Smart Electronic Voting Machine Using IoT

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Abstract: The basic concept of this mission is to create a digital voting sys- tem as a way to assist to get rid of defrauding of the manual voting structures like paper based voting system, in this there is a chance of casting vote more than once and prior. The proposed machine is which includes a couple of layers of verifications to ensure the reliability of the device. With the inclusion of biometric fingerprint sensor, every voter is entered into the gadget simplest after being diagnosed and checked with the given database of enlisted voters. Once the corresponding fingerprint is matched with the records provided, the voter will be allowed to proceed for selecting their preferred candidate from the panel of buttons. The final vote is then displayed onto a Liquid Cristal Display for the pride of voters. The proposed project displays transparency and also carries the characteristic of being autonomous for the duration of the path of operation.

Keywords: LCD Display,FingerprintSensor,Aurdino.

1. Introduction

Technology is growing so rapidly that it brings great impacts to human change, including how to vote. Voting is a method that is often used by large institutions such as a country or small institutions such as student organizations to choose a leader . In general, people are accustomed to vote in a conventional way using ballot paper. Voting in such a way is considered ineffective both in terms of cost, time, and governance. In the country of Indonesia, voting on paper ballot in the election often causes various problems. The problems refer to the level of waste of expenses incurred for eachelection.

The old and slow counting of vote counts, the vulnerability of ballot papers, and it has big potential for fraud and errors happened in the election. Because of all that problems, so we need to review againthen the voting system can be held more effectively. From the results of the review then created an electronic voting system or commonly known e-voting based on android so that the voting system can be held more easily and effectively because it takes a short time, the cost is not expensive, and it can minimize errors. However, on the other handtheimplementationofElectronicVoting(E-voting)alsohasaproblem about the security that can allow a person to manipulate data voting results. Therefore, E-voting requires a security method that can guarantee the security and authenticity of the voting results.

2. Related Works

The author [1] describes that raspberry pi is used as host. This minicomputer has the ability of image processing and control complete voting machine system. A camera is used to take picture of citizens national ID card and identify that this user is valid voter for that region. If the citizen is valid and also didn't vote then the person is allowed to submit his/her vote. Each voting machine is locked by finger print access module. The user is identified his/her finger print is sent to a specific machine for voting. Each voting machine isnetworked with central Raspberry pi voting identificationsystem.

The author [2] summarizes all the necessary electronics to allow you to store, delete, and verify fingerprints with just the touch of a button. Stored fingerprints are retained even in the event of complete power failure or battery drain. Biometric voting has made the voting procedure simpler. It is a revolutionary method preferred to traditional EVM voting, as it is risk defective.

The author [3] describes that creation of a database consisting of the thumb impressions of all the eligible voters in a constituency is done asapre-pollprocedure.Duringelections,thethumbimpressionofavoter is entered as input to the system. 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 themaintenance cost of the systems. The postal type of voting is not convenient for everyone.

The author [4] describes to improve the security performance in the voting machine as well as to provide easy access to cast the vote by using finger print. Fingerprint is one of the unique identities of a human being which is being used in the aadhar system. By using arduino software and by using image processing we capture the finger print of every individual and the face of the individual is being captured. The polling of the vote is transmitted to PC through arduino communication. Face of the person captured is compared to aadhar details using LabVIEW.

The author [5] describes that advance method of voting system in Indian Election commission. The casting a ballot framework is overseen easierly as the clients need to login by Unique Identification Authority of India(UIDAI) and secret phrase and snap on individuals ideal possibility to make their choice. This shows that highly secured secret key is affirmed in advance to each individual acknowledged in the fundamental database of Electronics Corporation of Israel(ECI). The elector can guarantee that his/her vote has polled to the address as such saving a huge time and facultative ECI to result at betweentimes.

3. Objective

The main objective of this review is to design a E-voting mechanism based on IoT, to avoid fraudulence and Malpractice by the voters who have registered as a voter and to improve the security performance by making finger print authentication, it helps in providing easy access to cast the vote.

4 Project Description

4.1 Existing System

Election is the act of party casting votes to elect on individual for some type of position. Election may involve a public or private vote depending on the position. Most position in the local, state, andfederal governments are voting on in some type of election. In paper-based elections, voters cast their votes by simply depositing their ballots in sealed boxes distributed across the electoral circuits around a given country. When the election period ends, all these boxes are opened and votes are counted manually in presence of the certified officials. In this process, there can be error in counting of votes or in some cases voters find ways to vote more than once. Sometimes votes are even manipulated to distort the results of an election in favorof certain candidates.

