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Smart Voting System Using Fingerprint

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ABSTRACT: The objective of this project "SMART VOTING SYSTEM USING FINGERPRINT" is to create an electronic voting machine that will help to eradicate defrauding of the manual voting systems and prior versions of electronic voting. With the inclusion of biometric fingerprint sensor, each voter is entered into the system only after being recognized and checked with the given database of enlisted voters. Once the corresponding fingerprint is matched with the information provided, the voter will be allowed to proceed for choosing their preferred candidate from the panel of buttons. The final vote is then displayed onto a LCD for the satisfaction of voters. The proposed project displays transparency and also carries the feature of being autonomous during the course of operation

KEYWORDS: Arduino, Fingerprint, Microcontroller, Voting.

I. INTRODUCTION

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, and federal 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 favor of certain candidates. In order to avoid these shortcomings, the government of India came up with direct-recording electronic (DRE) voting system which are usually electronic voting machine (EVM).

These devices have been praised for their simple design, ease of use and reliability. However, it has been found that EVMs are not tamper proof and are easily hacked. Moreover this attacks, hardware as well as software, go without any detection but are quite simple to implement. This made us to bring forth a system that is secure, transparent, reliable as well as easy to use for the citizens. Biometric e-voting systems are not a phenomenon anymore they are being actively used in countries like Ghana and Ireland and are spreading in many other developing nations. In this project, 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. Lot of methods have been developed to avoid fraudulence in voting systems, but we are not able to eradicate it completely. The objective of this project 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. By using Arduino IDE software and SFG demo v2.0 we scan the finger print of every individual. The scanned finger print is authenticated, if matches the individual is allowed to cast the vote.

II. LITERATURE SURVEY

[1] The proposed model is more secure than other models and it is suitable for use in major elections on a large scale. After casting a vote with NCVVS system, the voter receives a confirmation email containing the ballot fingerprint (and also the fingerprint of the election) calculated by standard hash function SHA (256)

[2] The 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.

[3] To avoid all kinds of problems related to ballot and electronic voting systems a method has been developed, which is based on the authentication of fingerprint and UID number from AADHAR database. The method of electronic voting mechanism helps to simplify the election process, constricts voting fuss; short - term result announcement with enhanced reliability and security of the votes

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[5]This project is designed for integrating Electronic Voting Machine with the data of the voter as in the Aadhar. Using the Aadhar Number and its unique bio metric identification system to prevent and alert the authorities against fake voting protecting the voting rights of the citizen using fingerprint to ensure the identity of the person who is voting and also to ensure that no single person can vote more than once and aborting and alerting the authorities if otherwise. An RFID is used to represent the Aadhar card of each citizen and can be used only by the respective citizen as the data stored in the Aadhar are exclusive to each citizen.

III. PROBLEM STATEMENT

There are several problems and issues which are the most important drawbacks that have to be cleared and verified. There are some of the important problems High manpower, takes lots of time to give the count, less accuracy, less security etc. According to the current system, votes could be counted manually so that there is more opportunity for occurring errors, such as duplicates counting and completely missed counting

IV. PROPOSED SOLUTION

First the voter should enroll his aadhar number and fingerprint. During the process of voting, it checks with enrolled data if it matches, then check if there exists any previous entry against that user. If that voter has voted before, "Already voted" message will appear along with a buzzer alarm. If not voted before, he can cast his vote by selecting the candidate and cast vote and a register will be incremented. Then at the end of the voting, the result can be obtained.

V.OBJECTIVES

- To provide a secured voting platform where authenticity of votes and voters are ensured with the use of mechanisms such as fingerprint registration
- To improve voter's identification since biometric features cannot be shared.
- Helps to generate digital counting

