

# Aadhar Based Fingerprint Electronic Voting Machine

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**Abstract** – The objective of voting is to allow voters to exercise their right to express their choices regarding specific issues, pieces of legislation, citizen initiatives, constitutional amendments, recalls and/or to choose their government and political representatives. It has always been an onerous task for the election commission to conduct free and fair polls in our country. A lot of money has been spent on this to make sure that the elections are rampage free. But, now- a -days it has become very usual for some forces to indulge in rigging which may eventually lead to a result contrary to the actual verdict given by the people.

In order to provide inexpensive solutions to the above, this project will be implemented with biometric system i.e. finger print scanning. This is used to ensure the security to avoid fake, repeated voting etc. It also enhances the accuracy and speed of the process. The system uses thumb impression for voter identification as we know that the thumb impression of every human being has a unique pattern.

In this, creation of a database consisting of the thumb impressions of all the eligible voters in a constituency is done as a pre-poll procedure. During elections, the thumb impression of a voter is entered as input to the system [1]. This is then compared with the available records in the database. If the particular pattern matches with anyone in the available record, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected. The result is instantaneous and counting is done. The overall cost for conducting elections gets reduced and so does the maintenance cost of the systems.

**Index Terms** – Aadhar, Fingerprint, Voting, Biometric, Thumb.

## 1. INTRODUCTION

This paper examines policy regarding the electronic approaches and developments towards electronic data storage and transmission [2]. Voting is a method by which the electorates appoint their representatives. In current voting system the voter should show his voter ID card whenever an individual goes to the booth to poll one's vote.

This process could be a time consuming method as the person needs to check the voter ID card with the list he has, confirm it as an authorized card and then enable the person to poll his vote. Thus, to avoid this type of problems, designed a finger print based mostly voting Security could be a heart of voting method. So the requirement of designing a secure voting system is very vital. Usually, mechanisms that ensure the security and privacy of an election are often time consuming,

expensive for election administrators, and inconvenient for voters.

There are completely different levels of e-voting security. So serious measures should be taken to keep it out of public domain. Also, security should be applied to hide votes from publicity.

The secured voting process can be done by linking the voting machines with the Aadhar, an Indian citizen identification data base with a unique identification number for every citizen [3].

The Aadhar based EVM can result in secured voting process. As a result of no two or more voter's data can match as this system uses biometrics.

Biometrics is the science and technology of measuring and analyzing biological data. In information technology, biometrics refers to technologies that measure and analyze human body characteristics, such as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. During this paper used thumb impression for the purpose of voter identification or authentication. As the thumb impression of each individual is exclusive, it helps in maximising the accuracy.

Aadhar database is created containing the thumb impressions of all the voters in the constituency. Illegal votes and repetition of votes is checked for in this system. Hence if this system is utilized the elections would be truthful and free from rigging.

## 2. LITERATURE SURVEY

### 2.1 Issues of Existing Voting System:

Electronic Voting Machines ("EVM"), Idea mooted by the Chief Election Commissioner in 1977. The EVMs were devised and designed by Election Commission of India in collaboration with Bharat Electronics Limited (BEL), Bangalore and Electronics Corporation of India Limited (ECIL), Hyderabad. An EVM consists of two units,

i) Control Unit

ii) Balloting Unit

The two units are joined by a five-meter cable. The Control Unit is with the Presiding Officer or a Polling Officer and the Balloting Unit is placed inside the voting compartment.

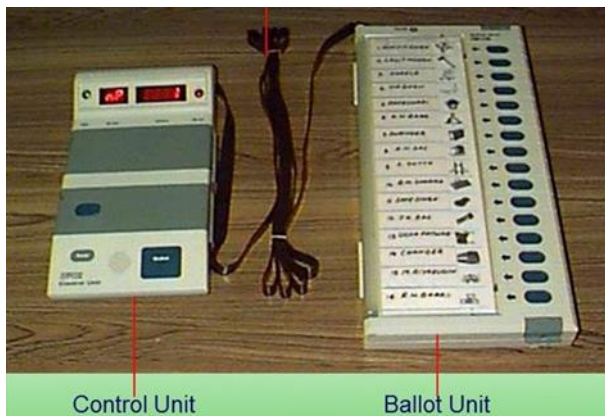


Fig 2.1 Sub-units of EVM

There are many types of problems with EVM which is currently in use they are

**Accuracy:** It is not possible for a vote to be altered e laminated the invalid vote cannot be counted from the finally tally.

