Finger Print Based Electronic Voting Machine

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Abstract

In India, voting procedure strictly adheres to the principle of Electronic Voting Machines (EVM'S) known as offline E-Voting. EVM'S have the flexible characteristics like simple design, ease of use, reliability and fast accessing. Unfortunately these EVM'S are criticized for the irregularity reports in elections. So these criticisms leads to damaging the main objective of the voters and Election commission also faces arduous task to conduct free and fair elections. To decrease these criticisms many of the researches are into the survey to find out the legitimate voter. Due to lack of photo clarity in the identity cards or any other reasons like Hardware problems in EVM'S, malfunctioning officer's invalid votes are being casted. This paper provides the conceptual solution through multimodal biometrics which helps in enhancing the security, eradicating the fraud and provides the high-level authentication by linking with the Aadhaar card database. High accuracy will be achieved by fusion of face and finger print recognition systems compared to present EVM system.

Keywords – Fraud, India's EVM, Multimodal Biometrics, Voting.

I. INTRODUCTION

In a voting system, people elect their representatives by law who works genuinely for their good and welfare. 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. Choosing a wrong representative brings a disaster to the notion. In developing countries like India, digitalisation has been improved and traditional voting systems like ballot paper voting system are obsolete and not

the secrecy of the votes. The person who votes they can casts his/her ballot in a box at a polling station. The word "ballot" is used

secure these days. To avoid the fraud some countries are using EVMs (Electronic Voting Machines), but still there are some uncertainties associated with it, like security issues.

Considering these problems, in this paper, a new system of voting is proposed using fingerprints of a person as an identification to vote and to keep a check for fraudulent votes. The additional feature of this system is biometric security which will be realized by the fingerprints of the voters. In voting systems, the system should be easy to authenticate and verify, it also should have high accuracy rate and reliability. The system also must be cost effective and unique. In, an advanced voting system is introduced where Aadhaar card was used but the system is complicated, and the system is online. There are always some risks in online system. In this literature, the proposed system will identify each voter by their fingerprint with help of fingerprint scanner (FPS). It can detect whether someone is a registered voter or not and it will deny if someone tries to cast a second vote.

II. PREVIOUS METHODS

Ballot Paper:

In India, we are still using traditional voting systems like ballot paper method. A ballot is a device used to cast votes in an election. In that method they may used a piece of paper or a small ball for secret voting. Which was originally a small ball- see blackball – that is used to record decisions made by voters. Each one of the voter uses one ballot, and that ballots are not shared. In simplest elections ballot may be a simple scrap of paper on which each voter writes in the name of a candidate. In general body or governmental elections use pre-printed to protect

for an election process within an organization. Such as a trade union "holding a ballot" of its members.

Drawbacks
• Need more paper to vote
• Need more time to vote
• Not suitable for blind people
• Need more time for counting
• Need more man power for security

Offline EVMs:

As the world is getting digitalised day by day, everything is available in the form of electronic devices. In the same way there are offline EVMs available in some places. These EVMs are far better than the traditional voting systems as there is no need of extra manual power for counting and easier to use. The voter then make his or her selection from a list of switches denoting the appropriate candidates or measures.

Drawbacks
• Complex voting procedure
• More time to vote
• Recount of voting is not possible
• Expensive to test, complete tests are extremely rare
• Expensive to move and store,
• Difficult to test,
• Complex to maintain
• Far from secure against vote fraud.

III. PROPOSAL METHOD

To overcome these problems, lot of methods have been developed to avoid fraudulence in voting systems. The objective of this project is to improve the security performance in the I/O Pin: 40 mA, DC Current for 3.3V Pin: 50 mA, Flash Memory: 32 KB of which 0.5 KB used by boot loader, EEPROM: 1 KB (ATmega328), Clock Speed: 16 MHz.