VI.   BLOCK DIAGRAM
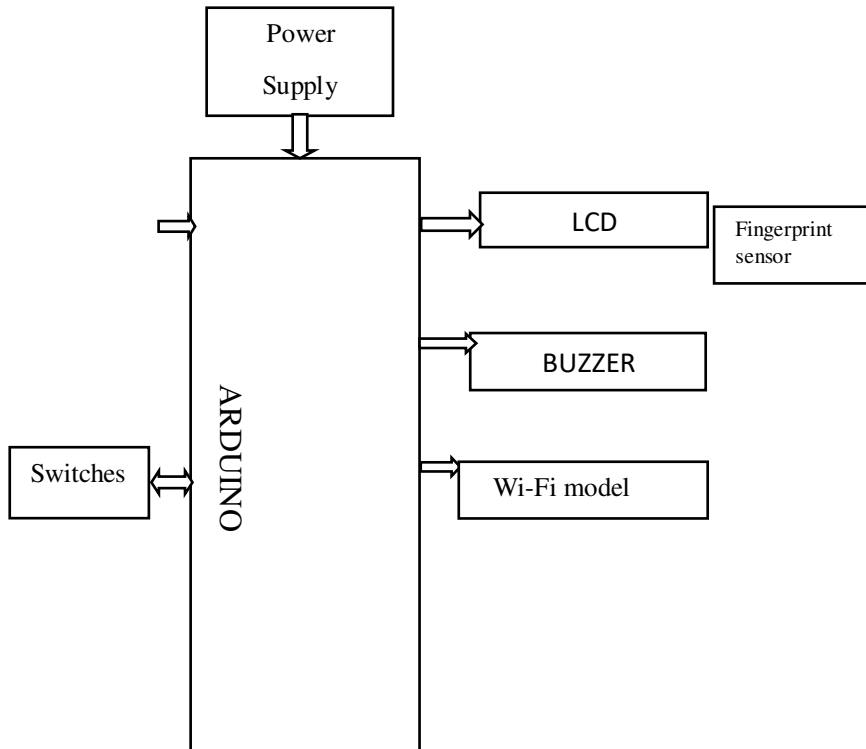
1.   Arduino UNO:

The Arduino UNO connects all the essential parts. It consists of an Atmega328 microcontroller, which is one of the most used mega chips in the Arduino. It also consists of an on- chip flash memory to which the code is uploaded. This board provides 14 digital input-output pins, out of which 6 are PWM pins (Pulse Width Modulation), and the other 6 pins are analog inputs.

2.   EEPROM Fingerprint Module:

The fingerprint module is one of the most prominent devices of the project. We use this module to acquire the fingerprint of a voter. The module used in this paper is R303. This module captures a high-quality image, resulting in a better matching process. The comparison process is very efficient as we could check every ridge, whorl, and valley with the already existing fingerprint.

3. LCD

We use the LCD (Liquid crystal display) to display details to the voters. The dimension of the LCD used is 16X2, which means it has 16 columns and 2 rows. We are using the LCD to display the access granted message to the voter, followed by the parties competing in the elections. After voting, the LCD displays the party to which the voter casts
their vote**.**

4. Switches:

This paper uses manual switches, which can also be referred to as push buttons, to vote. Each party has a separate button through which a voter can cast their vote to a party of their choice.

5. Buzzer (sounder):

Ringers like the TMB-course of action are alluring fit for being heard banner devices with natural faltering circuits. The advancement merges an influencing circuit unit with an acknowledgment twist, a drive circle and an alluring transducer. Transistors, resistors, diodes and other little devices go about as circuit contraptions for driving sound generators. With the utilization of voltage, current streams to the drive twist on fundamental side and to the area circle on the discretionary side. The strengthening circuit, including the transistor and the analysis circuit, causes vibration. The influencing current stimulates the twist and the unit delivers an AC alluring field contrasting with a faltering repeat.

IV. PROPOSED WORK

1. Algorithm of Fingerprint Based Voting System:
Step 1: start
Step 2: user can register by giving their fingerprint. We use
a microcontroller to store them.
Step 3: scan your finger.
Step 4: if match found goto step 5else return to step3
Step 5: user checks their details.
Step 6: cast your vote.
Step 7: press push-button for a party list.
Step 8: vote counted.
Step 9: stop

2. Fingerprint Identification and Matching:

1)AcquiringImage:
In the image identification process, the first step is to obtain an image as, without it, we cannot perform further steps. To acquire an image of a fingerprint, the person needs to place their finger on the sensor. Once the voter places their finger, on one end of the prism, the total internal reflection occurs through which we can capture the image using the image sensor and lens from another end of the prism. But the image extracted in this step is unprocessed

The position and placement of the finger play a prominent role in the process of capturing an impression. For intensifying the total internal reflection and capture a fingerprint of good quality with the image sensor, we need to make sure that the finger is placed correctly on the module.

2) Storing the image:

The unprocessed image acquired in the previous step is now processed using image segmentation.

Image Segmentation: The captured images may contain some redundant data and noise along with required data, so we use image segmentation in which we divide the image into many segments called pixels to remove the irrelevant

data. To ease the process of image analysis, we use image segmentation. We use the normalization of an image to get even pixels. Once the pixels are uniform, it results in the formation of an image, and then to reduce or remove the noise present in it, we use the Gabor filter. The thresholding technique is implemented on the filtered image to change it into a binary image, then we compare threshold values and pixel values, if the value is higher than the threshold value then we set the pixel value to 1 else 0. Next, to remove some pixels from the foreground, we implement the thinning process. Finally, all the segments form a single image.

3) Analysing the Image

Finally, it shows to whom the user cast the vote.

Using image analysis, we can retrieve all related data from the image for further use. Mostly some electrical machines are used to collect the required data. According to this project, the electrical machine is a fingerprint module through which we capture the fingerprint. The retrieved data from the image can be compared with data stored in different storage devices for identification, authentication, etc.

V. RESULT

Firstly, the message welcome to the voting machine

displayed on the LCD screen. Once the fingerprints are matched then the message ACCESS GRANTED is displayed on the LCD screen.

In the next step the voters can cast the vote by using the pushbuttons.

VI. CONCLUSION

The main purpose of 'smart voting system using fingerprint' is to overcome most of the problems faced during the voting period because election would no longer be tedious job. This paper provides an overview of biometric voting system using fingerprint technology which enhances the security by eliminating bogus voting, fake and repetitive voting. This can bring revolutionary change in electoral procedure by hosting fair elections. This will preclude illegal practices and so the citizens can choose their leaders and government parties by exercising their right in democracy.

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