

Study of Smart Automatic Teller Machine (ATM) With Biometric Strategy Fingerprints and Anti- Thief Security

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Abstract - The Prime importance of this paper is to provide easily accessible codes for creating, banks accounts and computer systems often use personal identification numbers (PIN's) for identification and security. A biometric measure as a means of enhancing the security for banking system for both customer's & bankers also. We also proposed nominees fingerprint identification process while actual card holder unable to do the transactions. In this new digital world there is no proper security for ATM machines. Robbery of the ATM machines has been increased widely. By using the existed technology ATM machines are not safe in order to provide proper security for money. So it is proposed a new technology which can overcome this problem.

Keywords — GSM: global system for mobile communication, ATM: Automated Teller Machine, vibration sensors, Microcontroller, ADC.

I. INTRODUCTION

Now days there are lots of tricks and hackers of computer programmers are step up with new technologies, so for many handlers it is not easy task to everywhere. For security and safety we should use our unique identification such as fingerprints. Actually PIN code are changeable but fingerprint are not changeable, so card holder may changes his/her PIN code while maintaining one's own secrecy and may permit his/her nominee with giving updated PIN code for transactions. We have considered the left & right thumb impression of an individual; it has been observed that there is no any match in these samples in any case. We have also observed that thumb impression samples have been taken in different angles & different forces. On study of these samples under the pattern matching algorithms as proposed it have shown at least up to 90% & more matching feature Today's existing ATM machine is a mechanical system that has its roots embedded in the accounts and records of a banking institution. It is a computerized machine designed to dispense cash to bank customers without need of human interaction; it can transfer money between bank accounts and provide other basic financial services such as balance enquiries, mini statement, withdrawal and fast cash among others.

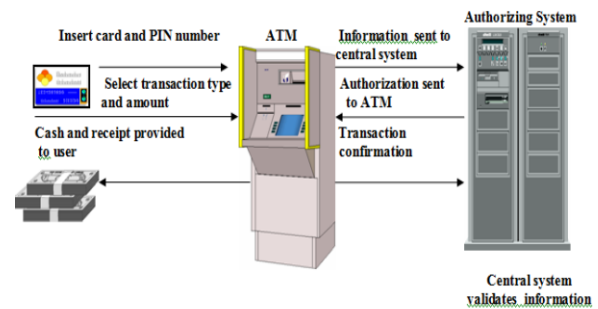


Fig. 1: Block diagram of ATM

II. PROPOSED SYSTEM DESIGN AND IMPLEMENTATION

Authentication metrics, that is, the ATM ID number, the PIN number and the Biometric feature (fingerprint) both card holder & nominees. It is expected that the This research is being carried out for the sole purpose of designing a three factor customer should possess an ATM card, to know and remember his/her PIN number and to enroll his/her fingerprint into the fingerprint device/reader adapter into the system. After which the fingerprint database compares the live sample provided by the customer with the template in the database, for identification proposed shows in figure 1. On confirmation that the information provided is true, that customer is granted access to the ATM system, for why proposed verification process shown in fig.2.

The algorithm that enrolls identifies and verifies a user using the functions in libfprint library for minutiae detection and identification. Image goodness factor is the number of minutiae returned by the feature extraction function in the library. Image matching against the database is done through comparison of the minutiae and subsequent score generation based on the degree of match. The library function BOZORTH3 does a fairly good job in image identification and verification and provides the flexibility of setting the score threshold through only above which the fingerprint is to be considered authorized. The performance of any fingerprint identification system is measured in terms of two parameters i.e. False Positive

and False Negative. False Positive is the situation in which an invalid user is granted access to the system while False Negative is the situation in which a valid user is denied access to the System.

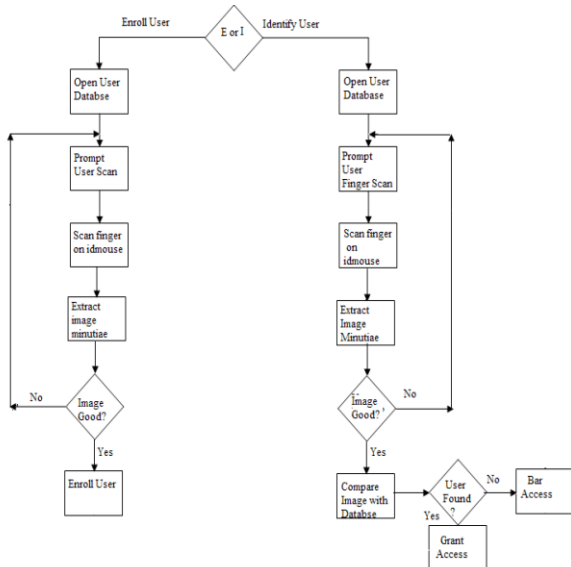


Fig. 2: Flowchart of Verification Process of ATM

For any identification system it is very important not to grant access to an unauthorized user, so false positive should be very low and ideally zero. While false negative is an inconvenience faced by a valid user in which he has to scan his finger again. Thus, in order to develop a more secure and accurate identification system the rate of these two parameters should be as low as possible. With a BOZORTH score threshold of 40 we observed 0 false positive rate and 1 out of 10 false negative attempts. Finally we have a function that can delete an enrolled user's record from the database.