**Democracy:** It permits only eligible voters to vote and, it ensures that eligible voters vote only once.

**Security Problems -** One can change the program installed in the EVM and tamper the results after the polling. By replacing a small part of the machine with a look-alike component that can be silently instructed to steal a percentage of the votes in favor of a chosen candidate. These instructions can be sent wirelessly from a mobile phone.

**Illegal Voting (Rigging) -** The very commonly known problem Rigging which is faced in every electoral procedure. One candidate casts the votes of all the members or few amounts of members in the electoral list illegally. This results in the loss of votes for the other candidates participating and also increases the number votes to the candidate who performs this action. This can be done externally at the time of voting.

**Privacy:** Neither authority nor anyone else can link any ballot to the voter

**Verifiability:** Independently verification of that all votes have been counted correctly.

**Resistance:** No electoral entity or group of entities, running the election can work in a conspiracy to introduce votes or to prevent voters from voting.

**Availability:** The system works properly as long as the poll stands and any voter can have access to it from the beginning to the end of the poll.

**Resume Ability:** The system allows any voter to interrupt the voting process to resume it or restart it while the poll stands. The existing elections were done in traditional way, using

ballot, ink and tallying the votes later. But the proposed system prevents the election from being accurate.

## 2.2 Securities of the Aadhar Based Voting system

The main goal of a secure e-voting is to ensure the privacy of the voters and of the votes. A secure e-voting system are satisfies the following requirements,

**Eligibility:** only votes of legitimate voters shall be taken into account.

**Anonymity:** votes are set secret

**Accuracy:** cast ballot cannot be altered. Therefore, it must not be possible to delete ballots nor to add ballots, once the election has been closed.

**Fairness:** partial tabulation is impossible.

**Vote and go:** once a voter has casted their vote, no further action prior to the end of the election.

**Public verifiability:** anyone should be able to readily check the validity of the whole voting process.

## 3. DESIGN AND IMPLEMENTATION

Fingerprint verification could also be an honest choice for in e-voting systems, where you can provide users adequate explanation and training, and where the system operates in a controlled environment. This method is inexpensive, small size, and easy integration of fingerprint authentication devices Capture the finger vein image and compare or match to database, capture finger vein and database finger vein matched suggests that this person will be valid for polling section and if condition is satisfied automatically.

Voting machine buttons will be activate otherwise deactivate buttons when the Evoting machine buttons square measure activated, the elector forged his/her vote [7]. When completion of his/her ballot method, a "voting method completed" message are displayed on the screen.

In earlier days the election process is in such a way that there will a box and a paper with all the political parties list. Whereas voting the voter has to put a stamp over the party symbol of his/her desired candidate in a specific consistency [8]. This is an extended time consuming method and extremely a lot of prone to errors. Additionally the probabilities for rigging were a lot of during this traditional methodology.

To beat of these ballot papers, stamps, boxes etc., going for Aadhar based EVM. So that, to beat time consumption, Rigging, insecurities etc., Here in Aadhar primarily based EVM, using the information primarily based server for Aadhar details, Raspberry-pi for the online technology and arduino is employed for interfacing Raspberry-The elector is allowed into election booth with Aadhar card ID. Here the voter first gives his Aadhar card for QR reading/Keypad operator.

The elector is allowed into the ballot box room when the QR reading/UID authentication is finished with success by the operator. When Authentication the digital display in EVM displays as “welcome voter” [4]. The elector has to scan his thumb mistreatment the biometric and providing the thumb data that's scanned is matched with the pre-loaded database information the elector can permit to forge the vote.

