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PORTABLE BIOMETRIC E-VOTING SYSTEM

S.R Preethi[1], Adithya M P N[2], Antony Rosario J[2], Balaji H[2]

[1]Asst.Professor & Dept. of Electronics & Communication Engineering, Valliammai Engineering College, Tami Nadu, India
[2]Engineering Student, Dept. of Electronics & Communication Engineering, Valliammai Engineering College, Tamil Nadu, India

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Abstract - In a democratic country voting is one of the fundamental rights of every citizen. People can elect their most suitable leader who will lead them by utilizing the right of the vote. In this digital world where technology is being used in every sectors, the same should be used in election system also. In the democratic country, crores of rupees have been spent on this to make sure that the elections are riot free. But, now a day is has become common for some forces to indulge in rigging which may eventually lead to result contrary to the actual verdict given by the people. This paper aims to present a new voting system employing biometrics in order to avoid rigging and to enhance the accuracy and speed of the process. The system uses thumb impression for voter identification as we know that the thumb impression of every human being has a unique pattern. As per poll procedure a database consisting of thumb impression of all the eligible voters in a constituency is created. During election the thumb impression of voter is entered as an input to the system. This is then compare with the available record in the database. If the particular pattern matches with anyone in the available record, access to cast the vote is granted. But in case the pattern doesn't match with record of database or in case of repetition, access to cast the vote is denied. Also the police station nearby to the election poll booth is informed about the identity of the imposter.

***Key Words*: Voting, Raspberry pi, Fingerprint sensor, Android application, LCD display.**

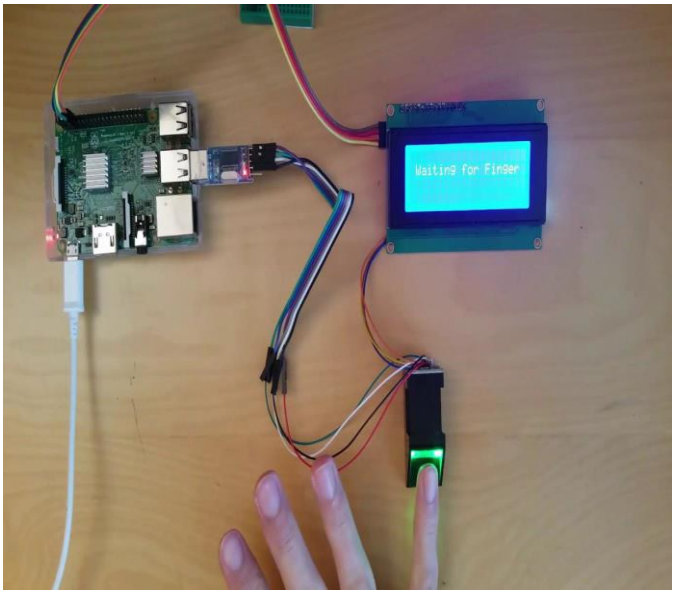
1. INTRODUCTION

The voting rights act of 1965, the signed into the law by the president Lyndon B. Johnson, aimed to overcome legal barriers at the state and the local level that prevented African-American from exercising their rights to vote as guaranteed under the 15th amendment to the U.S. constitution the voting rights act is considered one of the most for searching prices of civil right legislation in US history.

The Indian constitution has granted the right to vote to all Indian citizens of sound mind above the age of 18, irrespective of an individual's caste, religion, social or economic states. This right is universally granted to all the Indians with a few exceptions.

Idea is based on online voting system. This voting system will have linked to Aadhar card.

1.1 OVERVIEW OF COMPONENTS



1.2 VOTING PROCESS

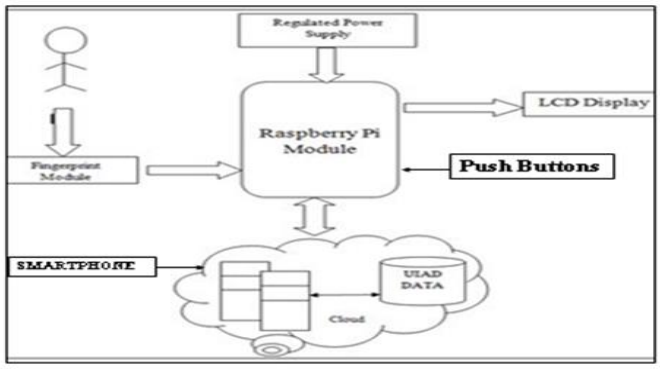
Fingerprint Scanner scans the thumb Impression. It captures a digital image or Live Scan

The Live Scan is digitally processed to create a biometric template. The Template contains a collection of extracted features (Ex: Minutiae)

The data which is processed (Template) is transferred to Cloud for searching process. The Template is transferred to the cloud is compared with that of database. Within the database, template is usually matched to a Aadhar number which is then matched to a person's name. Once the fingerprint is matched the machine allows the user to vote by showing the parties. The user selects the party and votes their desired candidate. The vote count is increased in the cloud and finally shows the total count by summing the no of votes.

2. PROPOSED SYSTEM

2.1 BLOCK DIAGRAM

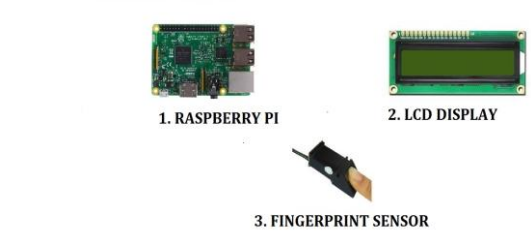


2.2 CLOUD METHOD

The cloud using here is the firebase database which is one of the product of google. In the cloud each individual is represented as nodes and the parties are parent of the nodes. The user who votes is counted as nodes in the cloud and math algorithm which is used to sum the no of nodes to give the final results.

