



Fingerprint based Voting Machine

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Abstract- "A FINGERPRINT BASED VOTING MACHINE" is used exclusively in this study. This concept's main purpose is to guarantee security while also overcoming the limitations of traditional voting systems. During the customer registration procedure, the voters' details, as well as their fingerprints, are first kept in the serial monitor. In this situation, the serial monitor acts as a database. The voter desires to place their finger on the polling booth's module, which will allow an impression of their finger to be taken and used as identification. After that, the imprint is sent to the controlling unit for confirmation. The microcontroller collects the voter's information and compares it to information saved earlier in the voter's registration process. If the statistics match the existing data, the voters are permitted to vote. Push buttons are used to operate the voting system manually. The welcome instructions, as well as the parties, are presented on the LCD. On the other hand, the voter information and results are displayed on the screen. The goal of this research is to offer a new voting system that uses biometrics to prevent rigging and improve the accuracy and speed of the process. Because each human's thumb imprint has a unique pattern, the system uses thumb impressions to identify voters. As a result, it would be more effective than current voting methods.

Keywords— *Microcontroller, voting, fingerprints;*

I. INTRODUCTION

The Fingerprint Based Voting Project is a system that recognizes persons based on their finger patterns. Because each person's finger pattern is different, the voter can simply be identified. This method of voting allows voters to utilise their fingerprints. The user's fingerprint is used to identify him or her. Each person's fingerprint has its own tiny parts. The voters' fingerprints are used to validate their identities. A voter can only vote for a candidate once, and the system will not enable them to vote for that candidate again. The administrator will have access to the system and will be able to enter the names and photographs of candidates who have been nominated for the election. The administrator's only responsibility is to enter the names and other information. Following the election, the number of candidates introduced to the system by the administrator will be removed immediately. The administrator must include the election's end date. After acquiring the user id and password from the administrator, the user can log in

and vote for the candidates that have been nominated. In the system, the user will be able to vote for only one candidate. For each election, the system will only enable the user to vote once. When a fresh election is announced, the administrator can add as many candidates as he or she wants. The administrator can view the election results by entering the election id. Users can also look at the election results.

Advantages

1. A voter will not be able to vote for more than one candidate under the method.
2. The technology will only allow people to vote once per election.
3. The fingerprint of the user will be used to verify his identification and confirm that he is one-of-a-kind.

Disadvantages

1. If a voter's finger pattern is severed or damaged, the system may be unable to recognise them.

II. LITERATURE REVIEW

The goal of the project is to create and deploy a web-based voting system that uses fingerprints. Voters will be required to scan their fingerprints, which will subsequently be compared to a database image, as part of the proposed EVS. Because the user is nationally linked, he or she can vote through the web from anywhere in the country after successfully completing the validation procedures. The results of the poll will be made public as soon as possible. It's mainly a continuation of the preceding part, including discussions of verified voters and polling data security for electronic voting systems. Voter authentication is accomplished through formal registration with administrators and the use of a one-time password in the online e-voting process. Iris reorganisation and finger vein sensing can be used to authenticate voters in the offline e-voting process, allowing the electronic ballot to be reset and voters to cast their ballots. The voted data details with voter details might also be transferred to the neighbouring Database Administration unit in a timely way using a GSM system with cryptography. The Biometric Electronic Voting System Software (BEVSS) will be used in conjunction with a biometric fingerprint machine to allow eligible voters to register throughout the registration

