

Finger Print Based Voting System Using Arduino

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Abstract: Casting a ballot is one of the principal privileges of each resident of a vote based nation. By using the privilege of the democratic, individuals choose their most reasonable pioneer who will lead them. In this cutting edge time where innovation is being utilized in each part of life, political race is a spot to apply the best innovation. In this undertaking, we have built up a system which will be reasonable for decisions in nations like India. The usual system for voting in India is EVM-based voting system, where voting is sometimes unfair. In this that system we have used Arduino and Finger Print Scanner to identify each voter as well as count votes and can prevent fake votes. The proposed system is increasingly computerized, innovation based and verified system.

Keywords: Voting, Electronic Voting Machine, Arduino, Finger Print Scanner, Biometric, Fingerprint.

1. Introduction

In a democratic system the unpredictable citizens choose an up-and-comer by law who speaks to them and works for them for their well-being. In the event that an off-base competitor is chosen, it carries a tragedy to the country. In creating nations like India, the arbitrary method for political race is polling form paper based system which is especially uninteresting and some of the time particularly risky. By this system there is in every case some hazard to choose an inappropriate competitor. In spite of the fact that India will present EVM in next parliamentary political decision however this system likewise needs from security. Thinking about these issues, in this task, another arrangement of casting a ballot is proposed dependent on electronic democratic machine (EVM). The extra component of this system is biometric security which will be acknowledged by the fingerprints of the voters. In casting a ballot system, the system corrects to be anything but difficult to confirm and check, it likewise ought to have high exactness rate and dependability. The system likewise must be financially intelligence and remarkable. In a motivate democratic system is presented where Aadhar card was utilized however the system is decomposing and the system is on the web. There are in every case a few dangers in online system. In this writing, the proposed system will recognize every voter by their unique mark with assistance of finger impression scanner (FPS). It can identify in the event that somebody is an enrolled voter or not

and it will deny in the event that somebody attempts to make a successive option.

2. Proposed system

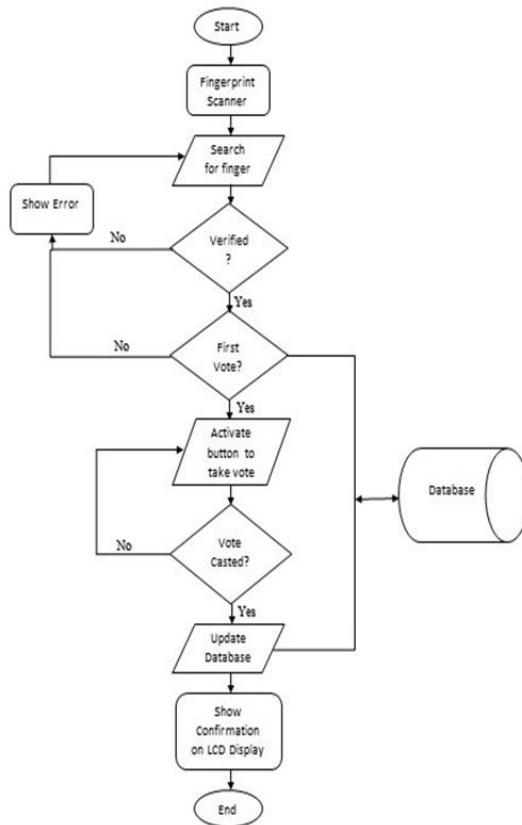


Fig. 1. Proposed system Flowchart

The proposed system depends on electronic democratic machine. The system can distinguish every voter by getting their unique finger impression. At whatever point the system will get a unique mark, it will coordinate the unique mark from the database. As indicated by the data given by the database, the system will choose if the individual is enlisted or not. system is additionally ready to recognize second vote. In the event that a specific voter isn't enrolled voter or attempts to make more than one choice, system will recognize him and will limit from

casting a ballot. In any case, if neither one of the cases is relevant for a voter, it will enable the voter to make the choice. The system is planned in such a manner, if vote is given to an applicant erroneously, the voter can change their choice however just once. Besides, much the same as some other electronic democratic machines, the gadget will check votes in favor of every applicant. It is additionally ready to show the outcome, after a specific timeframe when the democratic is finished. This is a preferred position that it won't require a lot of time to distribute who has won the political decision. It has exceptionally high exactness rate in the event of both recognizing voter and checking cast a ballot. Another bit of leeway of the system is, it is totally disconnected system. Hence, the information can't be hacked. The flowchart of the system is given below.

3. Hardware

A. Controller Unit

The controller unit of the entire structure is Arduino UNO R3 which is an open source microcontroller. The board depends on ATMEGA 32. The board is joined with Analog, Digital and Pulse width adjustment type signals. In this task, for speaking with the unique finger impression scanner, one PWM pin and one advanced pin was utilized. For casting a ballot pin reason, the simple pins were utilized as advanced methods. The code can be downloaded with USB connector [4].

B. Fingerprint Scanner Module

The Fingerprint scanner module used for this project is GT 511C3 from ADH-Tech [5]. The device is able to capture fingerprint, save it, manipulate it, match fingerprint with the database. It has on board 32-bit CPU which accepts code [6]. In this project, it is interfaced with Arduino. The module has 4 external wires, two of them which communicate with the Arduino. Other two wires are biasing voltage and ground. The finger print scanner module's receiving pin cannot handle more than 3.3 volts. That is why a voltage divider circuit was used so that the finger print scanner can get approximately 3.3 volts. Other wires were directly connected.



