

## Security based Voting System

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**Abstract:** Our paper focuses on simple and low cost fingerprint based electronic voting system that uses microcontroller of ATMEL Company. In this electronic voting system the candidate's information and voting data has been recorded, saved and digitally processed. This system consists of microcontroller hardware and a software. Our hardware has implemented with AT89s52 microcontroller along with the finger print module. The microcontroller is interfaced with finger print module. This system gives the better solutions to minimize the time taken to identify the voter. Our system implemented is portable, flexible and has minimum power consumption. The system is very user-friendly, easily adaptable & very cost effective. Moreover it has simple architecture, gives fast response time and AT89S52 micro controller IC is used for easy understanding and efficient use.

**Index Terms:** Microcontroller AT89s52, Finger Print Module, LCD, Buzzer, Keypad

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### I. INTRODUCTION

The objective of our voting system is to allow voters candidates to exercise their right for expressing their choices regarding any issues or pieces of legislation or citizen initiatives, it also helps for constitutional amendments, and to recall choice of their government or political representatives. This technology has been used as a tool for assisting candidates to cast their voting opinions. For allowance of this rights, all the voting systems all around the world includes some of the following steps:

- candidates identification and authentication
- allowing to vote and record the details.
- Counting of total Votes
- publishing the election results

Candidates identification is must for two phases of the electoral process in the system: The first necessary phase is for voter registration so that we can establish the right to vote and the second phase is at the time of voting, that allows any citizen to acquire their rights to vote. This is done by verifying all the requirements needed for voting (authentication).

This field of biometrics is formed and expanded on many types of physical identity system. Yet, the human fingerprint

sensor remains a common. The voter identification concept for humans has led to the wide development of the fingerprint sensors that serves quickly to identify the individuals and assign them with accessed facilities. This device also helps us to examine the scanned fingerprint data of an individual and compare it with the database of other fingerprints recorded previously.

Everyone in this world is born with a unique fingerprint; and a separate and comprehensive identity attribute which sets individuals apart from those 6.5 billion people in this world. This is because of the fact that, fingerprints have been proven very useful part of the biometric security.

Fingerprint recognition is the electronic method for recording the fingerprints and it also recognizes an individual's fingerprints. During the last decade of the 21st century it has advanced substantially. Today, identification can be achieved with appropriate accuracy within less time. Thus the use of Automatic Fingerprint Identification Systems (AFIS) that records, stores and search the match and identify fingerprints. Automated Fingerprint Identification System is being interfaced along with a microcontroller AT89s52. Other peripherals have also been interfaced with same module to form fingerprint identification system based on embedded system.

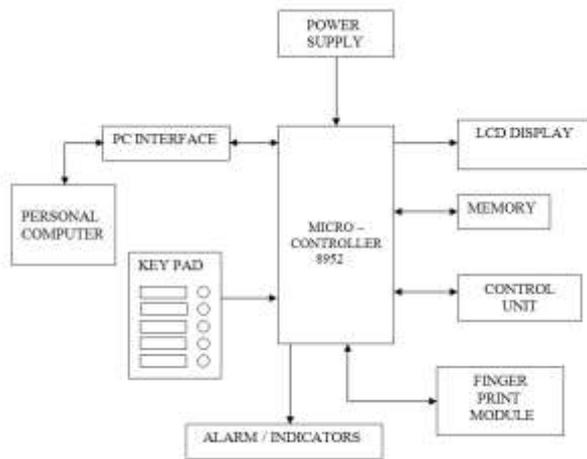


Fig 1. Block Diagram of the System

In this AT89s52 is interfaced with fingerprint reader module, LCD display, alarm indicators, keypad and computer interface. Finger print module provides unique data serially at the data rate of 9.6kbps with every scan of fingers. When the new user places its fingers on the fingerprint sensor, the coded data is saved in the memory and individual is asked to enter his choices for the elections. Later on this data is been regenerated from memory for the displaying the results. A person with previously stored finger print will be unable to vote again.