2.3 PROCEDURE

The main aim in designing this product is to provide the concept of the personal identity for each individual. This is extended to a special case of electronic voting machine concept. As a pre-poll procedure the finger prints of all the voters are collected and stored in a database initially at time of distributing voting cards. At the time of voting, the option of the voter is taken along with the finger print. The finger print taken by the scanner is sent to the DSP chip through an in-built A/D converter. The processed image is transferred to Cloud with biasing of SDRAM. The option entered by the voter is transferred to chip through DEMUX and is stored in the memory. If the transferred image is matched with any of the records in the data base, then the interrupt is given by the HARD DISK to DSP chip. Then the option is considered in the count. After the acquisition of the count this is transmitted to the HOST computer or central server using telephone lines. As the count of each party is transmitted to the HOST from all the VOTING MACHINES present in the constituency, the HOST will add parallel count of particular party and makes the final count of each party in ascending order. The final count is transferred to the main HOST (headquarters) using Internet.



3. COMPONENTS DESCRIPTION:

3.1 RASPBERRY PI

The Raspberry Pi is a series of small single-board computers and has a Broadcom system on a chip (SoC) with an integrated ARM- compatible central processing unit (CPU) and on-chip graphics processing unit (GPU). The hardware is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion board and other circuits. The board has processing speed of CPU running at 900 MHz with 1 GB RAM and it has 4 X USB 2 ports and 1 Ethernet Lan Port. It can be powered by a USB cable or by an external 9 volt battery.

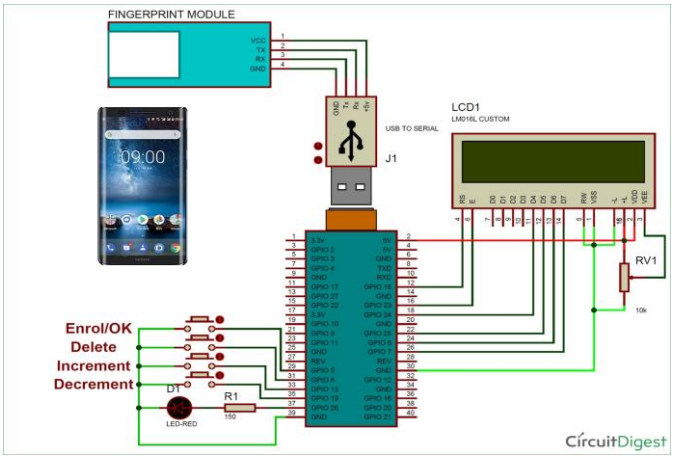
3.2 LCD DISPLAY

A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and seven-segment displays, as in a digital clock. LCD display contains 16 pins interfaced to raspberry pi which displays the voting process.

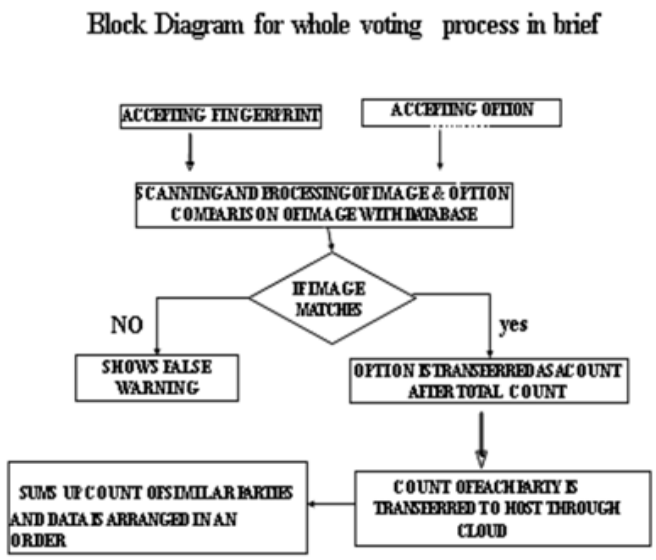
3.3 FINGERPRINT SENSOR

The Fingerprint scanner module used for this project is R307. The device is able to capture fingerprint, save it, manipulate it, match fingerprint with the cloud database. It has on board 32-bit CPU which accepts code [6]. It is interfaced with Rapsberry pi. The module has 5 external wires, two of them which communicate with the Raspberry Pi. Other two wires are biasing voltage and ground. The finger print scanner module's receiving pin can handle 3.3 and 5 volts.

4. CIRCUIT DIAGRAM



5.FLOWCHART



7. ADVANTAGES

- Increased Security – Provide a convenient and low-cost additional tier of security
- Reduce fraud by employing hard-to-forge technologies and materials
- Eliminate problems caused by lost IDs or forgotten

  Passwords by using physiological attributes
- Prevent unauthorized use of lost, stolen or "borrowed" ID cards
- Greater Accuracy, Faster Tabulation of Result
- Make it possible, automatically, to know WHO did WHAT, WHERE and WHEN!

8. APPLICATIONS:

This method is used in many Authentication systems as,

- Voting System
- Biometric Security Systems
- Attendance System
- Locker System

9. CASE STUDIES

The Heritage Foundation is releasing a new edition of its Voter Fraud Database. Featuring well over 100 new cases, the database documents 1,071 instances of voter fraud spanning 47 states, including 938 criminal convictions.

10. CONCLUSIONS

Advent of this system would enable hosting of fair elections in India. Will preclude illegal practices like rigging. The citizens can be sure that they alone can choose their leaders, thus exercising their right in the democracy. Biometric approaches should be extremely carefully deployed

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AUTHORS

S.R Preethi, Project Guide

ADITHYA M.P.N, Mobile App developer

ANTONY ROSARIO J, Hardware Implementation

BALAJI H, Coding and Paper work