Fig. 2. Fingerprint Scanner [5]

4. Software

For controlling the controller unit, which is Arduino UNO R3 with ATMEGA 32 microcontroller, the product from Arduino engineer is utilized. The Arduino board can be modified with this product. UNO was chosen from Tools>Board menu and ATMEGA 32 was chosen for microcontroller. In the event of controlling the unique mark scanner a library document was utilized made and created by Josh Hawley [7]. The header record from this library was utilized to interface the scanner with Arduino and for control. The language utilized in the header record is C++.

5. Results

Simulation of the whole system was done by software. After successful simulation, the hardware system was build.



Fig. 3. The finger scanning state

Figure 3 shows the full equipment arrangement in the wake of finishing the arrangement. The arrangement comprises of the unique finger impression sensor module which will take the fingerprints from the voters. It likewise comprises of a LCD show to control the voters to effectively cast the votes. It additionally appears if a voter is enlisted or not. It has 3 pushbuttons for offering votes to various applicant and other one is for indicating the outcome.

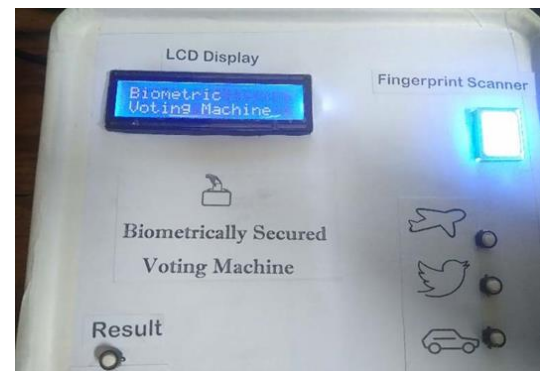


Fig. 4. At the point when the framework is turned ON

Figure 4 shows when the machine is turned on. The machines invite with a welcome message and the machine is currently all set. It is presently ready to check voters and tally votes.



Fig. 5. When an authorized voter is found

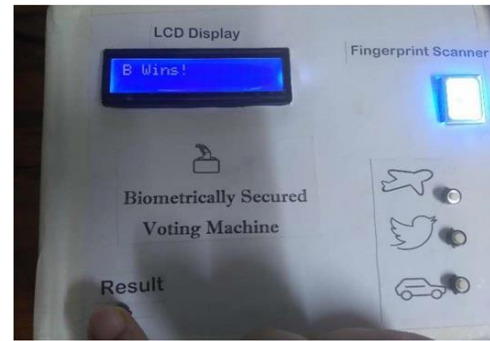


Fig. 7. Declaring result

Figure 5 shows when an approved voter, which implies that, if an individual's unique finger impression matches with the database and if the particular voter didn't make a choice already, the machine will demonstrate welcome message to the voter and instruct him to make the choice. At the point when voter makes the choice, the machine will request the affirmation, now, the voter has the opportunity to change the past vote on the off chance that he needs or they can continue with the past vote. After a fruitful vote throwing, the machine will show an affirmation message in the screen. In the event that a voter, who already made choice, again attempts to make choice. The machine will deny and will say that the individual has as of now made choice.

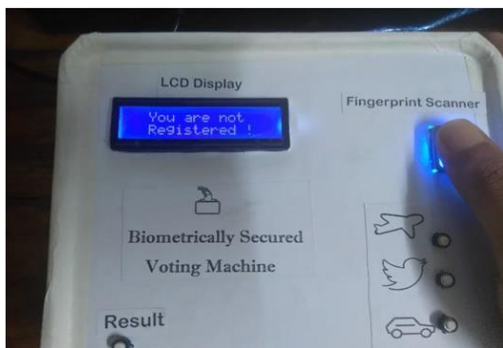


Fig. 6. Unregistered voter

Figure 6 is demonstrating that when an unregistered voter attempts to make choice, the machine won't take votes from that specific individual and will show that they are not enlisted on the LCD screen.

At long last, when the outcome button is squeezed, the machine will show on LCD screen, what number of vote goes for which group. It is fit for demonstrating result like and it can likewise ascertain who the victor is. It can likewise say that if the outcome is a draw or not. On the off chance that, nobody went to the democratic, it will show that nobody casted a ballot.

6. Conclusion

To make the democratic arrangement of India quicker and progressively secure, an endeavor has been taken with the goal that the democratic system can be adequate to all sort of resident of the country. The security was the primary worry of the entire undertaking. Greater security has been added contrasted with common electronic democratic machine by including the unique finger impression highlight so that there can't be any sort of cheating. By utilizing this system, the national democratic system will be progressively secure, quicker, simple to utilize and increasingly affordable. The system likewise expends low power and the gadget is anything but difficult to convey. The all out expense of one machine would be not exactly BDT 5500. In single word, the system will make casting a ballot framework progressively dependable and increasingly secure. It is superior to anything customary polling form paper system. In a nation like system where government is attempting to acquire advances each case to make the nation increasingly created, casting a ballot system is an excellent spot to apply new innovation like this, by which the everyday citizens will choose their correct agent in more brilliant and verified manner.

References

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