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BIOMETRIC VOTING MACHINE

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Abstract - *An embedded system is a special-purpose computer system designed to perform a dedicated function. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. 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 lead to damaging the main objective of the voters and Election commission also faces arduous task to conduct free and fair elections. The main aim of this proposed system is to develop a* ***counterfeit*** *free voting system by a valid recognition i.e.* ***biometric scanning****. The biometric scanning can be done with* ***Fingerprint scanner*** *and* ***Iris Recognition****. Since both fingerprint and iris of a person are unique to each and every person. So, the person who is recognized with either one of the scanners can be allowed for* ***voting.***

KEYWORDS: Counterfeit, Biometric scanning, Iris recognition, Voting.

1.INTRODUCTION

The Constitution of Asian country offers each adult (18 years or higher than of age) the proper to settle on representatives through the exercise of his right to vote. There are not any conditions hooked up to the current right. beneath British rule too, there was some of the representative government however the proper to vote was restricted to around one sixth of adults who would are eligible beneath universal franchise. Our Constitution has currently extended political powers down the individual. The voters exercise their right to vote to elect representatives to the Lok Sabha, the State Legislative Assemblies and also the native bodies right down to the Gram council. The framers of the Constitution were cognizant of the main importance of free and truthful elections in an exceedingly democracy.

The Constitution intrinsically of itself provides for a committee not answerable to the chief. The Chief Election Commissioner is appointed by the President is aided by variety of different Election Commissioners. The independence of the Commission is ensured by providing that the Chief Election Commissioner will from workplace solely through a better method of legal instrument as prescribed just in case of Judges of the Supreme Court. The committee functions with the assistance of the workers of the Central and State governments. once deployed on election duty, these officers and officers of central and State governments are deemed to get on deputation to the Commission. The Election Commission is aided by Chief Electoral Officers who assist within the preparation and revision of electoral rolls. Elections that happens in Asian country are command beneath this actual method. the entire country which is split into constituencies. Voters choose one candidate by marking against the candidates through electronic mechanical device.

2. LITERATURE SURVEY

A literature surveys scholarly articles, books, dissertation, conference proceeding and the other resources which are relevant to a particular issue, area of research, or theory and provides context for a dissertation by identification past research. This survey deals with voting machine of the existing system. Fingerprint sensor also discussed.

Electronic Voting System that will automatically perform authentication validation and counting with the help of UIDAI. The proposed electronic voting system can be implemented along with the traditional election system. The proposed an approach that will use the information provided by UIDAI in electronic voting system is a Project Director at Contain Southampton, United Kingdom. His generation on Biometric technology such as fingerprint. The fingerprints are more secured technology. Those are use in smart e-voting to secure voting process. Fingerprint are used to match the voter data base otherwise voter cannot vote. The fingerprint technologies are using Chris Roberts in voting system [1].

The information provided by UIDAI in smart voting system. The proposed system procedure is carried out in mainly few stages: registration, verification and validation. These stages of proposed system are illustrated. the smart e-voting system has been done on fingerprints in humans. There are two fundamentally main goal that have risen from voting process (1) A person's fingerprint will not change the structure naturally after about one year after birth and (2) the fingerprints of individuals are different. Even the twins in fingerprints are not the same. In practice two humans with the same fingerprint have never been found. [2].

The main objective of this paper is design and development of a Fingerprint Electronic Voting System. The suggested fingerprint voting system allows the user to scan his fingerprint, in order to check his eligibility by comparing his current fingerprint with the one already stored in the system's database, Once the users complete the identification process, they will be allowed to cast their vote using friendly geographical user interface. The counting of the votes will be immediately and that makes the voting process efficient, fast, and secure. In this system the voter does not need identity card, voters thumb impressions are used to identify the voter. The working of this system consists of two parts i.e., enrolling section and voting section. During enrolling the fingerprints of all the voters are collected and stored in the data base. During voting the voter keep his/her thumb in the fingerprint scanner, the system searches for the impression which is already fed in the data base. If it matches, the system will provide command to the voter to vote through an LCD display. If the fingerprints do not match then the system will provide indication to the presiding officer that the voter is not registered [3].

3. EXISTING SYSTEM

In this existing system (**Fig 1)**, the voter ID is considered as verification for a voting person. After the verification, the person is allowed to vote with the voting ballot. After he/she votes, it displays the candidate's symbol for the reference of voters. After the voting process, counting will be done and result will be published

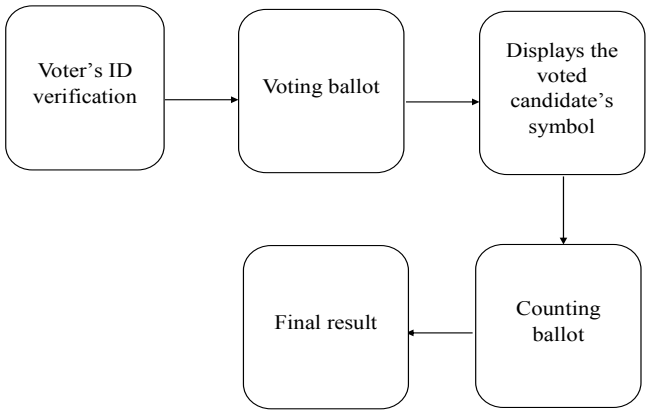

Fig 1: Block Diagram of Existing System

PROBLEM WITH THE EXISTING SYSTEM:

Dummy and duplicate voters in the EC's electoral list: Lakhs of duplicate voters (register in multiple constituencies) have been found in Delhi during the year of 2015 Assembly elections. Some improper verification causes counterfeit vote that changes the Indian constitution.

