theft and burglar actions.

5.1 Power Supply

Every electrical components need power supply to work. Power supply will provide electrical power to the load The power supply can be used to obtained voltage, current to power the load. A 230v, 50Hz single phase AC power is given

as input to transformer to get supply. This voltage is converted into DC voltage by the rectifier. The DC voltage is filtered by capacitor and given to voltage regulator to produce constant 5V supply.

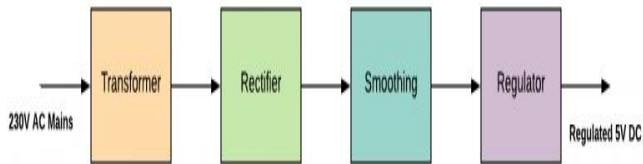


Fig -3: power supply unit

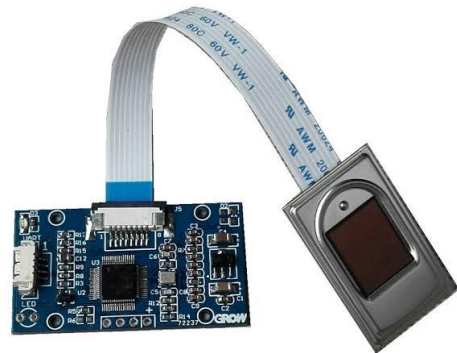


Fig-5: Fingerprint scanner

5.2 Microcontroller unit

We can use microcontroller unit like AT89S52, 89C51. AT89S52 is 8-bit microcontroller with 8K bytes with inbuilt programmable flash memory. It is powerful microcontroller which is high flexible and cost is low. This can be used to embedded control systems.



Fig -4: AT89S52 microcontroller

5.3 FINGERPRINT SCANNER:

It is a type of a electronic device used in security systems which uses finger impressions of a person for authentication to give permission to the person to access a information or transaction which are confidential. They are generally used for security purposes and now a days on smart phones. Each and every person has impressions on their fingers which are of different patterns which are very unique and varies from person to person which cannot be changed or removed. Hence fingerprints become the very unique and perfect way of identification.

The fingerprint scanner uses a light sensitive microchip to produce digital image. The computer will recognize the image and uses a pattern matching software to turn in code and the fingerprint is recognized.

5.4 Processor: Intel core-i5

This processor is developed and manufactured by the company Intel. It is available as dual or quad-core, 64-bit, x86 CPUs in the core "i" line between i3 and i7 and it is types of processor in the "i" series (also called the Intel Core family of processors). This processor is available in multiple speeds, and it ranges from 1.90 GHz up to 3.80 GHz. Intel core-i5 processor are used for the better performance in heavy usage.



Fig-6: Intel core-i5 Processor

5.5 LCD

The LCD display screen operation can be controlled to provide an improved fingerprint sensing by eliminating background light for optical sensing of the fingerprint. In one implementation, for example, each display scan frame generates a frame of fingerprint signals.



Fig-7: LCD

5.6 Keypad

The keypad is the physical input to the account holder which is used to enter the PIN. It provides multiple task like entering the PIN, cancellation the transaction, to clear the input given in the keypad [6].



Fig-8: Keypad of ATM

5.7 EPROM

EPROM stands for erasable Programmable read-only memory is a non-volatile memory chip. As the name itself says it can be easily programmed and erased, hence they are reusable. These are the additional memory used in the ATM machines for the storage of the data of a particular person. This memory chips will not lose its contents even if there is a power cut and the content or the data will be erased only if their exposed to ultraviolet light source. They have a transparent fused quartz window on the top of the package due to which they are easily recognized. A silicon chip which is inside the package is visible from this transparent quartz window and this window allows the UV light to pass through it while erasing the data of the memory.



Fig-9: EPROM

Keeping the problem in mind, we have developed a solution which would help the bank, achieve its overall objectives.

The application can be securely accessed by the bank employee and administrator who has got system-level rights access confidential information of the bank employees in the database.



Fig-9: ATM Fingerprint scanner



Fig-10: Fingerprint Recognition

Some of the future scope of the proposed the system is as follows:

- ★ Audio alert can be given by using sensors when the unknown getting into the ATM.
- ★ Secure, reliable, easy to use
- ★ Face recognition and facial verification technology
- ★ Research and thinking about the software base
- ★ Protecting ATM fraud and security

6. CONCLUSION

The benefit of ATM security by the recognition of fingerprint contains the Original checking techniques, which is send by the controller and checked appropriately. The security Features were upgraded to a great extent for the reliability and stability of proper acknowledgment. The entire framework was based on the fingerprint innovation, which makes the framework more secure, solid and simple to utilize. This will be generally encouraging innovation at electronic cash exchange. Finger of each individual is unique, so we can fingerprint scanner to avoid ATM card related fraud, use of duplicate ATM card, sharing of card by family and friends, inability to decode the fraud activities can be solved by implementing fingerprint recognition.

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