

# Aadhaar Based E-Voting System

Badarla Sri Pavan<sup>1</sup>, Rajesh R Katagawali<sup>2</sup>, Nikhil Kumar D<sup>3</sup>, Puneeth Prasad NR<sup>4</sup>, Sidram<sup>5</sup>

<sup>1</sup> Assistant professor Dept of Electronic and Communication Engineering

<sup>2,3,4,5</sup> Dept of Electronic and Communication Engineering

<sup>1,2,3,4,5</sup> Nitte Meenakshi Institute of Technology

**Abstract-** We propose a system in which, people can vote who have citizenship of India and whose age is above 18 years. Our purpose of Aadhaar based E-voting system in public elections that would allow people to vote electronically, from their current city. There is lot of methods to avoid fraudulence in voting systems. This project will give solutions for the above mentioned problem.

In this system, voting is based on Aadhaar's biometric database that is a fingerprint. This voting system would offer higher security and it will increase voting percentage. Today we all have Aadhaar card so the Government has all the data base of us including finger print and retina. Fingerprint is one of the unique identities of a human being which is being used in the Aadhaar system. At the time of voting in the elections, the authentication can be done using Aadhaar Card Id and Finger prints, which enables the E-voting system for allowing voters to cast their votes. The integration of finger print with E-voting machine undoubtedly requires less manpower, save much time of voters and personnel eliminate rigging, ensure accuracy, transparency and instant results in election.

**Keywords-** Aadhaar, Electronic voting machine, Biometric, Fingerprint and voting system

## I. INTRODUCTION

We all know that, Election is the process of democracy which gives rights to people to selecting their candidate by their opinion. In India, for the better democracy voting system should become honest, transparency and secured. Indian current voting system is very less transparency because of corruption and cheating during voting. The main challenges of current voting system are securing the voted data, the process of voting and voter's authentication. In electoral process, voter identification is required during two stages. First stage is during the registration of voter to establish a right to vote. And second stage is allowing a voter to give him right to vote by verifying his all details required to authentication.

It is necessary to implement a secured E-voting system because we all know that security is heart of E-voting

system. Usually, system that ensures the privacy and security of an election will be more time consuming, inconvenient for voters and costlier for election administrators. There are different kinds of E-voting security. Therefore appropriate measure must be taken to keep it out from public. Also security is given such that the votes should be hidden from publicity. The security level depends on the information we provide, so there is no measurement for security level.

Depending upon usability and strength of security method an acceptable security level get compromised. The proposed E-voting system, is based on biometric i.e. fingerprint of voter which is saved in the centralized Aadhaar database server. In Aadhaar database, government collects all the biometric and demographic data of people and provides them a unique 12digit number. Everywhere using fingerprint as a biometric because it is unique to every person and provide secured authentication. This system is introduced to avoid the duplicate votes as we see in current voting system in India.

We all know that the Aadhaar card is the document provided by the government to all of the citizens of India which gives unique number to identify a person and take his all the biometric data to recognize him. In our system we use the finger prints of voter to authenticate to allow him to cast the vote. Those biometric finger prints are matched with the Aadhaar centralized database. If the fingerprint matches with database then only he is allowed to cast the vote. It also verifies with age, he/she is allowed to vote only if he/she is more than 18years old

## II. LITERATURE SURVEY

In [1], "Chris Armen identifies and discusses few of the main vulnerabilities and issues in Electronic Voting Machines (EVMs) and concludes that the EVMs must be verifiable and their hardware design as well as source code should be made transparent to the public. Mayur Patil et al. [2] has conducted a survey of all available voting systems including Paper Ballot System, Electronic Voting Machine (EVM) System, Online Voting System, SMS Voting through mobile phones. The author, after a comparative study of all the voting systems concludes that there is a pressing need for developing a new voting system that combines the advantages

