Voting System using Fingerprint to Increase the Vote Count

Kiran Kewat[1] Prajakta Tatkare[2] Mayuri Jadhav[3] Tejaswini S[4]

[1,2,3,4]Department of Information Technology

[1,2,3,4]Padmabhushan Vasantdada Patil Pratishthan's College Of Engineering, Sion, Mumbai -400 022

Abstract— Knowing the disadvantages in the current voting system, the biometric method of voting is being implemented i.e., finger print based voting machine. Here the voter has no need to carry his ID. In this system, the government authorities come to certain area for collecting vote. Here voters thumb impressions are used for identifying the voters. One of the best advantages of using this system is that it ensures maximum no. of vote count and there is no need of voter id.

Key words: Microcontroller, Zigbee, Fingerprint module, Power supply, LCD, Keypad

I. INTRODUCTION

The objective of voting is to allow voters to exercise their right to express their choices regarding specific issues. In a democracy, a government is chosen by voting in an election, a way for an electorate to elect, i.e. choose, among several candidates for rule. Currently, the voting system in India is inefficient and vulnerable to outer threats, the only thing that the security checks is a voter ID card, which these days are faked by many. It is slow and counting the votes manually can take a long time. In some rural areas, where there is not much security available, polling booths are captured and often most ballots are destroyed. The major issue is the number of vote count.

In this system, the government authorities come to certain area for collecting vote. Here voters thumb impressions are used for identifying the voters. A public voting system based on biometric fingerprint method to make the election process transparent and efficient is `implemented [2]. During voting when the voter keeps his/her thumb in the scanner, the system will check whether it matches with pre stored impressions in the database. If it matches then system will allow the voter to poll his vote and otherwise prevent the voter from polling. The main advantages of the systems are, providing the preventive measures system for voting. It completely rules out the chance of invalid votes. [1]One of the best advantage of using this system is that it ensures maximum no. of vote count.
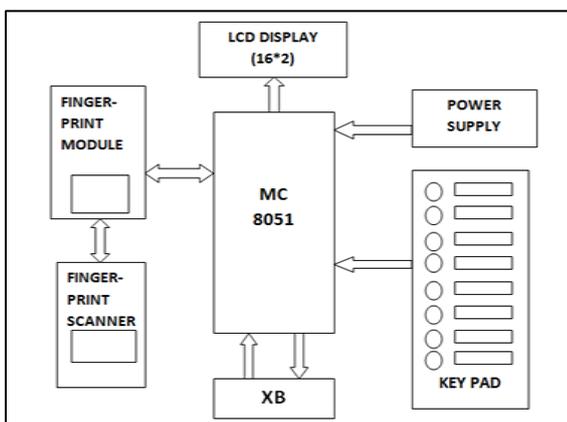
II. BLOCK DIAGRAM

Fig. 1: Block Diagram

III. DESCRIPTION

A. Microcontroller 8051:

The generic 8051 architecture supports a Harvard architecture, which contains two separate buses for both program and data. So, it has two distinctive memory spaces of 64K X 8 size for both programmed and data. It is based on an 8 bit central processing unit with an 8 bit Accumulator and another 8 bit B register as main processing blocks. Other portions of the architecture include few 8 bit and 16 bit registers and 8 bit memory locations. Each 8051 device has some amount of data RAM built in the device for internal processing. This area is used for stack operations and temporary storage of data. This bus architecture is supported with on-chip peripheral functions like I/O ports, timers/counters, versatile serial communication port. So it is clear that this 8051 architecture was designed to cater many real time embedded needs.

1) Features of 8051 Architecture:

- Optimized 8 bit CPU for control applications and extensive Boolean processing capabilities.
- 64K Program Memory address space.
- 64K Data Memory address space.
- 128 bytes of on chip Data Memory.
- 32 Bi-directional and individually addressable I/O lines.
- Two 16 bit timer/counters.
- Full Duplex UART.
- 6-source / 5-vector interrupt structure with priority levels.
- On chip clock oscillator.
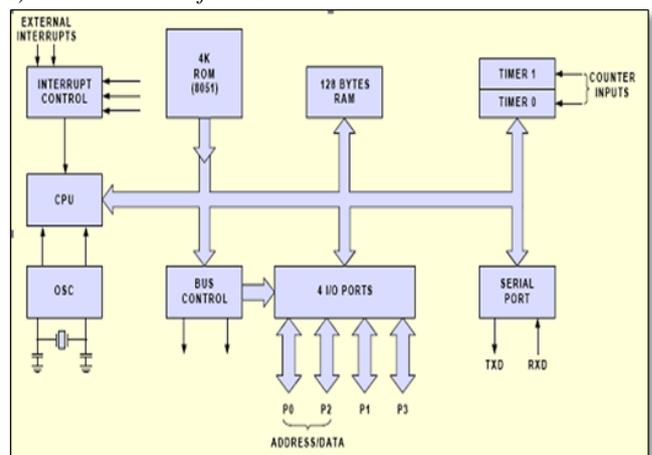
2) Architecture of 8051:

Fig. 2: Architecture of 8051

B. ZIGBEE:

ZigBee is one of the newest technologies enabling Wireless Personal Area Networks (WPAN). ZigBee is the set of specs built around the IEEE 802.15.4 wireless protocol.

ZigBee based traffic management system have also been implemented[4]   They are a non-profit organization dedicated to furthering technology involving electronics and electronic devices. The 802 groups **is** the section of the IEEE involved in network operations and technologies, including mid-sized networks and local networks. ZigBee is a home-area network designed specifically to replace the proliferation of individual remote controls. ZigBee was created to satisfy the market's need for a cost-effective, standards-based wireless network that supports low data rates, low power consumption, security, and reliability.

