

“BIOMETRIC SYSTEM BASED ELECTRONIC VOTING MACHINE USING RASPBERRY PI”

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Abstract- The main idea behind the work is to reduce the defrauding of manual voting system which includes many steps for verification to ensure the reliability of the device. In recent times the vote casting process became held with the manually running machines or even through message where as digital balloting device is a individual and unique concept which saves a time and avoids the fake balloting through a false person on the machines the voter need to apply his finger pattern to ballot to attest vote. “Vote from Anywhere” this scheme of advanced technologies enables everyone to take their right to vote. Details with respect to the number of citizens presented in the balloting set are saved in a list. The idea behind this scheme has an identical privilege of voter rejection. The EVM is based on the fingerprint and facial recognition has been researched the longest period and shows the most promising future in real world application. Because of their uniqueness and consistency over time, fingerprint and facial recognition have been used for identification over time by using this feature voting system can be made more secured. EVM is faster, efficient, reliable and error free, also easy to operate which reduces the chances of errors. Decisions are shown in few seconds just by pressing a result button after the e-voting has been conducted.

Keyword: Fingerprint, Facial recongnization, E-Voting, Authentication

1. INTRODUCTION

Voting is a method of electorate to decide or express an opinion. In a democratic country a ministry is choiced through a vote in an election, among various candidates present for rule. In this voting scheme electorate are going to appoint their representatives in their government. The direct democracy is the processes were people are directly going to decide. Voting is a method of expressing an opinion or making of concerted judgment. In democratic community, the authority is named by the process of balloting. When we consider the ancient period people would poll their vote with the use of paper, punch card. It subsequently emerged from the general voting system to electronic voting machines (EVM). In general voting process had a vast issue about efficiency, resilience, isolation, authentication and insecurity. Here electronic voting system overthrown all these problems. Presently India is using the electronic voting system.

The referendum process for precinct is carried out in distinct polling pivot or polling center among that ambiance. The elector can't prefer their polling center or city of his or her choice. Which means a elector wants to poll in the referendum he or she will be able to poll their vote only from the described polling set from his/her ambiance and if the elector is out of state due to specific reason, he or she will not have the opportunity of balloting. This will be the major drawback of the present polling process. As per recent voting process of India 60 to 70% of the society were unable to poll from any place. By adopting this method of voting, each and every individual mortality of society can yield their opportunity to poll from anyplace in India. By adopting this method voting helps the voter which can be setup at any voting center through fingerprint and facial recognition.

Here Admin is the simplest character capable to insert, update and delete the information about citizens for election of any town or any ward. The citizens ward facts may be matched with candidate's database and the matching wards candidate list might be displayed on show. The voter can vote to any candidate from that list. The vote remembers is encrypted and saved briefly within the system memory that is later given to primary database. After vote be count increment, the consumer disable request will be given to database, to avoid the multiple voting. Balloting is the manner which is been accomplished to reveal the opinion of the human beings in deciding the government. Paper vote casting is being replaced by electronic voting machines.

Voting is the process of electorate to decide or express an opinion. In olden days, voting machines were used by the administrative authorities to reduce the risk of errors or manipulations also to control the administrative costs of elections. In this project advanced machine of balloting is determined based totally on digital voting tool the brand new function of this device is biometric protection in an effort be accomplished to found out by the fingerprints of the voters. The particular identity of the each and every person will be there fingerprints which is one of the cheapest way of popularity the fingerprint reputation might be the exceptional for builders to use this biometric the authorities also taken vital steps the government also provided Aadhaar card to become person specific identity. In this project we increase on a digital vote casting method to remove fraudulent practices all

through public elections related to double person identification checks facial recognition and finger print based totally completely identification techniques facial reputation is finished through feature extraction based definitely machine learning set of rules at the same time as finger print based identification.

2. PROBLEM STATEMENT

Presently in India we are following the traditional way of authentication method by producing photo identity card issued by government authority, but the authority of allowing the voter to cast vote is in the hands of polling booth officer there he may allow fake voters to cast the vote. If the person is out of station he/she may loss his right of voting due to this recede the accuracy and rate of voting booth from elector vicinity and if elector is out of city he may lose his right to caste the vote which becomes the major drawback of the scheme, since the percentage of the electing voting booth of Indian election the moderate balloting is 70-80% where the individual will not be able to suffrage from any place.

3. OBJECTIVES

The E- voting casting system is best suitable for India because of its big geographic locality voting population literacy stage and illegal. The biometric vote casting device is a versatile solution for mal practices within the loose and honest electoral process. The documentary proofs like voters identity cards are maximum encounter duplication and alteration of the voter's identity card. The biometric vote casting machine ensures the unfastened and fair electoral manner. It can be termed because the technological solution for uphold democratic value.

