International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 09 | September - 2023 SJIF Rating: 8.176 ISSN: 2582-3930

FINGERPRINT BASED VOTING MACHINE

Prateek B Sawant, Ritesh Gole, Prince

Department of Electronics and Telecommunication, Bharti Vidyapeeth's College Of Engineering Lavale, Pune

---

Abstract - One of the major factors to be taken care of in a voting process is authentication and authorization of voters. Many conditions need to be checked to ensure these factors. Major conditions include:

Check authenticity of voter.
Authorize legitimate voters to vote.
Avoid double vote casting by any individual.

Checking if all these conditions manually is a very complicated and exhausting task with many chances of human error. To avoid this we here propose a fingerprint based voting system project. We use a fingerprint module interfaced with microcontroller and an LCD screen in this system. The fingerprint module is used to sense fingerprints and provide to microcontroller for further processing. The system has list of eligible voters in it, the voting system tallies the recognized finger print against the ones stored in database. If match is found that person is allowed to vote. Once a vote is casted by that person his id is rolled out for that voting process. This avoids double vote casting. Thus our system provides for a fully automated voting system with finger print based authentication.

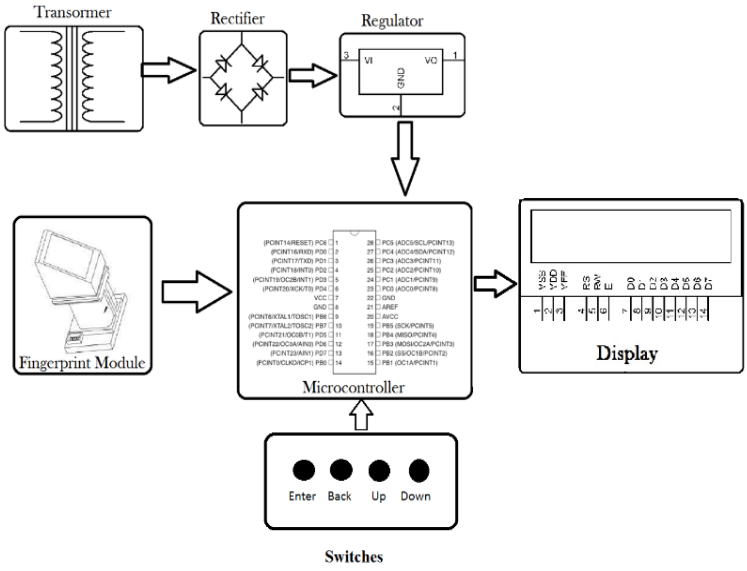
Key Words: ATmega 328, Fingerprint Module, LCD Display.

1. INTRODUCTION

These days the voting machine has become an effective toll compared with traditional paper-based voting techniques. Thus, we decided to design a machine to overcome the already existing voting system. The main scheme of this project is to have more secure, no duplication of votes and declare the results as early as possible.

We are presenting a new Electronic Voting System with Fingerprint scanning that will overcome the drawbacks of the current voting methods that are used in India. Currently, the voting system in India is inefficient and vulnerable to outside 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. So, the development of such a system which is online will cut out these possibilities and many votes can be saved through this system, even if such incidents occur.

2. BLOCK DIAGRAM



Crystal Oscillator:
The crystal oscillator plays a principal role in the implementation of this project. It produces a frequency of 16Mhz to continue the process of execution. Using this, we can estimate the time of execution. As the frequency is 16Mhz, the time taken to execute each line of the code would be 1/16 microseconds

Atmega328 Microcontroller:
The Atmega328 is an 8-bit microcontroller. It comprises of flash memory along with read-write capabilities. To store the code, we use the EEPROM residing in the microcontroller. One of the main advantages of this microcontroller is, it optimizes the power use and provides high-performance speed.

LCD
We use the LCD (Liquid crystal display) to display details to the voters. The dimension of the LCD used is 16X2, which means it has 16 columns and 2 rows. We are using the LCD to display the access granted message to the voter, followed by the parties competing in the elections. After voting, the LCD displays the party to which the voter casts their vote.

Power source module
The major blocks of power supply are given below Transformer, Rectifier, Filter, 7805 voltage regulator .These will provide the regulated power supply to the unit which is first converted into 12V AC .12V AC is converted into DC using rectifier circuit .Finally the 7805 voltage regulator provides constant 5V DC supply which will be given to circuit.

Fingerprint module
The device is the most popular among all the identification devices because of its ease in acquisition, and also the number of sources that are available for its data collection. It has found its vast use in law enforcement and immigration purposes .The module used here is R305. The basics of this identification process comes from "Galton points" – a certain characteristics defined by Sir Francis Galton, through which the fingerprints can be identified. In this module the scanned image are compared with an earlier existing finger print of yours to get the correct identity. The comparison is carried out by the processor and the comparison is made between the valleys and ridges though your whole fingerprint is recorded, the computer takes only parts of the print to compare with other records

Switches:
This paper uses manual switches, which can also be referred to as push buttons, to vote. Each party has a separate button through which a voter can cast their vote to a party of their choice

Reset
This button is used to reset the whole system so that it can be configured for next election.

