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## REMOTE VOTING MACHINE

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**Abstract :** *Today's Electronic Voting Machine needs high maintenance for security. To reduce this problem we developed Remote Electronic Voting Machine. This is simple to use, less in cost, flexible, faster and more secure. With the help of this system we can develop new technology for voting system. We use raspberry pi controller which collects the voting data and verify it with data base. To provide more security, we use encryption method as a fingerprint scanning and face recognition we use display unit as a web server. The main purpose of this system is candidate can vote from any place in india. This system reduces security issues fake voting etc.*

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**KEYWORDS :** *INTERNET OF THINGS TECHNOLOGY (IOT); FACE RECOGNITION; FINGERPRINT SCANNER.*

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### I. Introduction

The voting machines used in India as a combination of two components. First component is called the balloting unit on which the voters press the button. The other part is called the control unit. This unit gives supervising power to the polling officer stationed at the poll booth. The two units are connected by a five meter cable. The voter places his/her vote on the balloting unit which is placed inside the voting compartment. Previously, the polling officer used to issue a ballot paper to each voter. This is replaced by functionality of the control unit. Now the polling officer presses the ballot button which then allows the voter to cast a vote.

The raspberry pi is a minicomputer or system on cheap uses ARM Cortex A-53 processor. It uses Raspbian operating system to start the operation. For storing purpose, we use SD/MMC card. Camera module is used to take a picture of candidate further it will be processed and verify whether candidate is valid or not for voting. Next step is fingerprint scanning which will scan the fingerprint images and matches with its database. If both processes give positive result then and then only candidate can vote. Counting of vote will be done automatically and stored at web server. This system is highly secure and reliable. With the help of this system voter can vote from his/her remote location. Travelling issue, fake voting and Time consumption problems are reduced.

### II. RELATED WORK

Internet of Things gradually become an important topic of research and electronic industries. IOT with image processing definitely will result in great human help related to many industrial as well as surveillance work. In this paper, we firstly captured the face of the candidate and fingerprint image, extracted its features using various algorithms. Then, using IOT technology and Wi-Fi, we can vote from any location in india. Softwares like raspbian os, python and open CV play an important role in this system.