4. METHODOLOGY

Due to fast development within the discipline of biometric technology the biometric authentication process become the consumer pleasant approach if a voter forgets or if he/she will not remember any password. The idea behind of undertaking is to make election technique as speed as possible secured and to growth of the percentage of vote casting. In this project finger print sensor, LCD and Arduino where fingerprint is been used to reduce the mal practice i.e. a person will be allowed to vote only if the sensor senses his/her finger and identification is matched and then Arduino will count the number votes and LCD will display the vote and winning candidate. When the person stands near the Pi camera the system will capture the face print of the person and will verify the data through the database. If the is not data is matched with he/she cannot vote. The organization generally takes the verdict lower than 5 seconds.

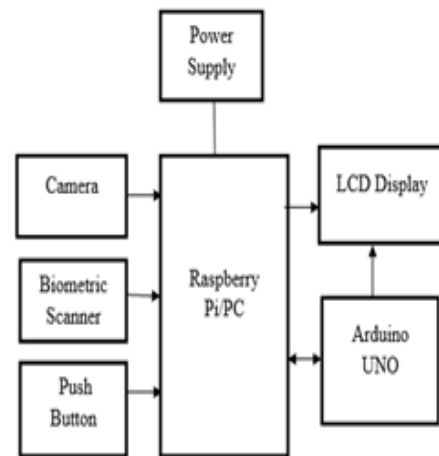


Fig: 4.1 Block Diagram of Electronic Voting Machine

5. SOFTWARE REQUIREMENTS

5.1 PYTHON

Python is a high level, interpreted interactive and object-oriented scripting language. It is designed to be highly readable processed during a run time by an interpreter. It is a great language for the beginner programmer helps in the development of high range of applications from simple processing to website browsers and games. In our work we have used this language for the face recognition detection purpose.

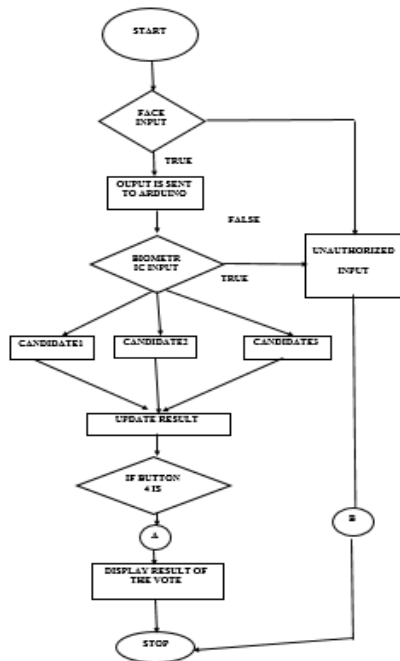
5.2 EMBEDDED C (LANGUAGE)

Embedded C program is used in our project to recognize the fingerprints.

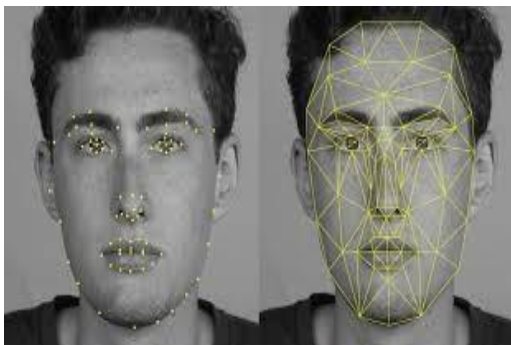
5.3 HARDWARE REQUIREMENTS

1. Raspberry pi
2. Power Supply unit
3. Arduino UNO
4. LCD(Liquid-Crystal Displays)
5. Finger print reader
6. Pi camera
7. Push Button Switches (Keys)

