

# IOT Based Advance E-Voting System

Daniel A<sup>1</sup>, Naveena J<sup>1\*</sup>, Indira S<sup>2</sup>, Ashok Kumar K<sup>2</sup>, Ramesh A P<sup>2</sup>

<sup>1</sup>M.Sc. Electronics and Communication System, Sri Ramakrishna College of Arts and Science, Coimbatore<sup>2</sup>Assistant Professor, Sri Ramakrishna College of Arts and Science, Coimbatore.

\*Phone Number: +91-9952263241 \*Corresponding Author's E-mail: indira@srcas.ac.in

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**ABSTRACT:** Electronic voting refers to voting using electronic means to either aid or take care of the chores of casting and counting votes. This project aims to present a new voting system employing biometrics in order to avoid rigging and to enhance the accuracy and speed of the process. This system uses the fingerprint sensor to scan thumb of the voter's in order to provide high performance with high security to the voting counter also as we using internet of thing i.e. (IoT) to make the voting system more practical. As a pre-poll procedure, a database consisting of the thumb impressions of all the eligible voters in a constituency is created. During elections, the thumb impression of a voter is entered as input to the system. This is then compared with the available records in the database. If the particular pattern matches with anyone in the available record, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected. Also, the police station nearby to the election poll booth is informed about the identity of the imposter. All the voting machines are connected in a network, through which data transfer takes place to the main host. The result is instantaneous and counting is done finally at the main host itself. The overall cost for conducting elections gets reduced and so does the maintenance cost of the systems. This system used to display the data-base of the user (voter). After receiving the instruction from the polling officer, also the voter can use the touch screen to poll his/her vote. On that touch screen the name and symbol of the respected candidate is displayed. The touch screen is connected to the client system and client systems are connected to the server. The entire voting counter result is updated in the server to protect from hacker's we are using encryption and decryption method.

**Keywords :** Arduino Mega with ESP8266, Ballot Unit, Control unit, Finger Print Sensor

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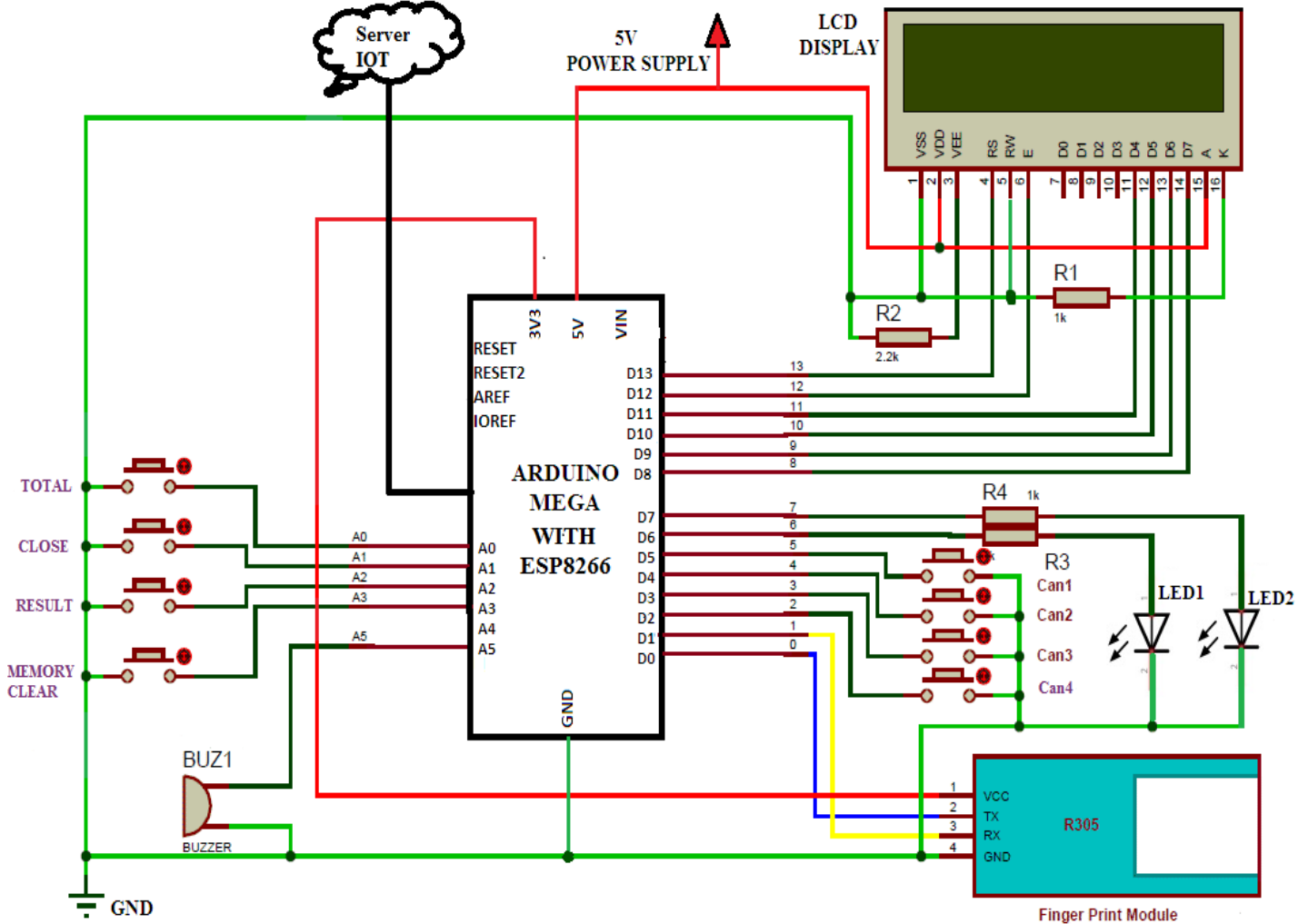
## I. INTRODUCTION