II. FLOW DESIGN OF THE SYSTEM

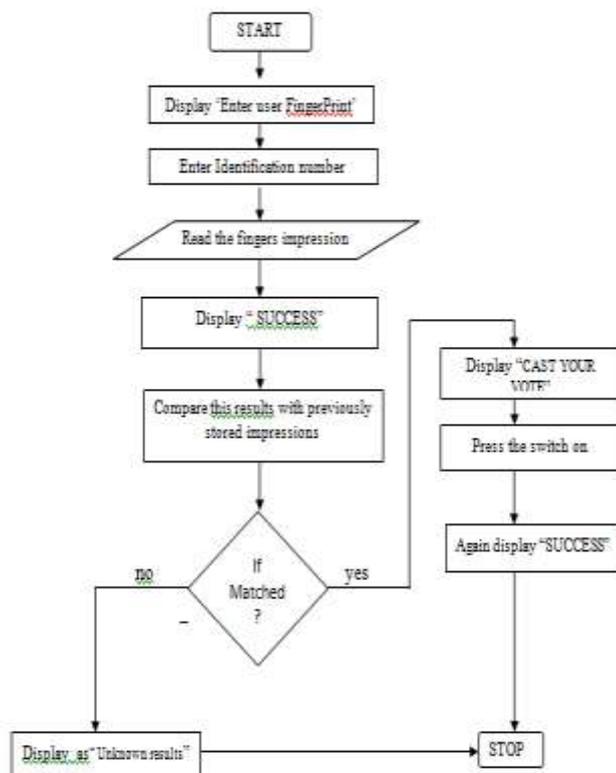


Fig 2. Flow Design

III. HARDWARE SECTION

MICROCONTROLLER AT89S52

The AT89S52 is a low power, RISC architecture, with high-performance CMOS 8-bit microcontroller having 8K bytes of in system programmable, flash memory. This on-chip Flash allows program memory to get programmed again in the system or by the means of a non-volatile memory programming. The AT89S52 is most powerful microcontroller that provides very flexible solution to any embedded systems applications. The Atmel AT89S52 provides the following standard features

- 8K Bytes of In-System Programmable (ISP) Flash Memory.
- 4.0V to 5.5V normal Operating Range.
- Fully Static Operation: 0 Hz to 33 MHz of frequency.
- 256 x 8-bit Internal RAM provided.
- 32 Programmable I/O Lines are available.
- Three 16-bit Timer/Counters present.
- Eight Interrupt Sources are introduced.
- Interrupt Recovery from Power-down Mode available.
- Fast Programming Time provided.

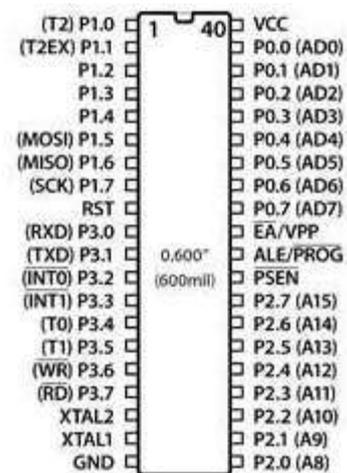


Fig 3. Pin Diagram AT89s52

Finger Print Module

The FPC's area sensor and swipe sensor are based on the technology, that offers many strong advantages for example acknowledged better image quality, pixel elements that are programmable and 256 values of gray scale from each and every single pixel element. This sensor consists of small capacitive plates, each having their own circuit embedded in the chip. The sensors used are FP HSPA (High Sensitive Pixel Amplifier) that allows each pixel element to detect weak signals in the sensor, that improves the image quality for all types of fingers impression for extremely weak electrical

signals, given by the fingers, are created, by building pattern between finger's ridges and/or valleys and the plates of sensors. With the help of these charges the sensor measures the capacitance patterns.

FPC's HSPA-method allows a protective coating, that is 25 to 30 times thicker than other suppliers, which helps FPC sensors to withstand above European Community Standard Class 4 requirements for 15kV of static electricity and wear and tear.



Fig 4. Finger Print Module

#### LCD

LCDs are accessible to show the subjective pictures (as it aides in a universally useful PC show) or is additionally accessible for showing settled pictures with much low data content, that can be shown or concealed, digits, 7-fragment shows as saw in the advanced clock. They make utilization of the same essential innovation, with the exception of that the subjective pictures are of a bigger number for little pixels, while alternate presentations have bigger components.

#### IV. RESULT

In our system we are using microcontroller, finger print module. We give our thumb impression on the finger print module. It stores this impression in the memory of the controller. The voter is asked to enter his identification number, and provide the thumb impression. If present thumb impression matches the previously stores thumb print it gives indication and allows voter to cast his vote. This system is related to human characteristics. It is mainly used for identification and access control. Certain uses of biometric systems are different from others in terms of convenience and security. If individual uses the biometric system for the first time, it indicates the process of enrollment, this enrolled information is stored. When used subsequently it checks for the previously stored data. This process is known as matching phase. During matching phase the templates stored in the memory are matched for enrollment. Once it has been matched it processes further for voting purpose.



Fig 5. Biometric system

#### V. CONCLUSION

A working model of Security based voting system has been implemented successfully. Our experimentation provides security for voting system. We can make future advancement for this system by introducing face detection, vien detection, iris detection systems using image processing and/or by using ARM controller, we can also implement the system which would record the results of the election for future use.

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