6. FLOW CHART



7. RESULT AND DISCUSSION



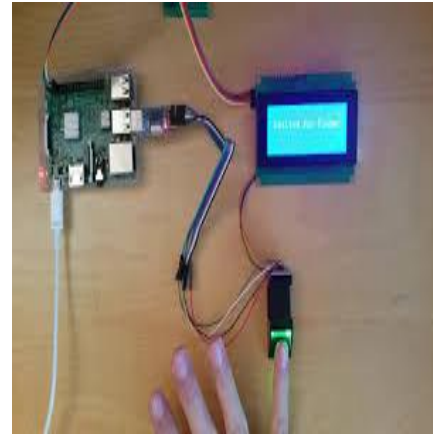
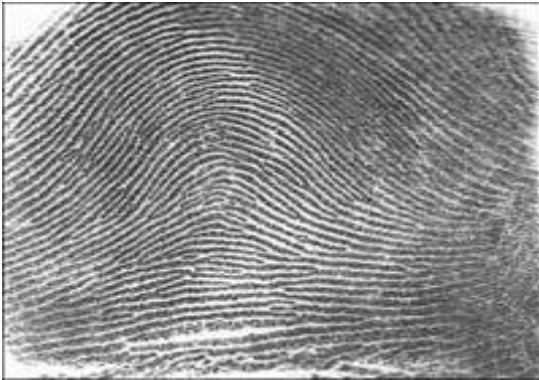
The main aim of this system to meet the fair, reliable and transparent election kit which will reduce the rate of fraudulence and help to provide a fair, easy and fast election voting system. India is the country with more than 130 crore population. Due to the lack of knowledge of voting of uneducated people and due to the laziness of the educated people, India is still a developing country. To make our country strong we need 100% voting and to choose the best leader. This is done easily by smart voting system, the main things related to smart voting is voter's Aadhar card details and fingerprint, face recognition authentication. Extra security has been brought in comparison to traditional electronic vote casting device by means of adding fingerprint, face recognition feature so that there can't be any kind of dishonest. By using of this system the country wide vote casting system might be quicker. The identity control which was done manually is eliminated due to use of the smart card system with authentication each is more secure and makes this system

faster. In this project most important benefit is that because fingerprints of all have various and subsequently this system completely reduces the chance of invalid votes.

Facial recognition technology is not a new phenomenon; the first experimentations with the technology can be seen from the 1960s. The technique as the software is more analytical, automatic which is depended on the clone whereas the initial image required a higher level of mortal input hence they prevailed as a semi-automated. Every individual has number of differentiable vestige which make a special facial feature. Each individual elector face has relatively almost 80 nodal points few among these are systematic by facial recognition technology considering some features such as

- The shape of the cheekbones
- Distance between the eyes
- Depth of the eye sockets
- Width of the nose
- The length of the jaw line.
- There is four-level technique the biometric structure function.
- **Seizure**-The real or the observable pattern is secured by the scheme amid enrolment process.
- **Exadication**- Individual statistics from the sample and the impression arrangement is set up based on captured data.
- **Comparison** - The impression prevailed later is correlated along with a identical pattern.
- **Matching** - The scheme thus determines that the visage exact from the current pattern is identical or different. When the elector stands in front of the camera, the system will make the face print of that person and it will verify with the data in the database. If match not found, he may need to go for another attempt. This scheme generally takes the verdict within the less period of time.
- **FINGERPRINT RECOGNITION:**

As maximum fingerprint recognition scanner are primarily based on very comparable hardware standards, additional components and software also can play a major component special manufactures use unique algorithms to discover key fingerprint traits, which could adjust in velocity and accuracy typically those algorithms look for where in a ridge splits and line case collectively those are different exclusive features are known as minutiae if a scanned fingerprint matches several of these trivia then it is going to be considered as in shape comparing minutiae reduces quantity processing electricity required to discover the fingerprint and allows to avoid fakes if scanned fingerprint smudged and permits the finger placed off center.



It involves two main stages of operation.

- Enrolment
- Verification.

Enrolment: In this information about the user can be scanned, analyzed and stored in the form of code in the data base.

Verification: In this anyone who wants to gain access must put their finger on a fingerprint sensor. The scanner senses the fingerprint and assessments it towards all the prints in the database stored for the duration of enrolment and allows to determine whether or not the individual is entitled to advantage get admission to or no longer. These fingerprint schemes can authenticate and contest up to 40,000 prints per second.

Operation:

- The fingerprint and the photo of the voters will be fed in the raspberry pi. This information will get stored in the SD card.
- First the photo of the person will be taken by using a small camera module.
- It will be connected to the facial recognition sensor.
- Then the fingerprint of the person is taken with the help of fingerprint scanner.
- Then the verification process will get starts.
- If both them get verified, then the person can vote.
- Even if he fails in one of the tests, he will not be allowed to poll his vote.
- Once he finished his voting process his account will get closed.
- He will not able to poll unlimited number of votes by using his ID.
- After the successful completion of voting, it is added to the total count.
- All these processes will be shown in the LED screen that is connected to the raspberry pi.

8. CONCLUSION

This proposed work is related to biometric system considering a right to vote from anywhere system which enables the elector to compute their vote from any place in India by using this biometric system based electronic voting machine using raspberry pi which provides the secure way of voting where a person cannot vote more than once where we consider fingerprint & face recognition system for the security purpose defraudulence is avoided by using this system and high accuracy, time is saved and fair voting process is been carried out.

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