

# Bio- Matric Intelligent ATM System

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**ABSTRACT:** Now a day, peoples have multiple bank accounts so money transactions play a vital role in the nature of trade. Today, ATMs and Credit cards are used for this purpose, the authentication of these transactions are unsecure. To overcome this shortcoming of money transactions, we proposes the idea of using fingerprints of customers as login multiple banking password in place of traditional pin number. Here, if the fingerprint is recognized, then it display the multiple banking screen. Then we can choose the bank which we need for transaction. The remaining feature are same as i.e., a reference fingerprint of the nominee or a close family member of the customer can be used if the customer is not available in case of emergencies. This proposed business model helps the society, mainly the rural people, by enhancing the security using Fingerprint recognition in Digital image processing. As the fingerprint of every person is unique and unchangeable, this biometric feature is used over the others

**Key words:** Automatic Teller Machine (ATM), Biometric, Microphone, Voiced-Based Access Control, Smartcard Access Control, Voiced-Based Verification System.

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## I. INTRODUCTION

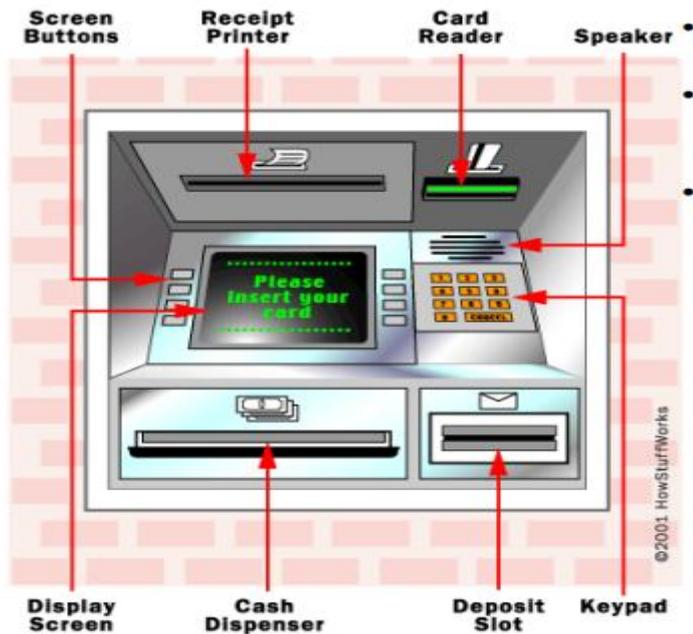
The main objective of this system is to develop an system, which is used for ATM security applications. In these systems, Bankers will collect the customer finger prints and mobile number while opening the accounts then customer only access ATM machine. The working of these ATM machine is when customer place finger on the finger print module when it access automatically generates every time different 4-digit code as a message to the mobile of the authorized customer through GSM modem connected to the microcontroller. The code received by the customer should be entered by pressing the keys on the screen. After entering it checks whether it is a valid one or not and allows the customer further access.

## II. EXISTING SYSTEM

ATM is an automated teller machine which is a computerized telecommunications device that provides the customers of a financial institution with access to financial transactions in a public space without the need for a human clerk or bank teller. In ATMs the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smartcard with a chip (that contains a unique card number and some security information). The first ATM was installed in Enfield town in London on June 27, 1967 by Barclays Bank. ATMs are known by various other names as Automated Transaction Machine, Automated Banking Machine, Cash Point(at Britain), Hole in the wall, Ban

comet(in Europe and Russia) and Any Time Money( in India).