Fig.1 Arduino

FINGER PRINT SENSOR:
R307 Fingerprint Module consists of optical fingerprint sensor, high-speed DSP processor,

voting machine as well as to provide easy access to cast the vote by using finger print for authentication. By using Arduino we scan the finger print of every individual. The scanned finger print is authenticated, If matches the individual is allowed to cast the vote. Biometric electronic voting machine is one of the better options to keep a check to malpractices associated with the voting process

The following are the advantages of secure voting machine using biometric:
• Security
• Flexibility
• Reliability
• Scalability

IV. HARDWARE

ARDUINO:

Arduino is an open source prototype platform based on an easy-to-use hardware and software. Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins [12] (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. Microcontroller: ATmega328,Operating Voltage: 5V, Input Voltage (recommended): 7-12V, Input Voltage (limits): 6-20V, Digital I/O Pins: 14 (of which 6 provide PWM output), Analog Input Pins: 6, SRAM: 2 KB (ATmega328), DC Current per

high-performance fingerprint alignment algorithm, high-capacity FLASH chips and other hardware and software composition, stable performance, simple structure, with fingerprint entry, image processing, fingerprint matching, search and template storage and other function

The R307 fingerprint module has two interface TTL UART and USB2.0, USB2.0 interface can be connected to the computer; RS232 interface is a TTL level, the default baud rate is 57600 , can be changed, refer to a communication protocol ; can And microcontroller, such as ARM, DSP and other serial devices with a connection, 3.3V 5V microcontroller can be connected directly. Needs to connect the

computer level conversion, level conversion note , embodiments such as a MAX232 circuit.

Fig.2 R307 finger print module

WI-FI MODULE:

The ESP8266 Wi-Fi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application

processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this upto your Arduino device and get about as much Wi-Fi ability as a Wi-Fi Shield offers.

processor. Each ESP8266 module comes pre-programmed with an AT command

Fig.3 Wi-fi module ESP8266

". With the help of this kind of voting system, rigging can be prevented more efficiently than

V. SOFTWARE

Software tool used to design Finger print Based Electronic Voting System is Arduino.

VI. DESIGN AND IMPLEMENTATION

Finger print Based Electronic Voting machine consist of Arduino Uno, Fingerprint sensor, LCD display, switches. Arduino UNO act as the controller unit. In order to cast a vote and as security a Finger print sensor has been attached to the machine. LCD and switches is also used. In this project we used three push buttons for three different candidates. We can increase the number of candidates but for ease of the understanding we have limited it to three. paintppWhen any voter press any of three button then respecting voting value will increment by one each time and will be stored in the cloud data storage. Voter is allowed to use his chance of voting only once for any candidate. After the voter casted his vote in polling booth , to which party he casted his vote will be shown again inn the LCD screen, making clear that he voted for his desired party. If any voter tries to vote again, the system will not allow him to vote and even shows a message in the LCD screen saying "Sorry already voted

the offline voting system in which tampering of EVM's can be done easily.
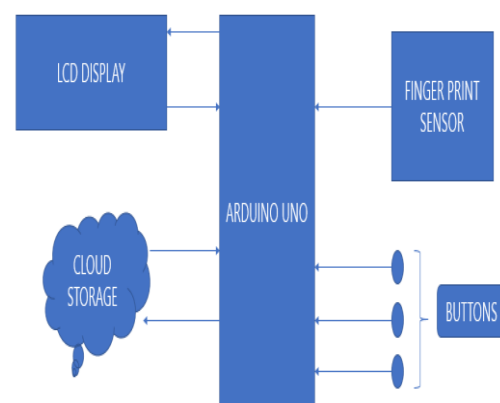
Fig.4 Flow chart

VII. BLOCK DIAGRAM

Fig.5 Block diagram of Finger print based Electronic voting Machine

VIII. RESULT

Fig.6 Finger Print Voting Machine Prototype

The initial setup of the Electronic voting machine is shown above, here the LCD and Push buttons are interfaced to the Arduino as shown in the above figure.

Fig.7 Casting Vote
The above image shows the different parties names P1, P2, P3.
The polling is done by pressing the Push button
Button 1 for party P1.
Button 2 for party P2.
Button 3 for party P3.

Fig.8 LCD Display
The above image shows that sorry already voted , it means that voter who casted his vote once is trying to vote again. So, this stops him to vote more than once by showing the message already voted.

IX. CONCLUSION

To develop a indigenous Electronic Voting System for the country. The concept of electronic voting systems is not a new one.. By using this system, the national voting system will be more secure, faster, easy to use. More security has been added compared to usual electronic voting machine by adding the fingerprint feature so that there cannot be any kind of cheating. The system provided by this paper goes the lengths to cover the necessities that met the requirement for a fair, transparent and reliable election tool. This project assures that, if this system is brought into practice it will reduce the rate of crime. This system is a small contribution for the fair process of election. Let's make our country smart and let's make our nation to become super-power.

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