of all the existing voting systems, overcoming the drawbacks of all those voting systems. Dimitrios Zissis et al. [3] explores the notion behind the term cloud computing and evaluates its relevance to e-government services, particularly e-voting information systems. Further, the author proposes architecture for e-government and E-voting systems by leveraging cloud computing technology and cryptographic technologies. Ashutosh Gupta et al. [4] puts forward an e-voting model based on cloud computing technology, including the integration of Aadhaar Card database with e-voting system. The author states that cloud computing would fasten up the e-voting system due to its new architecture and security offerings. Pankaj Kumar Malviya et al. [5] propose a cloud based evoting model where Aadhaar Card plays a pivotal role. Further, the author intends to provide multiple level security and expects the cloud to offer transparency and reliability, apart from ensuring faster vote counting by the e-voting system. Gandhi Usha Devi et al. [6] proposes an e-voting framework based on public cloud that is made secure through deployment of fingerprints. The cloud is leveraged in e-voting aiming to deliver reliability and ensure quicker election results.”

### III. OUR PROPOSED SYSTEM

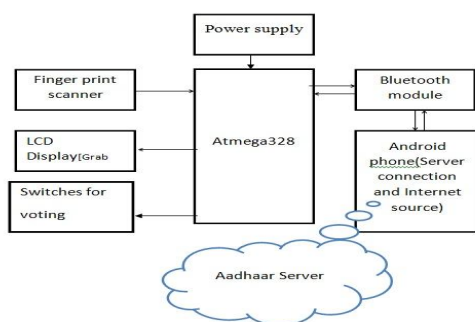


Figure 1: Block diagram of Aadhaar based E-voting system

The above block diagram represents the design of Aadhaar card based voting system, modules such as fingerprint sensor, Bluetooth device, keypad, LCD are interfaced with ATmega 328. A database is also created for storage, updating of votes and generation of results. This system is implemented and developed in 5 phases:

- 1) Creating of android application and database
- 2) Interfacing of Bluetooth
- 3) Interfacing of finger print module
- 4) Keypad interfacing
- 5) LCD interfacing

A web database server is created for storing details of registered person, updating of vote count, generation of

results and storing the results, these results can be retrieved when ever required. Bluetooth is interfaced to establish communication from server to the controller via mobile phone. a android application is created for 4 main purposes i.e. registration, voting, results and communicating with the web server.

#### Registration:

For the registration process to be completed, the person's details have to be entered. "ID Number, Name, Aadhaar ID, Mobile no., Age, Region and capturing of finger print". For a fingerprint to be captured, a finger print module is interfaced with the controller. The module senses the finger and captures it based on the algorithm in the module, the data is then digitally stored in the server.

#### Voting:

After the registration, The voting process begins, here the registered person's are allowed to cast their votes. The person is allowed to place his/her finger on the finger print scanner, if his/her finger print gets matched along with the Region and Age, he/she is capable of casting his vote. A LCD display is interfaced to display the name of the candidates, the person then casts his/her vote to the respected candidate, casting of vote is done with the keypad switch which is interfaced with the controller. The casted vote is then updated to the server through the mobile phone.

#### Results:

After the voting process is completed, The results can be viewed. the calculation and generation of results takes place in the server and will be displayed in the mobile phone.

### IV. FLOWCHART OF PROPOSED SYSTEM

Figure shows the flowchart of Aadhaar based E-voting system.

Mainly there are three steps

1. Registration
2. Voting
3. Results

**Registration:** When you press the registration button in the Android Application, It will display 5 options to enter. In this all are mandatory.

1. Aadhaar Unique ID No: Enter the Aadhaar unique ID number provided by the central government.
2. Enter the name
3. Enter the Area
4. Enter the Age
5. Enter your mobile number

And press on capture fingerprint button. When you press on capture fingerprint button, it gives a message as to swipe the fingerprints for 3 times and Registration is successful.

**Voting Process:** When you press voting button in the Android Application, It displays 3 options to enter

1. Election Title
2. Region and
3. Aadhaar ID

When you enter all the details it gives you message to verify the fingerprint. When you place the finger on finger print module it captures the image of your fingerprint, if your fingerprint matches with stored data in Aadhaar data base then it checks for Age. If your age is below 18 then voter is not valid for voting else it will allow voter to select the candidate. It checks weather he/she had voted before. If he had done voting already, Then vote is rejected else it is updated to the database.