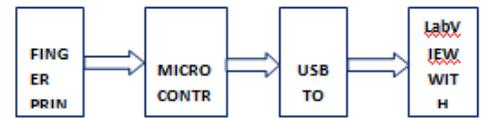


Existing system

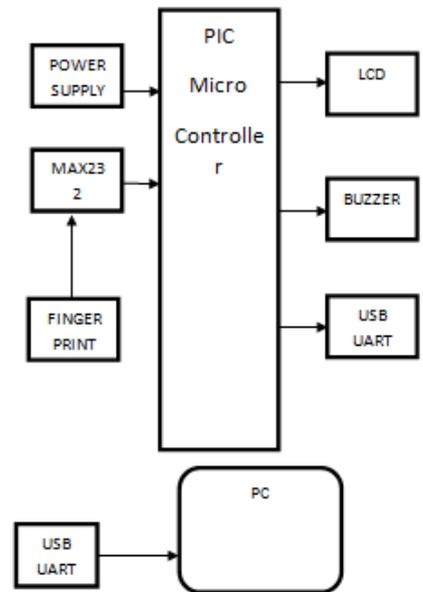
**III. PROPOSED CONCEPT:**

Fingerprint Based ATM is a desktop application where fingerprint of the user is used as an authentication. The finger print minutiae features are different for each human being so the user can be identified uniquely. Instead of using ATM card Fingerprint based ATM is safer and secure. There is no worry of losing ATM card and no need to carry ATM card in your wallet. You just have to use your fingerprint in order to do any banking transaction. The user has to login using his fingerprint and he has to enter the pin code in order to do further transaction. The user can withdraw money from his account. User can transfer money to various accounts by mentioning account number. In order to withdraw money user has to enter the amount he want to withdraw and has to mention from which account he want to withdraw (i.e. saving account, current account) .The user must have appropriate balance in his ATM account to do transaction. User can view the balance available in his respective account. The system will provide the user to view last 5 transactions.

Block diagram:



HARDWARE DESIGN



**FINGER PRINTS SENSOR:**

Finger prints Sensor is used to sense finger prints of customer and given to microcontroller.

Micro controller:

Microcontroller is used to calibrate sensor output and given to Software via USB to UART

**SOFTWARE:**

Lab VIEW (Laboratory Virtual Instruments Engineering Workbench) is used for maintain database of customer and bank account details and balance. It is also used as User Interface. Customer can interact this system using Lab VIEW.

**Biometrics**

Biometrics are automated methods of recognizing a person based on a physiological or behavioral characteristic. Among the features measured are; face, fingerprint, hand geometry, iris, retinal, signature, and voice. Biometric technologies are becoming the foundation of an extensive array of highly secure identification and personal verification solutions. As the level of security breaches and transaction fraud increases, the need for highly secure

identification and personal verification technologies is becoming apparent.



#### INGER PRINT SCANNER:

A fingerprint scanner system has two basic jobs -- it needs to get an image of your finger, and it needs to determine whether the pattern of ridges and valleys in this image matches the pattern of ridges and valleys in pre-scanned images. Only specific characteristics, which are unique to every fingerprint, are filtered and saved as an encrypted biometric key or mathematical representation. No image of a fingerprint is ever saved, only a series of numbers (a binary code), which is used for verification. The algorithm cannot be reconverted to an image, so no one can duplicate your fingerprints.

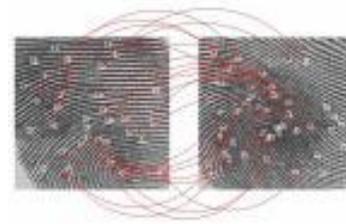
#### Fingerprint processing:

Fingerprints are not compared and usually also not stored as bitmaps. Fingerprint matching techniques can be placed into two categories: minutiae-based and correlation based. Minutiae-based techniques find the minutiae points first and then map their relative placement on the finger.

Minutiae are individual unique character- *minutiae* istics within the fingerprint pattern such as ridge endings, bifurcations, divergences, dots or islands (see the picture on the following page). In the recent years automated fingerprint comparisons have been most often based on minutiae. The problem with minutiae is that it is difficult to extract the minutiae points accurately when the fingerprint is of low quality. This method also does not take into account the global pattern of ridges and furrows. The correlation-based method is able to *correlation* overcome some of the difficulties of the minutiae-based approach. *Based* However, it has some of its own shortcomings. Correlation-based techniques require the precise location of a registration point and are affected by image translation and rotation.



Loop Arch Whorl



Source: PRIP MSU the minutiae matching is a process where two sets of minutiae are compared to decide whether they represent the same finger or not

#### IV. SOFTWARE REQUIREMENTS DESCRIPTION:

##### EMBEDDED C:

The C standard doesn't care about **embedded**, but vendors of **embedded** systems usually provide standalone implementations with whatever amount of libraries they're willing to provide. C is a widely used general purpose high level programming language mainly intended for system programming.

**Embedded C** is a set of language extensions for the C Programming language by the C Standards committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations. In 2008, the C Standards Committee extended the C language to address these issues by providing a common standard for all implementations to adhere to. It includes a number of features not available in normal C, such as, fixed-point arithmetic, named address spaces, and basic I/O hardware addressing. Embedded C uses most of the syntax and semantics of standard C, e.g., main () function, variable definition, datatype declaration, conditional statements (if, switch case), loops (while, for), functions, arrays and strings, structures and union, bit operations, macros, etc.

##### ADVANTAGES:

- It is small and simpler to learn, understand, program and debug. Compared to assembly language, C code written is more reliable and scalable, more portable between different platforms. C compilers are available for almost all embedded devices in use today, and there is a large pool of experienced C programmers.

##### Lab VIEW:

Laboratory Virtual Instrument Engineering Workbench (Lab VIEW) is a system-design platform and development environment for a visual programming





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