process and be validated on Election Day. This research focuses on a sophisticated voting system that employs RFID and fingerprint technology to ensure that each vote is distinct. The data from the fingerprint sensor generates a warning that displays mismatches, and RFID serves as a substitute for voter identification. A keypad is used to choose your voting selections. On the LCD, the user can see the associated data for each key. The proposed solution uses the Android mobile OS to build an application and fingerprint-based biometric control information to make voting more secure. When an Android smart mobile smartphone is utilised, the system is more resilient. This project provides a secure online e-voting system based on UIDAI. The technology confirms a person's identification by comparing fingerprints, and eligibility is confirmed by assessing the voter's age. In the Aadhar system, one of a person's unique identities is their fingerprint. The Arduino software is used to capture each person's fingerprint. When voting in elections, voters can authenticate themselves using their Aadhar Card Id and Finger Vein Sensing, allowing the electronic ballot to be refreshed and voters to cast ballots [18]. The study discusses a voting method based on the AADHAR CARD, which is in line with current trends. Aadhar information, together with matching finger scratches, is expected to be updated in the national database as a valid ID proof. Data from a fingerprint scanner is received at the time of voting and compared to fingerprints in the AADHAR CARD database. A person's fingerprint is one of their unique identities in the Aadhar system. The fingerprints of each person are captured using Arduino software. Voters can use their Aadhar Card Id and Finger Vein Sensing to authenticate themselves when voting in elections, allowing the electronic ballot to be refreshed and voters to cast ballots. The study outlines a voting technique that is in accordance with current trends and is based on the AADHAR CARD. As valid ID evidence, Aadhar information and matching finger scratches will be entered to the national database. At the time of voting, data from a fingerprint scanner is received and compared to fingerprints in the AADHAR CARD database. The electronic voting system simplifies the election process, minimises voting annoyance, and gives quick results with improved vote reliability and security. An electronic voting machine will be linked to voter data saved on an Aadhar card in this project. To prevent and notify authorities about fake voting and to protect citizens' voting rights, the Aadhar Number and its unique biometric identification system are being used. Using fingerprints to verify the voter's identification and ensuring that no one can vote more than once and aborting and notifying authorities if this is not the case. Each citizen's Aadhar card is represented by an RFID, which can only be utilised by the government.

III. METHODOLOGY

A comprehensive, theoretical analysis of the procedures used in a field of research is called methodology. It entails a theoretical examination of the corpus of methods and principles linked with a field of study. It usually includes terms like paradigm, theoretical model, stages, and quantitative or qualitative methodologies. A methodology is not intended to provide solutions; rather, it provides the theoretical foundation for determining which method, set of procedures, or best practises can be applied to a certain scenario, such as calculating a specific result. Because of the facts and information gained from earlier publications, the goal and target are more obvious. The hardware and

programming integration produced the design model. The prototypes are shown in the design model.

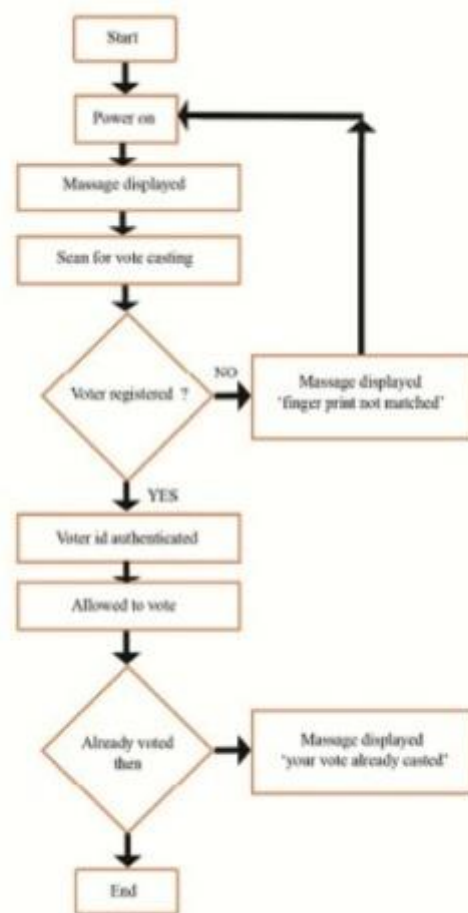


Fig. 1 Fingerprint voting machine system flow chart

IV. DESIGN AND IMPLEMENTATION

A ballot unit is a simple voting gadget that shows a list of candidates.

- Polling, display of total votes polled, sealing at the end of the poll, and finally a declaration of results are all accomplished by a single device: the control unit.
- The fingerprint sensor scans the voter's finger for identification, and the display unit displays the measurement instrument's results.
- A microcontroller device is not simple, but it may be thought of as a computer device with internal memory and a large number of input and output (I/O) device options.