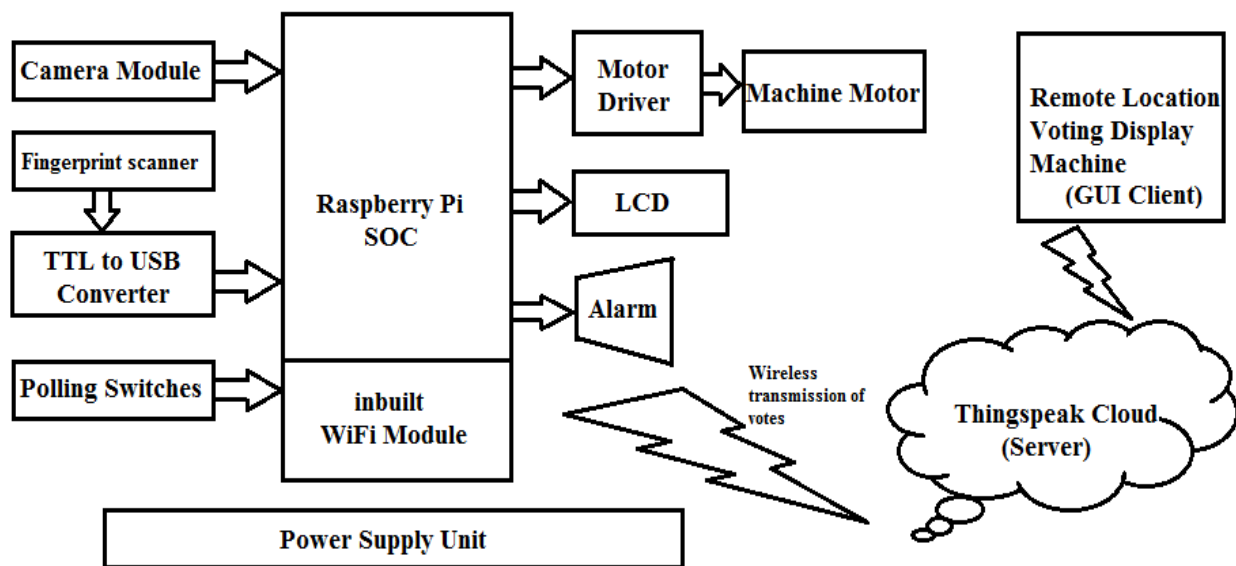
### III. LITERATURE SURVEY

- 1) Secured electronic voting machine using biometric system by Anandaraj S.  
Traditionally, voting is conducted in centralised or distributed places called polling booths. Voters go to polling booths and cast their votes under the supervision of authorised parties. Then the votes are counted manually once the election has completed. With the rapid growing development of computer technology and cryptographic methods used for voting system.

- 2) Development of electronic voting machine with the inclusion of near field communication ID cards and biometric fingerprint identifier by Syed Mahmud Hasan.  
The basis of this project is to create an electronic voting machine that will help to eradicate defrauding of the manual voting system by multiple votes cast by same user.
- 3) Microcontroller based smart electronic voting system by Sahibzada Muhammad Ali Chaudhari Arshad Mehmood.  
In this paper proposed machine is faster, efficient , reliable and error free as compared to manual voting system which is slower and chances of error are greater.
- 4) Toward Coercion-resistant End-to-End verifiable Electronic Voting systems by Wagner M. Santos; Ruy J. G. queiroz. Sevral voting systems have ben proposed, varying in usability and practicality. In this study we analysed various processes of electronic voting and counting votes, aiming at a better understanding in the pursuit of secrecy of the vote.

