# SMART VOTING SYSTEM USING AADHAR

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***Abstract—*** *This paper describes a smart voting system for Election which is managed in an easier way to cast their vote using finger print and Aadhar card details. The main features of the project are high security password is confirmed before the vote is accepted in the main data base of Election Commission of India(ECI), the voter will ensure his/her vote has been casted. The votes are going to be done automatically therefore saving an enormous time and facultative ECI to announce the result at the intervals a very short period.*

***Keywords—Aadhar; Arduino Uno; Finger Print; Voting System; PIC Microcontroller***

## 1. INTRODUCTION

A democracy is a system of Government in which the entire population participates. Election day is one of the most responsible days of the year. Our nation comes together to elect a leader who will represent us on the global stage till the next election. We will elect a leader who will stand for our rights as citizens and hopefully keep their promises. Voting is the opportunity to contribute to the political process and the system was created to work best when everyone participates. Therefore, using your right to vote is not just an addition to the voter turnout statistics published by every major media site. Our vote actually matters and the nation wants and needs to hear our opinion.

Voter identification is needed during two phases of the electoral process: first for voter registration so as to determine the right to vote and subsequently, at voting time, to allow a citizen to exercise their right to vote by verifying their authentication. The secured e-voting process can be done through linking the voting machines with the Aadhar, an Indian citizen identification data base with a unique identification number for every citizen. The Aadhar based Electronic Voting Machine(EVM) can result in secured e-voting process.

In the current system , as soon as the last voter has voted, the Polling Officer in-charge of the Control Unit will press the 'Close' Button. Thereafter, the EVM will not accept any votes. Further, after the close of poll, the Balloting Unit is disconnected from the Control Unit and kept separately. Again the Presiding officer, at the close of the poll, will hand over to each polling agent present an account of votes recorded. At the time of counting of votes, the total will be tallied with this account and if there is any discrepancy, this will be pointed out by the Counting Agents. During the counting of votes, the results are displayed by pressing the 'Result' button. There are two safeguards to prevent the 'Result' button from being pressed before the counting of votes officially begins. This button cannot be pressed till the 'Close'

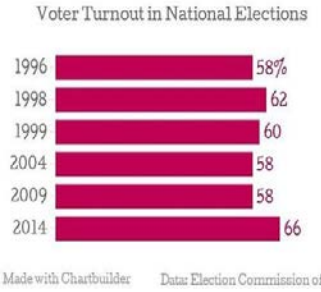


fig 1. Voter Turnout in National Elections

button is pressed by the Polling Officer in-charge at the end of the voting process in the polling booth. This button is hidden and sealed; this can be broken only at the counting centre in the presence of designated officer. The present system has the disadvantage that all the voter should reach their hometown or to the area where they should cast their vote. There may be some people who desire to represent their vote but they cannot overcome their situation. This is one of the reason for not achieving cent percentage voting in our country. Fig 1. shows the past election turnouts. In order, to overcome those drawbacks we go for SMART VOTING SYSTEM USING AADHAR in which we use AADHAR details and finger print to cast the vote which will be available at the door step of the people.

## 2. OVERVIEW OF VOTING SYSTEM

### *A. Implementation of Electronic Voting Machine*

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. The EVMs are now manufactured by the above two undertakings. 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. Electronic Voting Machine

fig 3. applying ink to the voters for avoiding fake votes

*B. Issues in Electronic Voting Machine*

There are many types of problems with EVM which is currently in use they are: A candidate can know how many people from a polling station voted for him. This is a significant issue particularly if lop-sided votes for/against a candidate are cast in individual polling stations and the winning candidate might show favoritism or hold grudge on specific areas. Now the election seems to be a great messy proceeding. On or before election days transport system totally ceases and maximum surface transport vehicles are taken off the road for election purpose.

Moreover official works in a majority of public sectors are suspended during election months. Officers and staffs from public sectors are appointed on election duties. As a result the public sectors have to face a complete disorder and the employees, customers related to it also suffer a lot.

Schools, colleges and other related institutions are taken as polling stations or DCRCs (Distribution Centre cum Receiving Centers) for distribution and collection of voting equipment, related documents & applications, to the polling officers. For these, the official works, classes are suspended and the students have to face various problems. On a particular election day, the election booths become heavily crowded. People have to stand in the scorching sunlight for hours just to cast “a vote”. Aged people and senior citizens have to face the same problems. Pregnant women and women with kids face great difficulty for the lack of various facilities; as a result a great percentage of these women do not come to the booths to cast their votes.