The above existing system possess the drawback of counterfeit vote which is the major problem in Indian constitution. This problem itself changes the fate of the Indian constitution. The solution for the above problem can be overcome by the proposed system.

4. PROPOSED SYSTEM

In the proposed system (Fig 2). we are implementing the voting process through Fingerprint sensor and Iris recognition. Finger print scanner is used to find the particular person to vote. Using this project, the person can be stopped from voting in different places. Fake voting will be stopped. When the person is trying to press the voting button twice time the microcontroller will recognize the person and he will be unauthorized to vote. In case, if fingerprint fails in any random cases, iris recognition can be done. This has been done by using the algorithm called LBP (Local Binary Pattern).

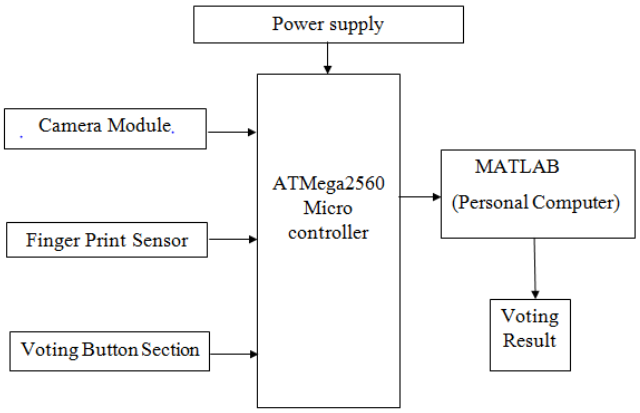

Fig 2: Block Diagram of Proposed System

In this system there are two inputs, Fingerprint image and Iris image. Finger scanning technology provides a high level of security, as fingerprints cannot be stolen or given to someone else to use. Also, fingerprints are not lost or misplaced. For these reasons, finger scanning is now used for a variety of security purposes. Finger scanner development has led to the improvement of fingerprint scanning for access reasons and the use of finger scanning for such things as computers, safety boxes, portable finger print scanners, and scanners that may be used by banks or the police. In order for iris recognition to provide accurate and dependable results, the subject must be within a few meters of the camera. Some control mechanisms must be implemented to ensure that the captured image is a real face, not a high-quality photograph. The ambient lighting must not produce reflections from the cornea (the shiny outer surface of the eyeball) that obscure any part of the iris. The subject must remain stationary, or nearly stationary, with respect to the camera, and must not be hostile to the process. Certain types of contact lenses and glasses can obscure the iris pattern.

Initially these images have been stored in the database using Fingerprint module and Iris camera **(Fig 3)** during enrolment. We can use either of this system for authentication purpose. During testing, the image can be taken as a real time input for the system. These inputs can be compared with the previous samples using controller (ATMega 2560). The authenticated result is displayed in serial monitor of the Arduino. The serial monitor displays the user name and ready to vote. The voting can be done with voting ballot. Simultaneously the result gets counted in the controller and final result can be displayed. In the proposed system we are using Local Binary Pattern (LBP) for recognition of Iris.

The LBP feature vector, in its simplest form, is created in the following manner:

- Divide the examined window into cells (e.g. 16x16 pixels for each cell).
- For each pixel in a cell, compare the pixel to each of its 8 neighbors (on its left-top, left-middle, left-bottom, right-top, etc.). Follow the pixels along a circle, i.e. clockwise or counter-clockwise.
- Where the center pixel's value is greater than the neighbor's value, write "0". Otherwise, write "1". This gives an 8-digit binary number (which is usually converted to decimal for convenience).
- Compute the histogram, over the cell, of the frequency of each "number" occurring (i.e., each combination of which pixels are smaller and which are greater than the center). This histogram can be seen as a 256-dimensional feature vector.
- Optionally normalize the histogram.
- Concatenate (normalized) histograms of all cells. This gives a feature vector for the entire window.

The feature vector can now be processed using the Support vector machine, extreme learning machines, or some other machine-learning algorithm to classify images. Such classifiers can be used for face recognition or texture analysis.

A useful extension to the original operator is the so-called uniform pattern, which can be used to reduce the length of the feature vector and implement a simple rotation invariant descriptor. This idea is motivated by the fact that some binary patterns occur more commonly in texture images than others. A local binary pattern is called uniform if the binary pattern contains at most two 0-1 or 1-0 transitions.