#### IV. BLOCK DIAGRAM

##### Block Diagram

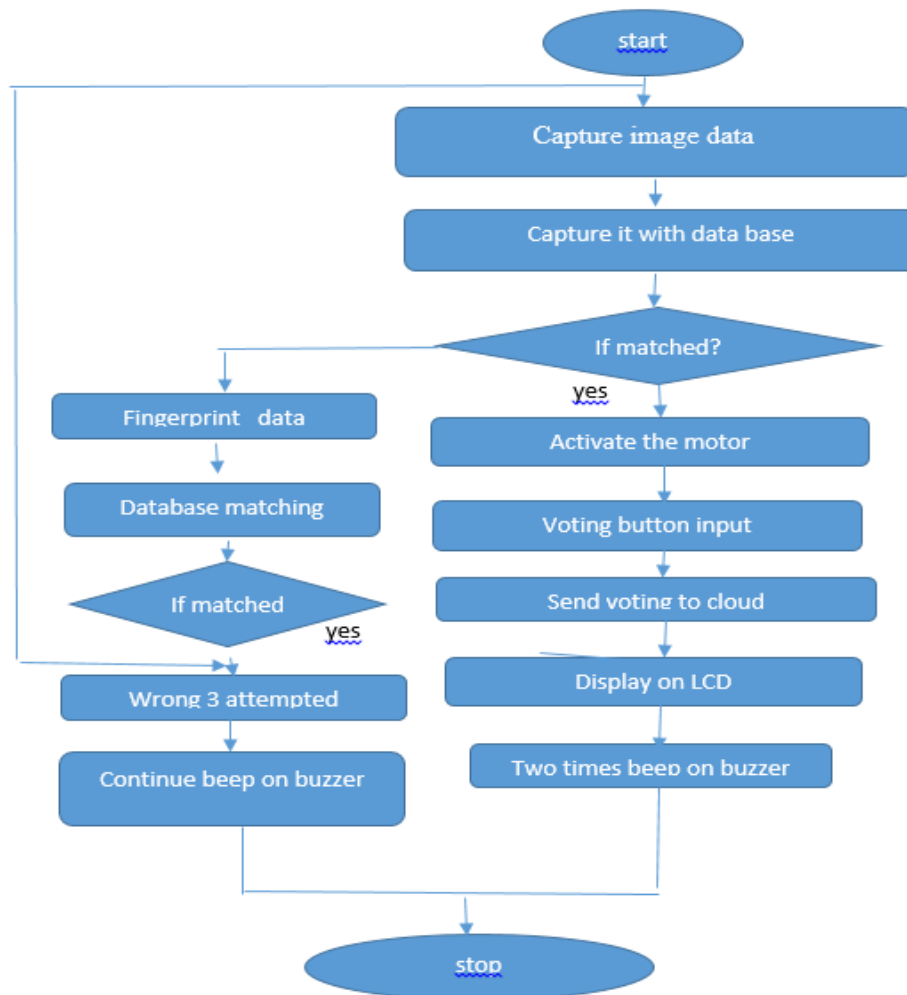


*Fig1- Block Diagram*

#### V. THE OPERATION OF THE SYSTEM

In our proposed system we are using Raspberry pi (system on chip) as a main host. It also features Wifi and Bluetooth model with low energy on board . Required power for this system is 5v, 50Hz as given externally. Camera module captures the image through small lens at the front using a tiny grid of microscopic light detectors built into an image sensing microchip. Fingerprint recognition refers to the automated method of verifying a match between database and inputed fingerprint. It includes two parts fingerprint enrollment and matching. USB TTL serial cable is a range of USB to serial converter which provides connectivity between USB and serial UART interfaces. If given input matches with database then the voting buttons will be enabled for the user to press . The buzzer will also beep twice for valid vote count , and if someone try it for more than one times the buzzer will beep continuous.The voting count can also be displayed on LCD . The data will also be send to the cloud, so that it can be seen from any remote location .

V. FLOWCHART



VI. CONCLUSION

By using advanced verification system as fingerprint scanner and face recognition system we are grabbing future technology. System reduces wastage of various resources so it improves system quality.

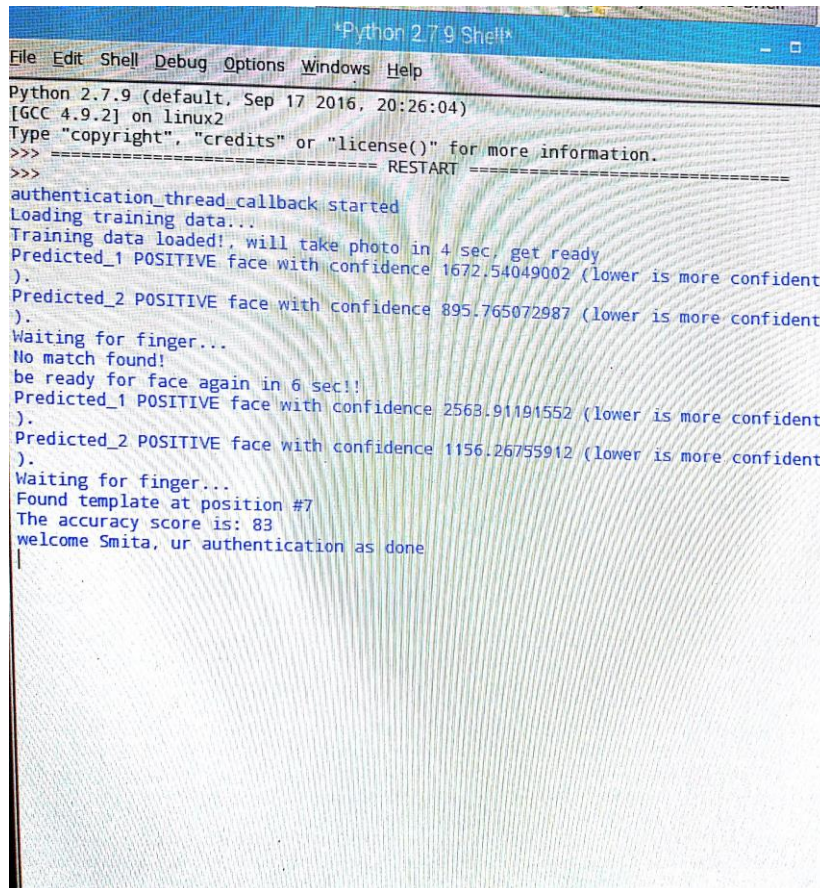
- 1.This system saves time , money and extra efforts to reach voting booth.
- 2.System uses data encryption technique so that we can achieve highly secure voting.
3. There is no need of vote counting manually.
4. Displaying result is quick and user friendly.