Fig. 3: ZIGBEE

1) Enrollment:

To enroll yourself, swipe or place finger on the sensor. When using optical sensor, full finger print image is captured at one time. When captured the image to create a template using unique features. A master template is created from templates. The master template is stored securely when finger print image is not stored.

2) Authentication:

To authenticate, just swipe or place finger. When using optical sensor, full fingerprint image is captured at one. The template is compared in this authentication. Voter identification is required during two phases of the electoral process: first for voter registration in order to establish the right to vote and afterwards, at voting time, to allow a citizen to exercise their right to vote by verifying if the person satisfies all the requirements needed to vote (authentication) [3].

3) Security:

The function of physical access control is security. For biometric finger print technology, security is determined by the sensors, it can be captured high quality images.

C. Fingerprint Module:

Fingerprint processing includes two parts: fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1: N).

        When enrolling, user needs to enter the finger two times. The system will process the two time finger images, generate a template of the finger based on processing results and store the template. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library. For 1:1 matching, system will compare the live finger with specific template designated in the Module; for 1:N matching, or searching, system will search the whole finger library for the matching finger. In both circumstances, system will return the matching result, success or failure.
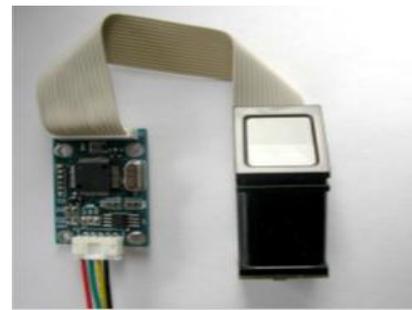

Fig. 4: Fingerprint module

D. Power Supply:

Components used in the Power Supply:-
  – Two pin Input Connector
  – Diode
  – Switch
  – Regulator IC7805 & LM1117
  – Resistor
  – LED
  – Two pin Output Connector

        Two pin connectors with positive and negative terminals are used. If the terminals get inter-changed, the diode prevents the circuit from getting damaged. Switch is used to pass the current further. The input can be of any voltage. To get the input voltage of 5 volts, we use regulator IC7805. The LED indicates that the current is passing through the circuit. Regulator LM1117 is used to get voltage of 3.3V which is required by zigbee.

E. LCD:

Various display device such as seven segment display. LCD display, etc. can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.

        Liquid crystal Display (LCD) displays temperature of the measured element, which is calculated by the microcontroller. CMOS technology makes the device ideal for application in hand held, portable and other battery instruction with low power consumption.

1) General Specification:
  – Drive method: 1/16 duty cycle
  – Display size: 16 character * 2 lines
  – Character structure: 5*8 dots.
  – Display data RAM: 80 characters (80*8 bits)
  – Character generate ROM: 192 characters
  – Character generate RAM: 8 characters (64*8 bits)
  – Both display data and character generator RAMs can be read from MPU.
  – Internal automatic reset circuit at power ON.
  – Built in oscillator circuit.

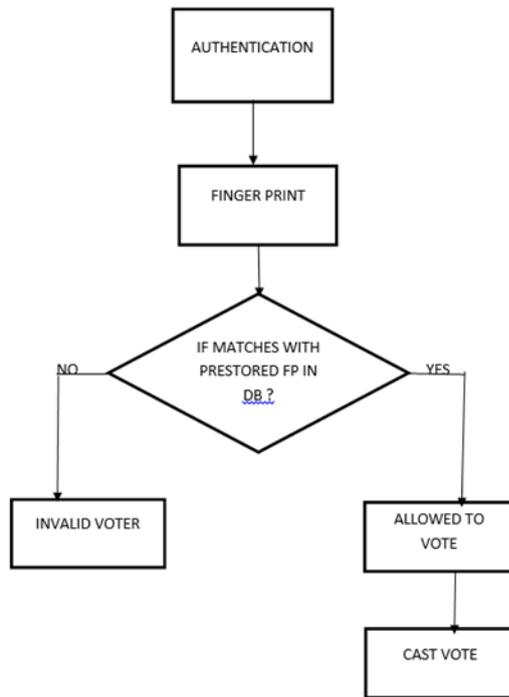Fig. 5: General Specification

IV. FLOWCHART

Fig. 6: Flow chart

V. CONCLUSION

This type of voting system overcomes the drawbacks of the current voting methods that are used in India. It completely rules out the chance of invalid votes. No longer people need to go to the polling booths as the government authorities will come to their places to collect votes. One of the best advantage of using this system is that it ensures maximum no. of vote count and increased participation of the youth in the Indian Administration.

REFERENCES

[1] S. Yadav and A. Singh, "A Biometric Traits based Authentication system for Indian Voting System",International Journal of Computer Applications, pp. 28-32, Vol. 65(15), 2013.

[2] K. Memon, D. Kumar and S. Usman, "Next GenerationA secure E-Voting System Based On Biometric Fingerprint Method", International Conference on Information and Intelligent Computing (IPCSIT), pp. 26-32, 2011.

[3] M. Khan, "Fingerprint biometric-based self-authentication and deniable authentication schemes for the electronic world." IETE Technical Review, vol.26 (3), pp. 191, 2009.

[4] ZigBee Alliance, ZigBee Specification. Version 1.0 ZigBee Document 053474r06, December 14th, 2004.

[5] Abishek Rawat., A Hierarchial Fingerprint matching system, Indian institute of technology,kanpur,july 2009

[6] Ashok kumar D., Ummal saiba Begum T.,"A Novel design of Electornic voting system using Fingerprint,International journal of Innovative Technology