A. How to Use an Electronic Voting Machine:

There are three units in our constructed electronic voting machine: a control unit, a ballot unit, and an identification unit. • There is an ON/OFF power switch on the control unit. • The control unit's LED lights up when the power switch is turned on. • After that, we must enter a password to begin the voting process. • A control unit is created with four switches, including result, delete, lock, and vote, in four separate modes. The voting authority is in charge of these switches. • A fingerprint sensor identifies the voter's fingerprint and allows them to be authenticated. • The

results of individual candidates will be displayed on the LCD display by pushing the result switch.

When all of the votes have been cast and the votes have been calculated, push the lock switch to protect the results, and the power switch of the electronic voting system will be turned off in the event of an emergency. When the situation has calmed down, we may resume our voting process using the electronic voting machine. • When the voting authority presses the voting mode switch on the control unit, the ballot unit's LED lights up, allowing the voter to cast his vote.

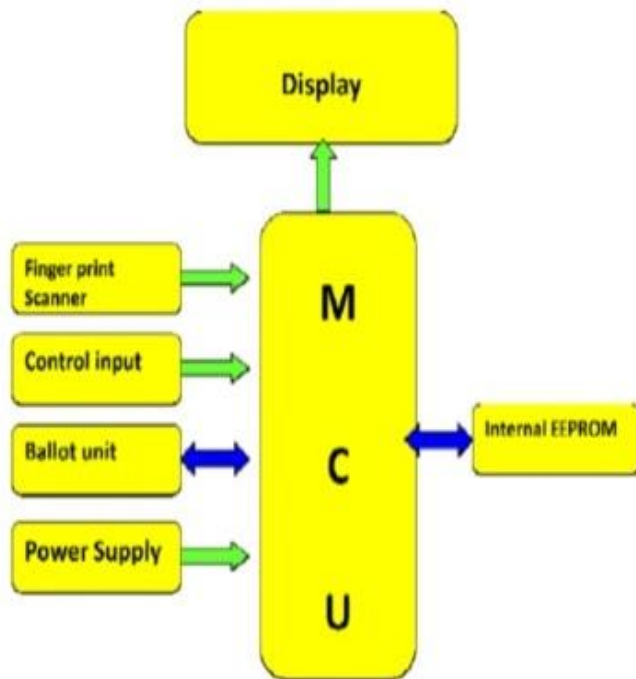


Fig. 3 Block Diagram of Electronic voting machine (EVM)

V. RESULT

The FPVM processing system is organised as follows: we must assemble the system with PCB. After connecting the power line to the machine, we must turn it on. The FPVM is made up of a controller and a switching unit that work both independently and in tandem. The message 'Enter Password' appears on the display once it has been turned on. After receiving the password, the voting machine went into voting mode automatically. The display then shows the message for voting. The fingerprint scanner then accepts the command from Control Unit to gather a voter's fingerprints. If this voter casts a vote, it will not be counted, and the system will display a message on the screen (such as "voters' fingerprint not matched"). As a result, this machine can readily detect a fake voter. Furthermore, the same fingerprint will not be permitted. If a voter has already cast a vote, he will not be allowed to do so again; if he does, the voter will be easily identified.



VI. CONCLUSION

When a large number of people want to vote in a significant election, it's necessary to offer a number of personal computers, each of which will be connected to the main computer/server to allow many people to vote at the same time and avoid congestion. Fingerprints are one of the most often utilised biometric ways for identifying people. Every person on the planet is born with a unique fingerprint, even twins, and fingerprints are unchanging throughout life. As a result, we attempted to deploy a biometric voting system that relied on fingerprints to provide a person ID. The fingerprint voting mechanism has been successfully implemented and tested. To determine the system's strengths and weaknesses, we must assess the system's performance on a variety of PCs with varying specifications. Our proposed voting mechanism is accurate, transparent, and speedier, and it ensures that each person receives only one vote. This product is a prototype that is inexpensive to many organisations that conduct preferential elections. Furthermore, this technology will give a realistic and trustworthy voting method. Improved database upkeep, an automatic registration system, and the ability to cast votes via fingerprints will all aid us in achieving our goal.

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