VIII. RESULT

**RESULT OBTAINED ON SYSTEM**

**Output obtained on hardware**

On hardware part the input is fingerprint from fingerprint scanner . Role of fingerprint scanner is to provide thumb impression to the controller and then matching it with database. Camera module is used to take the image of an voter and processing on it again verify for valid vote count.



```
Python 2.7.9 Shell
File Edit Shell Debug Options Windows Help
Python 2.7.9 (default, Sep 17 2016, 20:26:04)
[GCC 4.9.2] on linux2
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
authentication_thread_callback started
Loading training data...
Training data loaded!. will take photo in 4 sec. get ready
Predicted_1 POSITIVE face with confidence 1672.54049002 (lower is more confident
).
Predicted_2 POSITIVE face with confidence 895.765072987 (lower is more confident
).
Waiting for finger...
No match found!
be ready for face again in 6 sec!!
Predicted_1 POSITIVE face with confidence 2563.91191552 (lower is more confident
).
Predicted_2 POSITIVE face with confidence 1156.26755912 (lower is more confident
).
Waiting for finger...
Found template at position #7
The accuracy score is: 83
welcome Smita, ur authentication as done
```

Fig 2. Authentication is done voting booth is ready

After Fingerprint matches it will check for For Face.

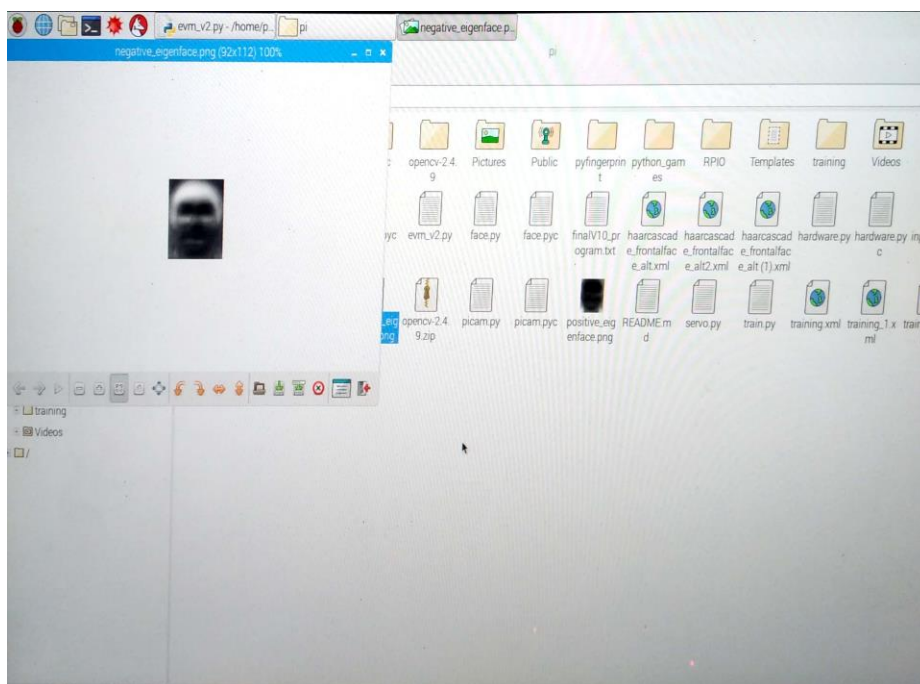


Fig 3. Processing after capturing image in negative format

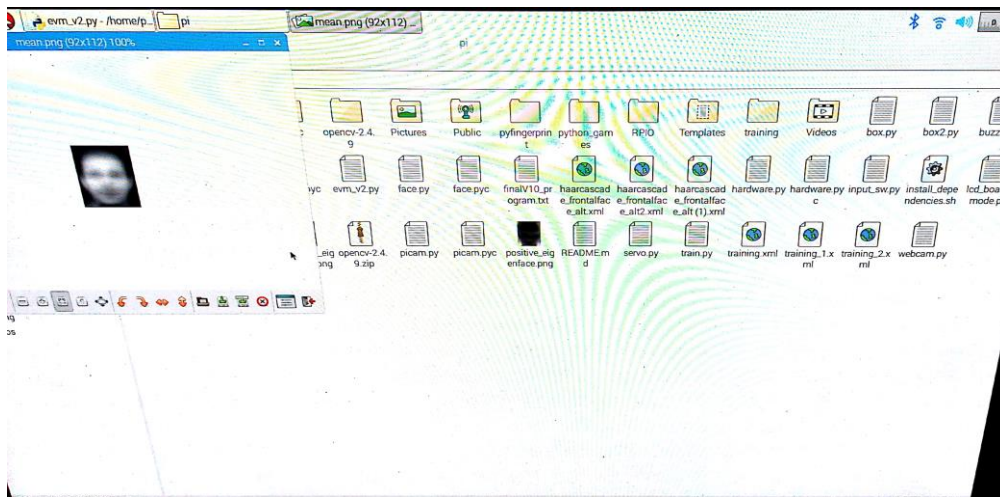


Fig 4. Processing after capturing image in positive format



Fig 5. Voting is accepted from voter it will display result on LCD  
Data will be send to the cloud , so that it can be seen from any remote location.

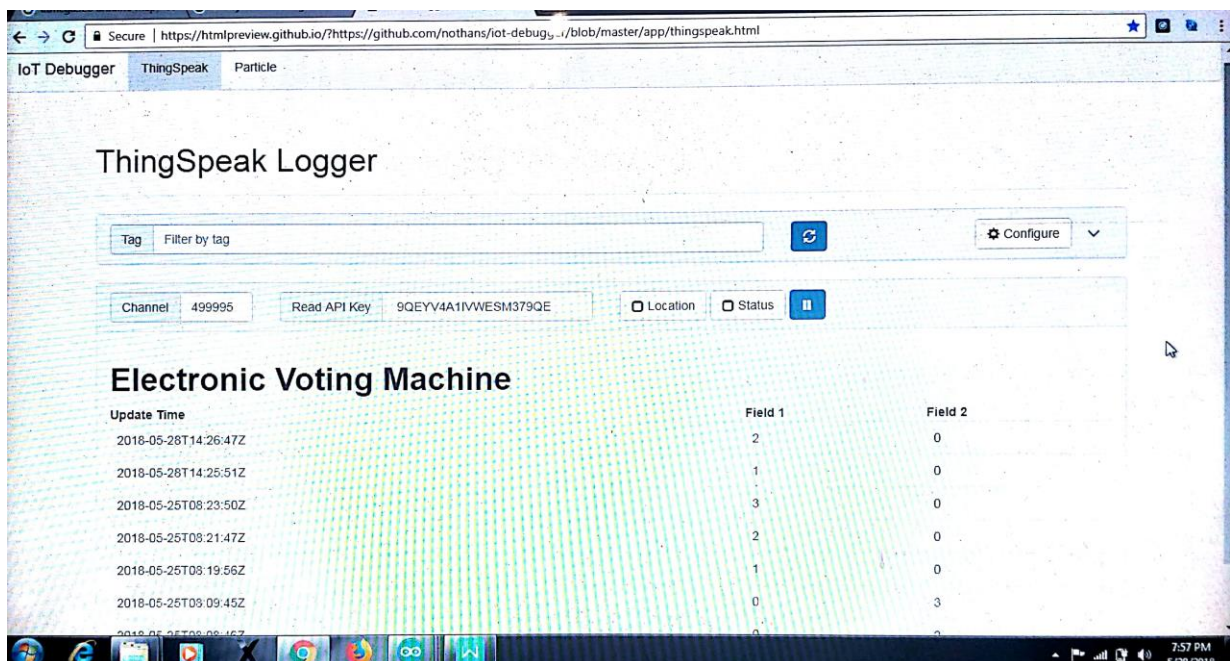


Fig 6. Thingspeak server platform

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