Otherwise the Authentication will fail and voter will not be able to cast the vote. Once the voter is authenticated the switches of parties will enable and conjointly the data of elector are shown on show of EVM[5]. When casting the vote the switches are disabled till next voter is authenticated and

EVM shows a message as “thank you for voting”. At identical time the printer connected to EVM can print the casted vote information at the side of a message “Please drop the token into ballot box”. The token is additionally useful to verify the vote casted by the voter. And at last the voter will check the token and drop it into the box [6]. The overall data of casted votes is distributed to the server mistreatment net technology in order that the results are often declared among all the consistencies.

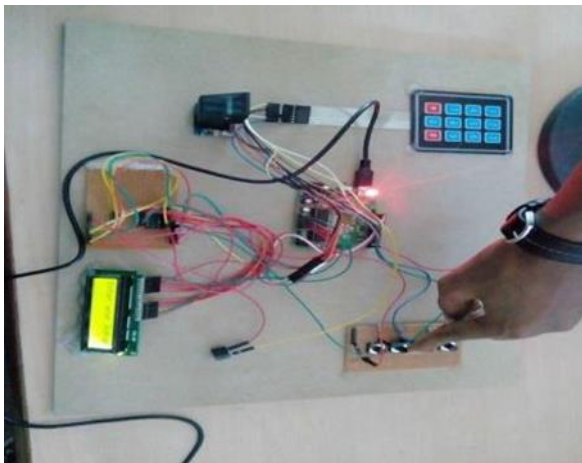


Fig 3.1. Voter Authentication

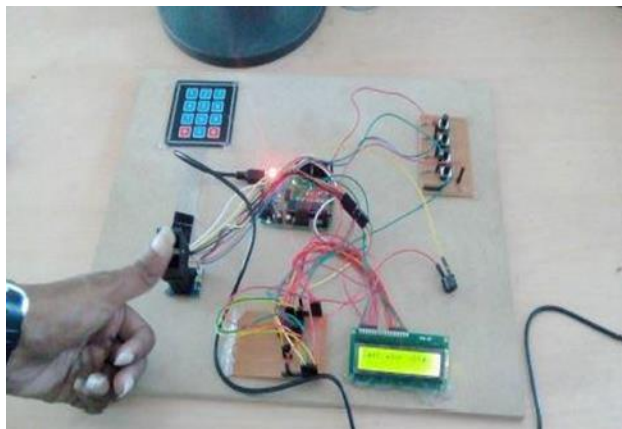


Fig 3.2. Casting Vote

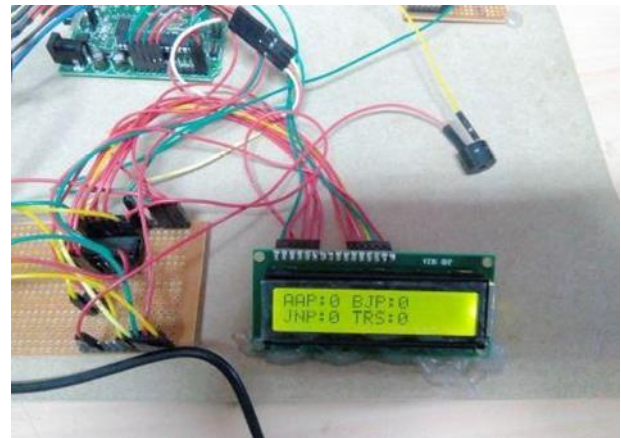


Fig 3.3. Final Results on LCD

#### 4. CONCLUSION

This review discussed introduction about EVM and its variation, Issues of EVM, Taxonomy, and Biometric based EVM. Our efforts to understand electronic voting systems leave us optimistic, but concerned. This paper suggest that the EVM system has to be further studied and innovated to reach all level of community, so that the voter confidence will increase and election officials will make more involvement in purchasing the innovated EVM's for conduct smooth, secure, tamper- resistant Elections. This concludes that the Aadhar based EVM will useful

To avoid Rigging

To avoid time consumption

To keep the voter's information more secured.

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