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E-VOTE: A BIOMETRIC IoT-ENABLED VOTING SOLUTION

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ABSTRACT

Electronic voting systems have come into picture to prevent rigging up to the maximum extent. But even there may be some malfunctions during elections. Thus, fingerprint based electronic voting system has been designed. According to ancient Greek scripts BIOMETRICS means study of life. Biometrics studies commonly include fingerprint, face, iris, voice, signature, and hand geometry recognition and verification. Many other modalities are in various stages of development and assessment. Among these available biometric traits, Finger Print proves to be one of the best traits providing good mismatch ratio and also reliable. To provide perfect security and to make our work easier, we are taking the help of two different technologies viz. EMBEDDED SYSTEMS and BIOMETRICS.

We will be using Master mode to register the fingerprints which will be stored in the ROM present on the scanner with a unique id. When a person wants to register himself in the voter list, he has to provide his complete details along with his fingerprint image. Thus, when the same person comes to poll his vote during the elections, he needs to give his fingerprint image before polling his vote. Thus, the system scans his fingerprint image, compares the image with the already stored image. If both the images are matched, the person can eligible to pole his vote. If the fingerprint was not matched then the buzzer will give us the alert sound and that person can't be eligible to cast his vote. By this way we can avoid the rigging.

INTRODUCTION

Electronic voting refers to the use of electronic devices to cast and count votes. Depending on how it is implemented, this can be done by a standalone electronic voting machine, also known as an EVM, or linking a PC to the internet. For the first time, an online electoral system for Indian elections is offered in this proposal.

Numerous voting systems have been developed globally, each with its own set of drawbacks. In order to provide high performance and high security to the voting counter, our system uses a fingerprint sensor to scan

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voters' thumbs. We also use the internet of things, or IOT, to make the voting system more useful. This system was used to show the user's database. In order to extract fingerprint features, the fingerprint matching algorithm combines local and global information. Finger code, which is short-length fixed code, is the algorithm's output and will be kept in the system's database and it will come into play when matching occurs. The voting procedure in the previous system involved clicking the button next to the party symbol and presenting your voter ID card at the polls.

- E-VOTE attempts to solve the security issues that are frequently connected to conventional voting techniques like paper ballots and electronic voting machines (EVMs).
- Election data may be monitored in real-time thanks to E-VOTE's IoT connectivity. Authorized staff to monitor the voting process and spot any irregularities or anomalies. This real-time visibility can help make the electoral process more accountable and transparent.
- E-VOTE automates the tabulation and counting of votes, removing the possibility of human error and cutting down on the amount of time needed to decide the outcome of the election. The public's trust in the electoral process can be strengthened by this efficiency and transparency.

LITERATURE SURVEY

R. Murali Prasad, Polaiah Bojja, Madhu Nakirekanti [Murali Prasad 2016] discuss about the user login with the aadhar number and a password. Then checks whether that person is eligible for casting vote. This paper examines policy regarding the electronic approaches and developments towards electronic data storage and transmission. In this paper the user should first show their fingerprint and checks whether are his eligible for casting his vote. Fingerprint reader reads the detail of the voter from the tag. The information obtained from the reader is passed to the controller, and then checks with the already stored data. If it matches with stored data then that person is allowed to vote or poll his vote. If it information read from the fingerprint reader does not match with the stored data a message will be displayed on the LCD display.

Rahil Rezwan, Huzaifa Ahmed, M. R. N. Biplob, S. M. Shuvo, Md. Abdur Rahman [Huzaifa 2017] proposed a system which will be used in a country like Bangladesh. The system is based on electronic voting machine. They created a database which stores the fingerprint of the voter. When the fingerprint is placed it checks for matching with the created database. The system identifies if the voter is not registered and casting vote more than one time. If it matches with the database

then that person can vote. The system counts the vote and it is able to show the result after certain period of time. This system allows showing result faster.

EXISTING SYSTEM

ELECTRONIC VOTING MACHINE (EVM):

Electronic Voting Machine (also known as EVM) is used nowadays for polling vote, which enable the voter with a button for each choice of candidate. is voting using electronic means to either aid or take care of the chores of casting and counting votes. An EVM is designed with two units: the control unit and the balloting unit. These units are joined together by a cable. The control unit of the EVM is kept with the presiding officer or the polling officer and after the verification; voter will be allowed to poll his vote.. The balloting unit is kept within the voting compartment for electors to cast their votes.



Fig.1: Electronic Voting Machine (EVM)

This is to make sure that your identity is confirmed by the poll worker. Voters can cast

their ballots after the presiding officer completes the verification process and presses the ballot button. Voters can use the Electronic Voting Machine (EVM) by pressing the Ballot Button, which replaces the need for paper ballots. The machine will display a list of candidates' names and/or symbols along with a blue button. The voter can indicate the candidate they want to support by pressing the button next to their name. The voter presses the button next to the name of the candidate they choose to support. Voters under the current system must carry their ID cards for verification.

