

# FINGERPRINT BASED ATM SYSTEM

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**Abstract-** Identification and verification of a person today is a common thing; which may include door-lock system, safe box and vehicle control or even at accessing bank accounts via ATM, etc which is necessary for securing personal information. The conventional methods like ID card verification or signature does not provide perfection and reliability. The systems employed at these places must be fast enough and robust too. Use of the ATM (Automatic Teller Machine) which provides customers with the convenient banknote trading is facing a new challenge to carry on the valid identity to the customer. Since, in conventional identification methods with ATM, criminal cases are increasing making financial losses to customers

**Keywords-** Fingerprint sensor (FIM3030), Microcontroller (LPC2148)

## I. INTRODUCTION

Biometrics is a technology that helps to make your data extremely secure, unique all the users by way of their personal physical characteristics. Biometric information can be used to perfectly identify people by using their fingerprint, face, speech, iris, handwriting, or hand geometry and so on. Using biometric identifiers offers several advantages over traditional and current methods. Tokens such as magnetic stripe cards, smart cards and physical keys, can be stolen, lost, replicated, or left behind; passwords can be shared, forgotten, hacked or accidentally observed by a third party. There are two key functions offered by a biometric system. One technique is identification and the other is verification. In this paper, we are concentrating on identifying and verifying a user by fingerprint recognition.

A modern ATM is typically made up of the devices like CPU to control the user interface and devices related to transaction, Magnetic or Chip card reader to identify the customer, PIN Pad, Secure crypto-processor generally within a secure cover, Display to be used by the customer for performing the transaction, Function key buttons, Record Printer to provide the customer with a record of their transaction, to store the parts of the machinery requiring restricted access -Vault, Housing for aesthetics, Sensors and Indicators. Fingerprint technology is the most widely accepted and mature biometric method.

## II. LITERATURE SURVEY

To implement this concept, we have studied different research works and found following information. For fingerprint recognition, a system needs to capture fingerprint and then follow certain algorithm for fingerprint matching. The research paper discusses a minutiae detection algorithm and showed key parameters of fingerprint image for identification. For solving the bugs of traditional identification methods, the author of designs a new ATM terminal customer recognition system. The chip of S3C2440 is used for the core of microprocessor in ARM9 and an improved enhancement algorithm of fingerprint image

increase the security of bank account and the ATM machine. For image enhancement, the Gabor filter algorithms and direction filter algorithms are used. In research paper, authors showed that Gabor filters (GFs) play an important role in the extraction of Gabor features and the enhancement of various types of images. For the purpose of enhancing curved structures in noisy images, curved GFs that locally adapt their shape to the direction of flow can also be used.

Sr No	Title	Authr	Year	Publication
1	ATM Terminal Security using Fingerprint Recognition	Vibhav R.Pandit Kirti R. Joshi Narendra G. Bawane	2013	IEEE SYMPOSIUM ON SECURITY AND PRIVACY WORKSHOP (SPW)

If images of fingerprint are poor-quality images, they result in missing features, leading to the degrading performance of the fingerprint system. Thus, it is very important for a fingerprint recognition system to estimate the quality and validity of the captured fingerprint images. Existing approaches for this estimation are either to use of local features of the image or to use of global features of the image. Traditional fingerprint recognition approaches have demerits of easy losing rich information and poor performances due to the complex type of inputs, such as image rotation, poor quality image enrollment, incomplete input image, and so on. Thus in order to overcome these shortcomings, in research paper, a new fingerprint recognition scheme based on a set of assembled invariant moment (geometric moment and Zernike moment) features to ensure the secure communications is proposed. In paper, fuzzy features match (FFM) based novel method on a local triangle feature is set to match the deformed fingerprints. Fingerprint here is represented by the fuzzy feature set: the local triangle feature set.

### III. HARDWARE DESIGN

To implement the proposed security for ATM terminals with the use of fingerprint recognition, we use the different hardware and software platforms. Fig 1 shows the major system modules and their interconnections

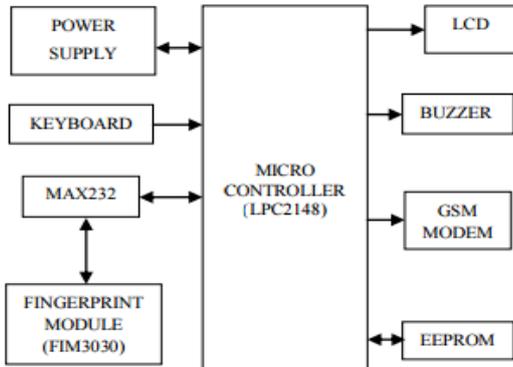


Fig 1: Overview of the system.

### IV. PROPOSED SYSTEM

Our system integrate biometric identification into normal, traditional authentication technique use by electronic ATM machines now a days to ensure a strong unbreakable security and non-repudiate transactions. In order to increase the security we are using the combination of three authentication methods of card, fingerprint, and PIN with voice. Our proposed System makes use of the Finger Print Scanning Technology and voice Recognition Technology to authenticate the user.

#### Advantages of Proposed System

- Strong Authentication
- Our System replaces card system with physiological characteristics.
- Hidden cost of ATM Card Management can be avoided.
- It's ideal for rural masses 5.
- Useful for senior system because no need to carry cards and memorize passwords
- Due to bio metric system no one is able to access the other systems.
- User can change the authentication any time in home branch with few simple procedures.
- It is easy to use.
- It is used instead of PIN number

### V. SOFTWARE DESIGN

The embedded platform discussed above is programmed in C language with KeilµVision4 to follow the program logic shown in Fig 4 as follows.

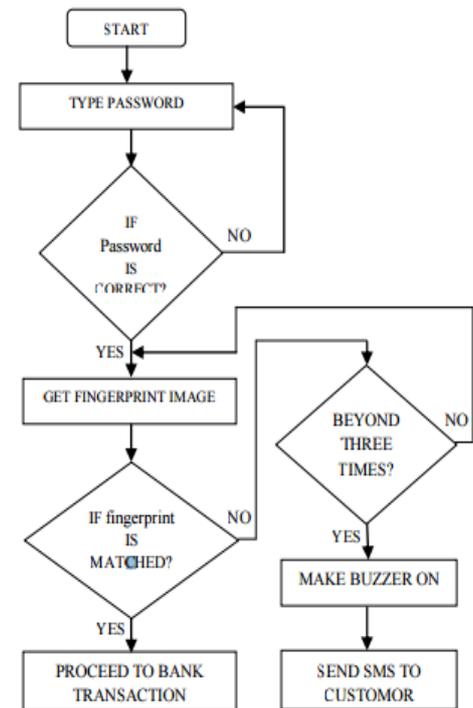


Fig 4: Realization of flow of tasks for the proposed system.

### VI. CONCLUSION

After testing the system developed, we came to know that ATM prototype can be efficiently used with fingerprint recognition. Since, password protection is not bypassed in our system, the fingerprint recognition done after it yielded fast response and is found to be of ease for use. Fingerprint images cannot be recreated from templates; hence no one can misuse the system. LPC2148 and FIM3030 provide low power consumption platform. Speed of execution can be enhanced with the use of more sophisticated microcontroller. The same hardware platform can be used with IRIS scanner to put forward another potential biometric security to the ATMs.

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