## 3. SMART VOTING SYSTEM USING AADHAR

*A. Advancement in Smart Voting System*

The system consists of a tamper proof card where in all the records about the person are stored.

The voter need not get to the officers at the polling booths instead of this issue can go direct to the Machine. Voters have to fix their fingerprint. Based on the features of fingerprint it gets matched with the person who caste his/her vote. Finger print matching will be done using the Aadhar card data base. The voter finger is matched with the database the voter get an OTP through GSM modem. OTP generation like an online transaction. Random numbers have been generated. The efficiency of a fingerprint based biometric system is relatively high in comparison to other biometric based authentication systems like iris recognition, face readers, retina scanning, voice recognitions or hand geometry. They want to enter the OTP through Keyboard Matrix. If OTP and finger print are matched then only they can able to put a vote.

After the comparison of fingerprints occurrence the area which is relevant to the voter will be displayed the candidates and their party name, symbol.

With the help of keypad matrix voter can select the candidate depends on his/her decision after casting the vote can receive a short message as confirmation using GSM. The vote will be appended. Appended list will be viewed only by authorized user. 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.

*B. Safeguard Measures of Smart 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.


fig 4. Flow chart of smart voting system using AADHAR

*C. Design*

The smart voting system consist of PIC Microcontoller, finger print sensor, 4x4 Keypad Matrix, UART, GSM Modem, LCD display.PIC Microcontroller is used to control the LCD and data storage. Finger print sensor is used to scan the thump impression of the voter. UART and GSM modem is used to send the OTP to the voters mobile. 4x4 keypad matrix is used to enter the OTP. LCD is used to display the symbols and names of the candidates of the voters specific area.

The elector is allowed to elect with Aadhar card details. The LCD first displays as “VOTE FOR NATION”. The elector has to scan his thumb mistreatment the biometric and providing the thumb data that's scanned is matched with the pre-loaded server information .The elector should enter the OTP. When the OTP is entered incorrect LCD displays “VOTING FAILED”. When the authentication is success the LCD displays “VOTE FOR’’ continued by party names. The voter can vote by entering the prescribed party number. Once the vote has been casted the voter receives the message to their mobile as “VOTED FOR NATION”.

*D. Block Diagram of Smart Voting System*

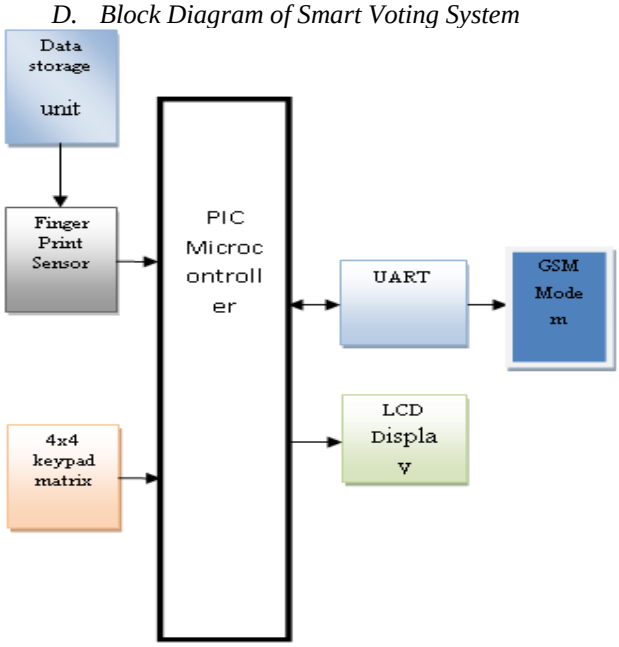


fig 5. block diagram of smart voing system using AADHAR

fig 6. finger print sensor

## 4. CONCLUSION

The Electronic Voting Machine using fingerprint and hex keypad has been designed. Data base consisting of the details like name, address, age, gender, fingerprint of the people should be updated every time before election. This system affords additional security by allowing voter to vote only once by imparting unique identification. It is very difficult to design an ideal e-voting system which allows perfect security and privacy with no compromise .

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