Drawbacks:

1. One problem is neither authority nor anyone else can link any ballot to the voter.
2. Another problem is one can change the program installed in the EVM (security problems).
3. Tampering of votes can be possible by corrupted officers.
4. Duplication of votes is possible.
5. Voter verification in human dependent so chance of unauthorized votes.
6. Availability is another problem 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.

7. One candidate casts the votes of all the members or few amounts of members in the electoral list illegally is also one of the problems in existing system.

PROPOSED METHOD

In the existing system, the election process was preceding like cast the vote by showing the voter ID card at the polling booth and by pressing the button against the party symbol. But in that there is a chance of rigging. Thus, to avoid this E-VOTE: A BIOMETRIC IoT-ENABLED VOTING SOLUTION has been designed. According to ancient Greek scripts BIOMETRICS means study of life. Biometrics studies commonly include fingerprint, face, iris, voice, signature, and hand geometry recognition and verification. Many other modalities are in various stages of development and assessment. Among these available biometric traits, Finger Print proves to be one of the best traits providing good mismatch ratio and also reliable. To provide perfect security and to make our work easier, we are taking the help of two different technologies viz. EMBEDDED SYSTEMS and BIOMETRICS.

In the proposed system, we are incorporating the fingerprint module and by using this

system, before election we are going to register the fingerprint of every voter and at the time of voting one must show his finger at the fingerprint module to cast his vote. Since finger print was unique for every person and there is no chance of rigging and once the fingerprint was matched then only the person can able to cast his vote. The project requires the voter to submit his/her Fingerprint at the election place. The Fingerprint technology will be used in this project to create the system. The primary goal of the project is to make a system that requests the voter to give his/her Fingerprint as a personality proof. The fingerprint voting system reads the fingerprint's data and compares it with the data previously stored inside the database. If the data exists in the database meets with the previously stored data, the voting system will enable the voter to enter into the system and give his/her vote. If the data of the Finger didn't meet with the stored data, then the system will instantly trigger the display and the authorities will come to take an action.

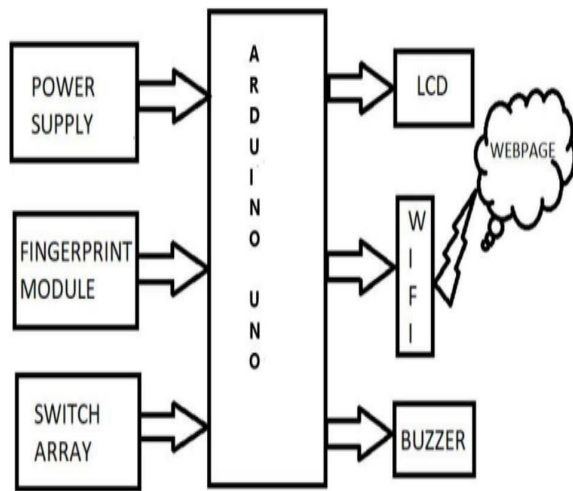


Fig.2: E-Vote: A Biometric IoT-Enabled Voting Solution

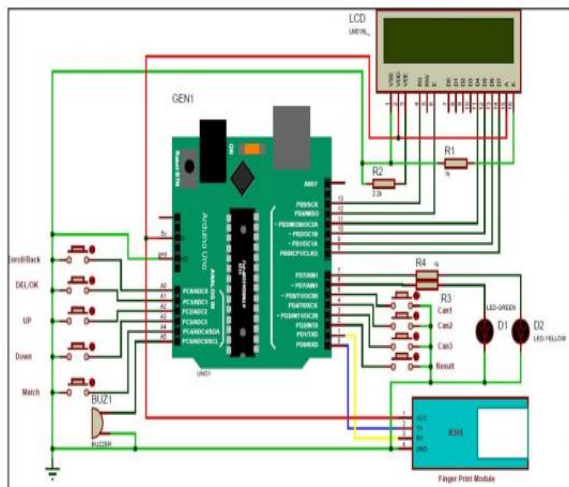


Fig.3: Circuit Diagram

In addition, all the major components were first tested individually in laboratory. This was done to make sure that all components perform its task and do not affect the function of other components. Also, mid-way test were carried out when assembling the components. Arduino Uno has built in analog

to digital converter (ADC). ADC converts analog signals into digital.

CONCLUSION

Fingerprints have been one of the most popular ways to identify people for more than a century; automated biometric technologies have only recently become accessible. This work is evaluated and executed effectively. Their findings were more comparable and noteworthy. This project makes voting possible without the need for proxies or duplicate votes. It also offers a highly secure, fast, and easy-to-maintain voting record that is very efficient and dependable since it uses a fingerprint scanner to decrease or eliminate human mistake. Furthermore, this voting system offers higher scalability for major elections and can manage several modules in different centres. Future work should do a thorough investigation into electronic voting.

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