

Biometric Authenticated Electronic Voting Machine

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Abstract: Biometric Fingerprint devices are used in the Electronic Voting machine for voter verification. We have designed a fingerprint and RFID based voting machine where there is no chance of fake voting. The person at the polling booth needs to place his Finger on the device and scan his encrypted RFID, thus allowing the acquisition of data from the voter which serves as an identification. This Fingerprint reader reads the details from the tag. This data is passed onto the controlling unit for the verification. The controller fetches the data from the reader and compares this data with the already existing data stored during the registration of the voters. If the data matches with the pre-stored information of the registered fingerprint, the person is allowed to cast his vote. If not, a warning message is displayed on Screen as well as an alarm gets triggered and the person is barred from polling his vote. The vote casting mechanism is carried out manually using the push buttons. All activities are recorded in a local storage device

I. INTRODUCTION

Biometrics is the science and technology of monitoring and analysing biological data. Biometrics are technologies that use DNA, fingerprints, eye retinas and irises, speech patterns, face recognition, and hand measurements to measure and analyse human biological traits for authentication purposes. Biometrics was born, and it has since expanded to include a wide range of physical identifying technologies. Fingerprint scanning remains to be the most popular identifier and the biometric method of choice for law enforcement agencies among the diverse biometric identification methods. These ideas have led to the development of fingerprint scanners and web cameras that can quickly identify persons and assign access credentials.

Voting is a means for a group, such as a meeting or an electorate, to reach a consensus or express an opinion, usually after discussions and debates during election campaigns. Voting elects high-ranking officials in democracies. Electronic voting, sometimes known as "EVMs," is the traditional means of organising

elections in India. Prior to the introduction of electronic voting, India used paper ballots and manual counting. The paper ballots method was heavily condemned due to fraudulent voting and booth grabbing, in which party supporters grabbed booths and stuffed them with pre-filled counterfeit ballots. Because counting hundreds of millions of individual ballots needed extensive post-voting resources, the printed paper ballots were significantly more expensive.

In our Biometric Authenticated EVM project we are using fingerprint identification and a RFID scanning method which ensures the prevention of fake voting. Also the long-hours of counting and cross checking the votes casted can also be avoided using our project design.

II. LITERATURE SURVEY

The purpose of this research is to build and implement a biometric voting system that uses fingerprint authentication and RFID scanning. Our initiative aims to reduce corruption and defrauding in manual voting systems, which include numerous human verification steps to assure the device's trustworthiness. The voter's Aadhar card is scanned using an RFID scanner as the first step verification. The voter's fingerprint is scanned and compared to the data stored in the Aadhar card in the second level of verification. He/she can vote if the information entered is correct.

[1] B. Shahzad and J. Crowcroft published "Trustworthy electronic voting utilizing altered block chain technology" in 2019, describing the evm block chain, i-voting, and e-voting methodologies. Block chain is the solution for the polling process and security. According to the paper, this aids the authentication process. [2] In a paper published in 2018, Han et al offered online voting, privacy preservation, and end-to-end verification. [3] QasimAbbas in his publication in 2018 proposed an Iris Detection based voting system. The system detects the voter's iris and, if it matches, certifies the voter's eligibility to vote by validating his or her Aadhar information. The voter will be able to cast his or her vote once confirmation has been received. Because the existing Aadhar database contains all of the information regarding a voter's iris, fingerprints, and other personal information like an address, a blood-group voter can be easily tracked and verified. This method takes less labor and is quite safe.

III. PROPOSED METHODOLOGY

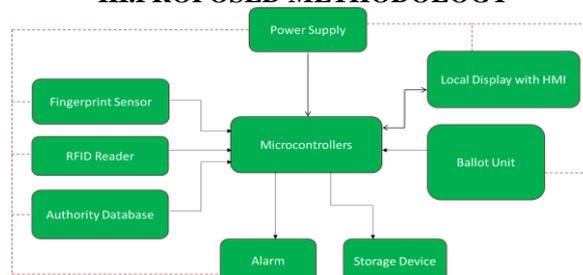


Fig. 1. Basic block diagram of Biometric Authenticated Electronic Voting Machine

Figure depicts the proposed system's block diagram. The project involves the following essential components: ATMEGA 328 microcontroller, R307 fingerprint module, EM-18 RFID reader module, LCD display with HMI, alarm, and storage device. During the voting process, the voter's Aadhar card is scanned with an RFID reader as the first step of verification, and the scanned ID is validated against the Aadhar card database, ensuring its legitimacy. The voter's fingerprint is then obtained with the use of a fingerprint module. The fingerprint is then checked for legitimacy by comparing it to a database.

A second check is performed to assure security by determining if the voter is voting for the first time or not, as well as confirming whether or not he or she is a legal voter. As a result of these procedures, unauthorized and second-time voters are eliminated. Following these authentications, legitimate voters can cast their votes with the approval of the preceding authorities. By pressing one of the master control switches, the central server can view the final polling result on the LCD display.

IV. CONCLUSION

Voter information and voting data are digitally recorded, saved, and processed in an Electronic Voting System. However, this strategy is risky because many people seek to vote for others and vote multiple times at the same moment. And the general verification method does not appear to be very efficient in preventing this. By incorporating biometric authentication into EVMs, we hope to significantly reduce illicit voting, polling of votes under a stolen identity, external manipulation pre- and post-election, and erroneous vote counting. Delays in the voting process can be reduced as a result, and huge waits can be avoided. In our two step verification process is done. The system consists of RF ID Scanner and Finger print scanner, so that identity of the voter can be easily identified. Also an alarm is provided to alert the next voter that someone is voting in the voting station. This will reduce the possibility of fake voting. So the device is user friendly and this will provide a new change to the voting system in different countries.

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