For example, 00010000(2 transitions) is a uniform pattern, 01010100(6 transitions) is not. In the computation of the LBP histogram, the histogram has a separate bin for every uniform pattern, and all non-uniform patterns are assigned to a single bin. Using uniform patterns, the length of the feature vector for a single cell reduces from 256 to 59. The 58 uniform binary patterns correspond to the integers 0, 1, 2, 3, 4, 6, 7, 8, 12, 14, 15, 16, 24, 28, 30, 31, 32, 48, 56, 60, 62, 63, 64, 96, 112, 120, 124, 126, 127, 128, 129, 131, 135, 143, 159, 191, 192, 193, 195, 199, 207, 223, 224, 225, 227, 231, 239, 240, 241, 243, 247, 248, 249, 251, 252, 253, 254 and 255.

Camera module Fingerprint module r307

Fig 3: Camera and Fingerprint Module

5. RESULTS AND DISCUSSION

In this process, the user Fingerprint data is stored using Fingerprint module. After the connection gets over the image is taken from the finger print module and get stored in the controller. The user has to place the Finger on the module for testing. When the image gets matched the used Id is displayed in the serial monitor of the Arduino.

Fig 4: Enrollment of fingerprint

Fig 5: Verified ID

If the fingerprint of the user is authenticated it allows user to vote by opening the voting ballot. Once the user is voted it opens the circuit of the ballot and show voted successfully in the serial monitor and the final result is displayed in the serial monitor.

ENROLLMENT OF IRIS SCANNER

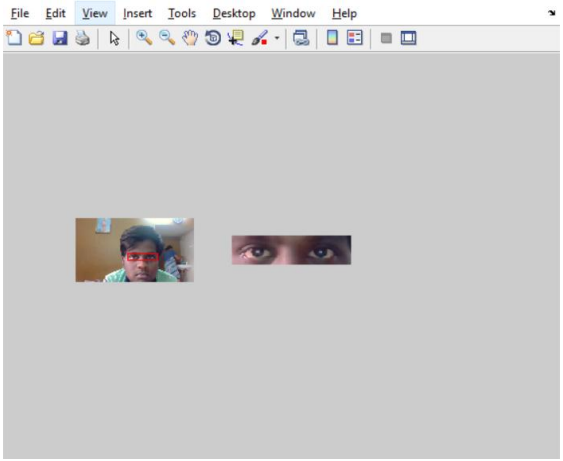

Fig 6: Enrollment of Iris Scanner

In this process (**Fig 6**), the Iris data of the user is stored in the MATLAB with help of camera module. After the connection get over the image is taken from the MATLAB. The user has to place the face on the camera module for testing. When the image gets matched the user ID is displayed in the serial monitor of the Arduino.

In this process (**Fig 7**), the Iris data of the user is compared with the test image, if the image is authenticated then the controller allow the user to vote

and it is displayed in the serial monitor. When the vote is casted the controller opens the circuit of the voting ballot, to avoid a user to vote twice. The output is displayed in the serial monitor and the result is displayed.

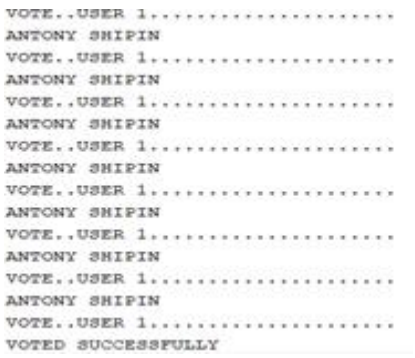

Fig 7: Output in Serial Monitor

ADVANTAGES

- Increase security – Provide a convenient and low-cost additional tier of security.
- Reduce vote fraud by employing hard-to-forge technologies and materials, such as minimize the opportunity for identification fraud and buddy punching.
- Eliminate problems caused by lost IDs, forgotten passwords by using physiological attributes. For example, prevent unauthorized use of lost, stolen or ID cards.
- Integrate a wide range of biometric solutions and technologies, customer applications and databases into a robust and scalable control solution for facility and network.
- Make it possible, automatically, to know who did what, where and when.

APPLICATIONS

- It can be used in all type of election process in order to avoid the counterfeit voting in Indian constitution.
- Since biometric system is ore safe and secure, it can be used in all security purpose.
- Biometric system is more robust and scalable, it can be even used in more security needed institutions such as bank account security etc.

5. CONCLUSION AND FUCTURE ENHANCEMENT

Thus, the advent of this biometric fingerprint and iris recognized voting system would enable hosting of fair elections in India. This will preclude the illegal practices like rigging. The citizens can be sure that they alone can choose their leaders, thus exercising their right in the democracy.

FUTURE SCOPE

In future, the election to be held will be more loyal and general. Biometric provides more secure and robust. So, the counterfeit vote can be completely eradicated undoubtedly. This system helps Election Commission to lead a peaceful and secured election and the legal candidates will be selected. It can even be used in more security needed institutions such as bank account security etc. It can be used in all types of election process in order to avoid the counterfeit vote in Indian constitution. Future India can be made only with the counterfeit free voting and from this voting, loyal leaders who can rule it.

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