



SECURE AND EFFICIENT ELECTRONIC VOTING MACHINE USING IOT

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ABSTRACT

During election voting plays a major role in democratic countries. Now a days, there are lot of technologies are developing but still we found many issues in voting system. In the existing system the voters have to go to their specific constituency to poll their vote, then the identity verification are made physically by the polling officials. There occurs many rigging. Announcement of results also get delayed in the existing system. To overcome the illicit activities and some complications, voters can vote in any of the nearby poll station in their current residing constituency, no need to travel very long distance to record their precious vote. Identity verification also made by machine itself with more secure and efficiently. The voter can scan their voter id in the RFID scanner to confirm their affinity. Voting machine will collect the required details of that particular voter from the election commission server and it lists the candidates who are all participating in his/her legislature. Once the voter polled their vote, they cannot poll again, as the system marks the voter as voted to ensure the rule of conduct like "one man, one vote". The system in election commission server will analyses the results automatically after the electing time is finished. The system developed establishes a arduinouno (micro controller), RFID Reader, GSM module, LCD Display. Finally, this project prototype is a newer approach to the existing and it implies better performance.

Keywords : *Better performance, Electronic voting machine, Newer approach, Reduced travel stress, Result analyzing.*

I. INTRODUCTION

IoT is a big platform where it enhances very powerful technology. A lot of technology has been methodologized to advance the electronic voting machine. The secured and efficient electronic voting machine is to implement the more advanced methodologies. Voters can able to vote from anywhere by going to the nearby poll booth in their location where they feel convenient so that the travel stress is reduced. The identity verifications are done twice. First the voter's ID card is scanned by the RFID scanner, so it will reduce the manual errors and the next verification is by sending an OTP to the mobile number which is linked to the particular voter ID.

The voting details are not stored in the voting machine. Instead the voting details are stored in the election commission database instantly. The system will analyze the votes and declare the results in the election commission server. The declared results are published in the website and also to the candidate who are all voted in the election through a message.

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II . OBJECTIVE

To develop a compact near field communication device for the voters to poll their vote in order to have the voting process in a secured and efficient manner . To implement the advanced technologies in the ornate world to store the vote records in database instantly through Internet of Things.

III . LITERATURE REVIEW

Online Voting System for India Based on AADHAAR ID : For the high security purpose the Indian election commission has implemented an online voting system In this methodology the voter can vote from any of the place such as nearby poll booth or allocated booth.In this section voter can confirm his or her voting which the voter pressed their vote to the correct candidate party. The vote analyzing will be done automatically which saves the time for election commission and announce the results in a short span of time.

IV . PROPOSED SYSTEM

In the proposed system, the voters no need to go to the poll station in their native constituency; they can go to any of the nearby poll station where they feel convenient to poll their vote. The voting process is also made much simpler than in the existing voting process. The voter have to take their voter ID to the nearby poll station and then polling officials have to scan their voter ID in the RFID scanner in the Electronic Voting Machine (EVM) to confirm their affinity. The EVM will send a One Time Password (OTP) to the mobile number which is linked with the particular voter ID, then the voter have to enter the received OTP to confirm identity. Once One Time Password validation process is completed, the EVM will collect the details of that particular voter from the election commission server and it lists the candidates who are all participating in his/her legislature. Voter can vote their candidate by pressing the corresponding button on the voting machine. Once the button is pressed the vote is recorded to the election commission database through internet and it will update the voter status as voted so that the same voter ID cannot be vote again to ensure “one man, one vote” principle. After all these process a confirmation SMS is sent to the voter’s mobile number linked with their voter ID to ensure that his/her vote has recorded.