4.2 Proposed System

We are proposing a method which is to improve the security performance in the voting machine as well as to provide easy access to cast the vote by using finger print for authentication. We propose an idea to avoid fraudulence in mechanism to make e-voting in India a reality. It improves the security performance and avoid forgery vote because naturally one human finger print is different from other human.

4.3 Advantages of Proposed System

- It improves securityperformance.
- It avoidsforgery.
- Duetocompactsizeitcanbeeasilytransportatedtodifferent places.
- It prevents unregistered voters fromvoting.
- Power consumption and man power isless.

5 System Architecture

The Fig. [1], shows that first power supply is given to Arduino board then the voters are allowed to give fingerprints. If the finger print is matched which is displayed on LCD then that particular person is allowed to cast vote usingswitchesavailable,ifnotbuzzerturnsonwhichmeansfingerprint is not matched or person is trying caste vote more thanonce.

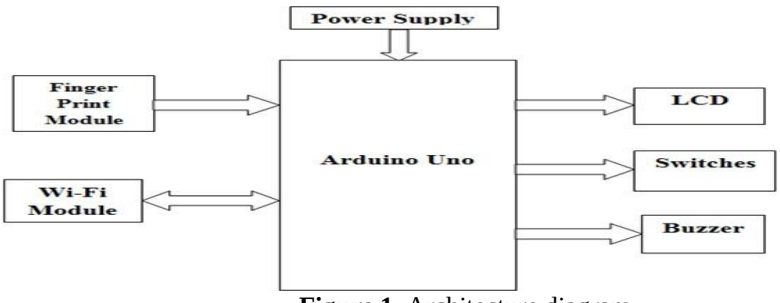

Figure 1. Architecture diagram

6 Module Descriptions

6.1 Finger Print Module

The fingerprint Module is used to detect the finger print of the voter. This module is used to enroll the voters and fraudulency is reduced. It detects the fingerprint of user only one time, and if the voter trying to vote again it shows error message.

6.2 Arduino

Arduino controls the complete voting processes like reading but- ton, incrementing vote value, generating result, sending vote and result to LCD Display.

6.3 Buzzer and Switches

When a person tries to caste vote more than once then the Buzzer turns on showing already voted on LCD screen. Switches are used to select the party for casting vote.

6.4 LCD

LCD is used to display basic operations in the System and it also shows the result of elections.

Wi-Fi Module

This is used to send the data to server i.e. used to update the current status of people who tried to cast their vote to server.

7 Implementation

The fingerprint Module is used to detect the finger print of the voter. WI-FI Module provides the data of voter. LCD is display the action done by voter. Buzzer detects frauds and provides alter message. The whole action done by the users is updated on iot server.The Arduino provides data of users and updates the action done by user. Voter is allowedpolling only once they are verified with finger print sensor. LCD displays action done by voters. Buzzer gets on when voter tries to castvote more than once. All this actions are updated on IOTserver.

7.1 Input Design

The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities. When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow.

7.2 Output Design

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is tobe displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient andintelligentoutputdesignimprovesthesystem'srelationshiptohelp userdecision-making.

8 Results and Discussions

8.1 Efficiency of Proposed System

Dimensionality to improve the presentation due to real time approach counting of votes could be done at the same time during voting. Time taken for casting vote is reduced. By using fingerprint module the chance of voting again is not possible. Hacking is not possible because of using encryption and decryption technique. System installation is effortless. Cost and human intervention are less in this system.

8.2 Comparison of Existing and Proposed System

In the existing paper-based elections, voters cast their votes by simply depositing their ballots in sealed boxes distributed across the electoral circuits around a given country. When the election period ends, all these boxes are opened and votes are counted manually in presence of the certified officials. In existing system, there can be error in counting of votes or in some cases voters find ways to vote more than once. Sometimes votes are even manipulated to distort the results of an election in favor of certain candidates. Whereas the present system is to improve the security performance in the voting machine as well as to provide easy access to cast the vote by using finger print for authentication. In we propose an idea to avoid fraudulence in mechanism to make e-voting in India a reality. It improves the security performance and avoid forgery vote because naturally one human finger print is different from other human.It prevents unregistered voters from voting.

9 Conclusion

This paper provides an innovative approach of electronic voting system it employs a dual authentication technique using both voter biometrics and unique voting pins sent to the voter at the point of registration. This restores confidence in the electoral process. It also provides a cheap, locally assembled, easily reproducible and highly sort after but presentlyunavailable or costly automated voting system. This system completely reduces the chance of invalidvotes.

10 Future Enhancement

In future it will be enhanced with additional features like for storing fingerprint images the external memory can be provided then later it can access the fingerprint images. To make it user friendly the audio output can be used for illiterate voters. In future like making the voting system online with Block- chain to improve the efficiency and moresecure.

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