**Results:**When you press Results in the Android Application, It displays 2 options to enter Election Title and Region Based on Election Title and Region It gives respective results.

**V. ADVANTAGES OF PROPOSED SYSTEM**

- Time saving.
- Possibility of maximum voting percentage.

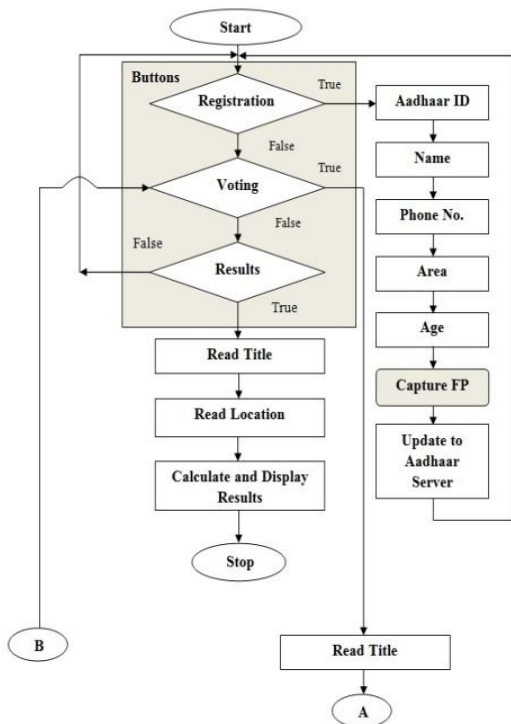


Figure 2: Flowchart of proposed system

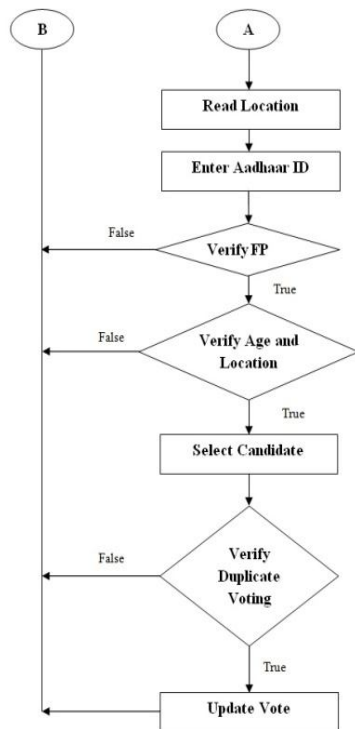


Figure 3: Flowchart of proposed system

- 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.
- Fingerprint authentication provides high security.
- Avoids duplicate votes.

## VI. EXPERIMENTAL SETUP

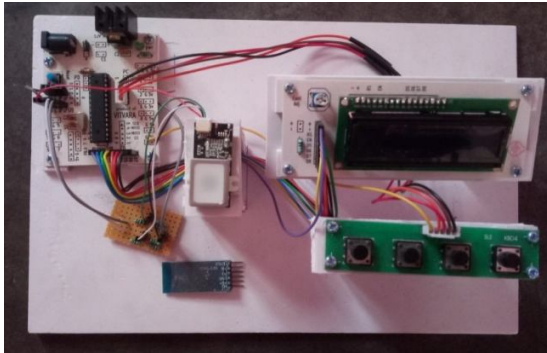


Figure 4: Developed Aadhaar E-voting system

## VII. CONCLUSION

The developed system eliminates the earlier issues of ballot paper and E-voting system. The system provides secure voting process, since fingerprint is used for authentication purpose. Duplicate votes are eliminated because only registered persons are able to vote. since a database server is created, all the data such as captured fingerprint, details of registered person, vote count and calculation of results are stored in the cloud, there is no loss of data and also the results stored can be regained and viewed when ever required. Manipulation of results by unauthorized person is highly impossible. Due to all of these characteristics, the system is efficient, reliable and portable. By viewing the accuracy and feasibility of the system, this developed system can be preferred for a better voting process.

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