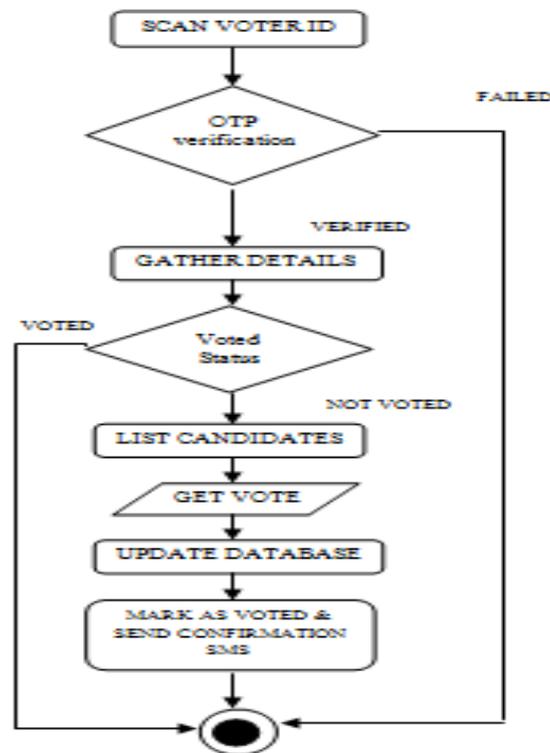


Fig. 4.1. System Work Flow

Similarly vote counting process also made simpler in the proposed system, as the votes are immediately stored to the database, the counting process is also easier when compared to the existing system. The system in election commission server will analyses the results automatically after the electing time is finished. After the results are analyzed, it is verified by the election commission officers and confirmed. After the confirmation the results are announced individually via SMS to all the voters who voted in the election and to all the candidates who participated in the election.

This project is to design and implement a secured and advanced voting system which exploits the Radio Frequency Identification technology (RFID). The Electronic Voting Machine (EVM) further improves the election process which is used to avoid apparel and complications. The system we have developed uses a arduinouno (microcontroller), a RFID reader, GSM Module, Database management system and LCD display. When voters approach to the polling station to exercise his franchise; they are directed to scan their voter identity card on a RFID reader. The voter ID is scanned by the Radio Frequency Identification then it sends this information to the microcontroller. After getting the voter ID information, the microcontroller checks whether the received voter ID is owned by the owner or not, by sending one time password to his/her mobile number. Once verified, whether the voter ID belongs to the particular polling booth are checked by the arduinouno (microcontroller). If the voter ID belongs to the particular polling booth, the microcontroller finds whether the voter has voted or not. If not, then it the makes the voting machine ready to display the corresponding candidates details at the corresponding ward from the database for voting. The vote will be recorded immediately to the

database server of the election commission through internet. After vote recorded successfully, that details will be send through message format to that particular voter via SMS.

The main aim of this project is to make the voters to vote from anywhere to avoid all the travelling stress in the voting process, because in the existing system the voter will not able to poll their vote from their constituency where they stay, they have to travel to their own constituency where their Voter ID has registered. Due to this travelling stress most of the people who has vote franchise also gives up their opportunity of voting in the election.

The voter will not get any notifications whether their vote is recorded or not and also there may be some chances of misusing their voting franchise by others. To overcome this issue confirmation message feature has been included to our project, whenever the voter records his vote in the polling station the voter will get a confirmation SMS to their corresponding mobile number which is linked to the Voter ID. In the existing system, the Electronic Voting Machine must be unlocked after every votes, this is done by the Ballot officer in the poll station but in the proposed system no need of ballot officer to unlock the EVM, the EVM can only be unlocked by the One Time Password received to the voters mobile number which is registered to the Voter ID. This will avoid the rigging in the election process and makes the election process more secured.

ADVANTAGES:

1. Voters can able to vote from anywhere by going to the nearby poll station in their current residing legislature, no need of travel to their own native legislature.
2. Voting process will be more secured, effective and advanced methodology.
3. Vote counting, result analyzing, result publications are automated, accurate and efficient.

V. SYSTEM REQUIREMENTS

5.1 ARDUINOUNO

It is a open source software based on both software and hardware. It consists of a circuit board, which can be programmed referred to as a microcontroller and ready-made software called Arduinouno IDE Integrated Development Environment, which is used to write and upload the computer code to the physical board.