3.WORKING

Step 1: Start
Step 2: Scan your Finger
Step 3: Finger matched
Step 4: Cast your vote
Step 5: Press button from the candidate list
Step 6: Candidate selected
Step 7: Vote Success
Step 8: Stop

3.1 VOTER ENROLLMENT

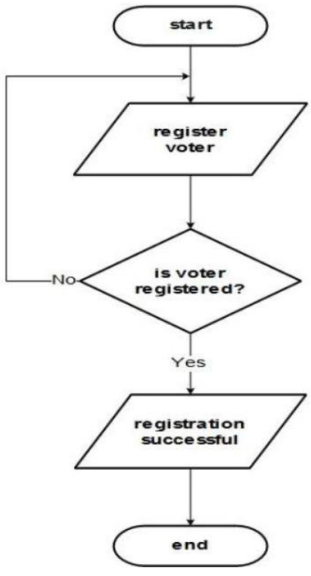


Fig.1: Enrollment for voters

3.2 CASTING OF VOTES

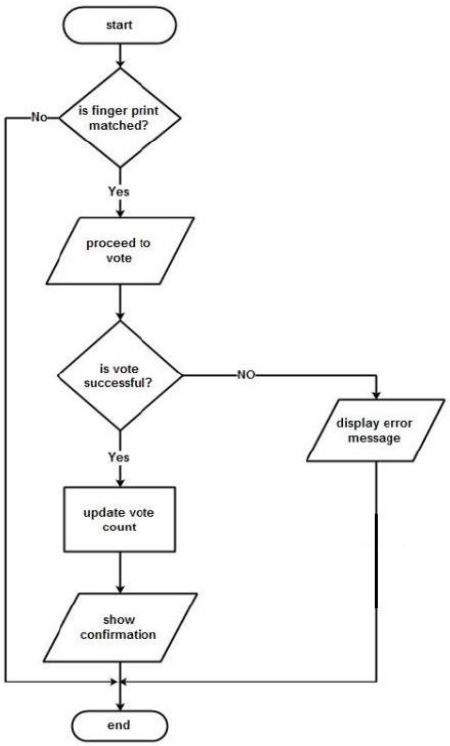


Fig.2: Casting of votes

4. APPLICATIONS

1] This project can be used as a voting machine to prevent rigging during the elections in the polling booths.

2] Fast track voting which could be used in small scale elections, like resident welfare association, "panchayat" level election and other society level elections, where results can be instantaneous.

3] It could also be used to conduct opinion polls during annual shareholders meeting.

4] It could also be used to conduct general assembly elections. The heading should be treated as a 3rd level heading and should not be assigned a number.

5.ADVANTAGES AND DISADVANTAGES

5.1ADVANTAGES

1] Ease of transportation.
2] This system will not allow the voter to vote again.
3] Less time required for voting.
4] Less Human Error.
5] Less manpower required.
6] Cost effective.
7] Avoid unregistered voter to vote.

5.2 DISADVANTAGES

1] If the voters finger pattern has some cut or got damaged the system might not recognize the user.
2] User has to enroll themselves before voting.
3] Sensitivity of fingerprint module sometime causes error.

6. LIMITATIONS

As this is the prototype-
1] Default we have four candidates only.
2] It is only Fingerprint based voting system.
3] Only 99 voters can enrol for election.

7. CONCLUSIONS

It has proved to be very advantageous in providing security EVM is capable of saving considerable printing stationery and transport of large volumes of electoral material. It is easy to transport, and maintain.

The project “Fingerprint Based Voting Machine” was mainly intended to develop a fingerprint based advanced Electronic Voting Machine (EVM) which helps in free and fair way of conducting elections which are basis for democratic country like India.

8. REFERENCES

[1] G.V.L. N. Rao. Democracy at Risk! Citizens for Variability Transparency & Accountability in Elections, New Delhi,.
[2] R. Haenni, E. Dubuis, and U. Ultes-Nitsche, “Research on e-voting technologies." Bern University of Applied Sciences, Technical Report 5, 2008.
[3] Press Trust of India.
[4] A. K. Agarwala, D. T. Shahani, and P. V. Indiresan. Report of the expert committee for evaluation of the upgraded electronic voting machine (EVM). Sept. 2006.
[5] Election Commission of India.
[6] D. Ashok Kumar, T. Ummal Sariba Begum A Novel design of Electronic Voting System Using Fingerprint International Journal of Innovative Technology & Creative Engineering (Issn: 2045-8711) Vol.1 No.1 January 2011