Fig.3: ATM Security Method

III. ANTI-THIEF SECURITY

Anti-thief security provides safety against many hackers and attackers. It also provides security for the ATM machine itself. When the attacker try to damage the ATM machine vibration detection sensors gets activated. A message is passed to the nearby police stations with the

help of GSM modem. By using this technology attacks over the ATM machines can be overcome. The attackers can be caught easily. ADC means Analog to Digital Converter.

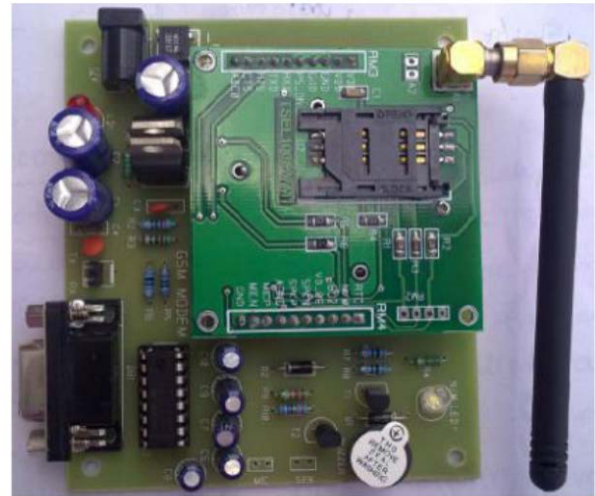


Fig. 4: GPS Modem

Here we have an analog input at pin6. And we have to convert it to digital output by giving certain set of commands to microcontroller to control ADC. By following steps one can convert analog data to digital data. Make CS (Chip Select) pin of ADC Low. Make a Low to High Transition on WR (Write) pin of ADC. Wait for 110 micro sec for Analog to Digital Conversion. Make RD (Read) pin Low. Copy the 8 bit Digital data. Make RD pin High for next reading. Vibration detector-vibration analysis [2] Holroyd manufacture a range sensors and accessories which are compatible with our vibration detector measurement and analysis equipment. This includes structural monitoring and remote monitoring accessories for vibration sensors

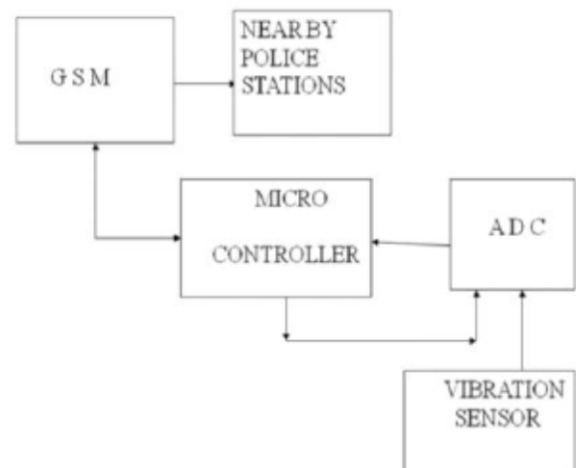


Fig. 5: Block diagram of the System

IV. VIBRATION SENSOR

In engineering, the applications of vibration sensor are widely used, so it caused by a high degree of importance about its research and development in the world. At present, with the development of science and technology, the shortcomings of vibration sensors continue to be overcome; measurement accuracy and increasing the sensitivity range of applications are increasingly being used.

V. CONCLUSION

The model design of smart ATM machine will be relevant, reliable and beneficial to the user. The Smart ATM machine provides many facilities that is not currently present in the existing ATM machine. The Outstanding features of smart ATM machine Are given below:

Fingerprints have a wide variation since no two people have identical prints.

1. There is high degree of consistency in fingerprints. A person's fingerprints may change in scale but not in relative appearance, which is not the case in other biometrics.
2. Fingerprints are left each time the finger contacts a surface.
3. Availability of small and inexpensive fingerprint captures devices.
4. Availability of fast computing hardware.
5. Availability of high recognition rate and speed devices that meet the needs of many applications
6. The explosive growth of network and Internet transactions
7. The heightened awareness of the need for ease-of-use as an essential component of reliable security.
8. Continuous detection of vibrations can be done. A message is passed to the nearby police stations. The attacker can be caught easily. ATM robberies can be overcome.
9. This system when fully deployed will definitely reduce the rate of fraudulent activities on the ATM machines such that only the registered owner of a card access to the bank account.

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