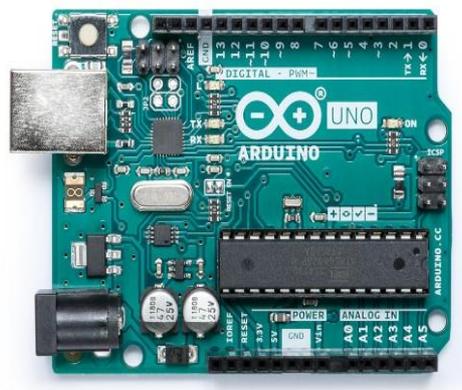


Fig. 5.1 Arduinouno

5.2 GSM MODULE

Global System for Mobile Communication is a circuit based system and digital technology used by more than one billion across 210 countries. GSM used for transmitting signals which can be either modem or mobile device over a network. GSM has the ability to have the services which is also the roaming service. Roaming is the ability to use your GSM phone number in another GSM network. GSM module has some specifications like point to point MO and MT, SMS cell broadcast and text & PDU mode. This methodology is utilized in our proposed system.



Fig. 5.2 GSM Module

5.3 RFID SENSOR

Radio frequency identification is a general term that is used to describe a system that transmits the identity of an object wirelessly, using radio waves. RFID technologies are comes under the more generic Automatic Identification technologies. Nowadays RFID is used in a increased number of cases like identification by scanning the barcode. Though, they are cheap but the stumbling block is their low storage capacity and also cannot be reprogrammed. The data is stored on the silicon chips which is the feasible solution. The ideal situation is transfer of data between the data carrying device and its reader. The contactless technology is to utilize the digitalized input carrying device is the requirement of power would also be transferred from the reader. These procedures give RFID its name.



Fig 5.3 RFID Sensor

5.4 LCD DISPLAY

It accepts two types of signals, one is data, and another is control. RS pin provides a signal which is identified by the LCD display. Now data can be read also from the LCD display, by pulling the R/W pin high. As soon as the E pin is pulsed, LCD display gather data at the falling edge of the pulse and executes it, similar incase of transmission.

5.5 SYSTEM ARCHITECTURE

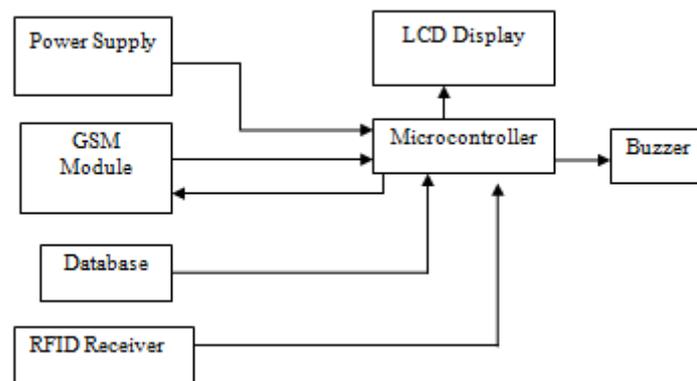


Fig 5.5 System architecture

5.6 COMPLETE MODULE

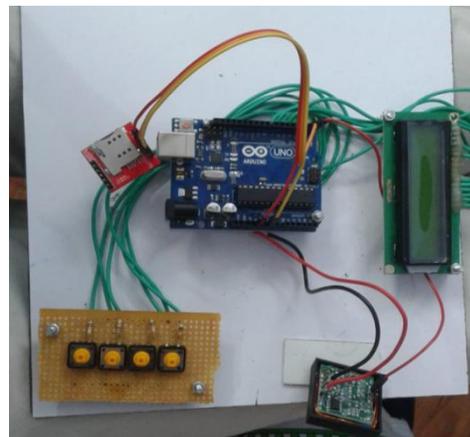


Fig 5.6 Complete Module

VI . CONCLUSION

Thus using this Secured and Efficient Electronic Voting Machine using IoT, the disadvantages of the existing voting machine as we discussed earlier are identified and corrected in the proposed system. Using this system the voter can now able vote in their nearby poll station which reduces the travel stress and increases the interest of people on voting in the election. The Secured voting machine is developed to avoid all the rigging activities in the election process. More accurate results are published in the developed system; no more manual error is

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possible in the developed system. Results are announced to every individual voter who voted in the election, this feature is lacking in the existing electronic voting machine.

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