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. This project proposes a secure e-voting system that uses Aadhaar database as its backend. During elections, the thumb impression of a voter is entered as input to the system. The system ensures authentication of an individual by matching fingerprints. This is then compared with the available records in the database. If the particular pattern matches with anyone in the available record, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected. The proposed system can handle voting at different levels simultaneously.

The project will bring transparency in the voting process by assuring the voters that their votes will be in favour of the candidates of their choice. Besides electronic recording and counting of votes will be faster. This system uses the fingerprint sensor to scan thumb of the voter's in order to provide high performance with high security to the voting counter also as we using internet of thing i.e. (IoT) to make the voting system more practical. All the voting machines are connected in a network, through which data transfer takes place to the main host. The result is instantaneous and

counting is done finally at the main host itself. The overall cost for conducting elections gets reduced and so does the maintenance cost of the systems. This system used to display the data-base of the user (voter). The internet of things (IOT) is the inter-networking of physical devices, vehicles, building and other items embedded with electronics, software, sensors, actuators and network connectivity which enables these objects to collect and exchange data. Now days the previous EVM system is replaced with advance electronic voting machine using internet of things. The unique feature of this system is fingerprint sensor which scan the human finger patterns because every human having their different finger patterns. This system is consisting of Controller which is a series of small single board computer, finger print sensor which reads the finger print patterns and LCD display. The fingerprint sensor scans the unique finger pattern and accordingly generates a digital signal in which is in the form of ones and zeros. This digitally generated output signal of fingerprint sensor is given to the Controller for further processing. All identity of voters is stored in record database at local centre. As the thumb is pressed the Controller check and match with the record data base if the data base is match with user figure print then and then only the overall system allows to voter (user) to vote his/her respective party at that same instant Buzzer gets ON and LCD displays the name of party to whom you are vote. If the fingerprint is not matched then system displays "Data is not found" then system cannot allow to vote.

### CIRCUIT DIAGRAM



### II. METHODS AND MATERIALS

This circuit consists of an Arduino Mega (Atmega 2560), which is the heart of the circuit. The basic circuit consists of a fingerprint sensor, LCD display, buzzer, LED, and push button. Here, the Arduino Mega board is built with an ESP8266 (WIFI module); it is used to connect to the internet and is used to send data to a server through the net. The fingerprint sensor is used to enroll the fingerprint data from people and to check the matching from the database record. Here, the LCD display is used to display the voting function; when a person enters inside the polling station, the polling officer will check the card verification. Then the officer will be on the system now in LCD “welcome ...place finger....” if the fingerprint matched, the person can vote or if not matched /already voted it will be displayed in LCD. For each candidate, a push button is given and connected with an LED; when the button is pressed, the LED will be high. Four main buttons are given as control units: Total, Close, Result, and Memory clear. Press the Total switch to see the Total number of votes in the end of the

voting or in between the voting also. Press the Close button to get the result because until the Close button is pressed, the result button will not work. If the Result button is pressed, the result will be displayed in LCD and Thingspeak. Until the Memory clear button is pressed, the memory will not clear even if the system is shutdown. If these four main buttons are pressed, the output will also be displayed in Thingspeak (IOT). When the buttons are pressed, the buzzer will be high for a delay (2sec). 5-volt input voltage is given for the circuit and common ground is given.

In this project, Arduino is the main source and server. Once a voter enters into a local center for voting, the voter card will be checked by barcode. If verification is found correct, the voter will be scanned using the fingerprint sensor. The person's fingerprint will be scanned using the fingerprint sensor. It will be checked with the database. If a match occurs, the person will be allowed for voting who have matched

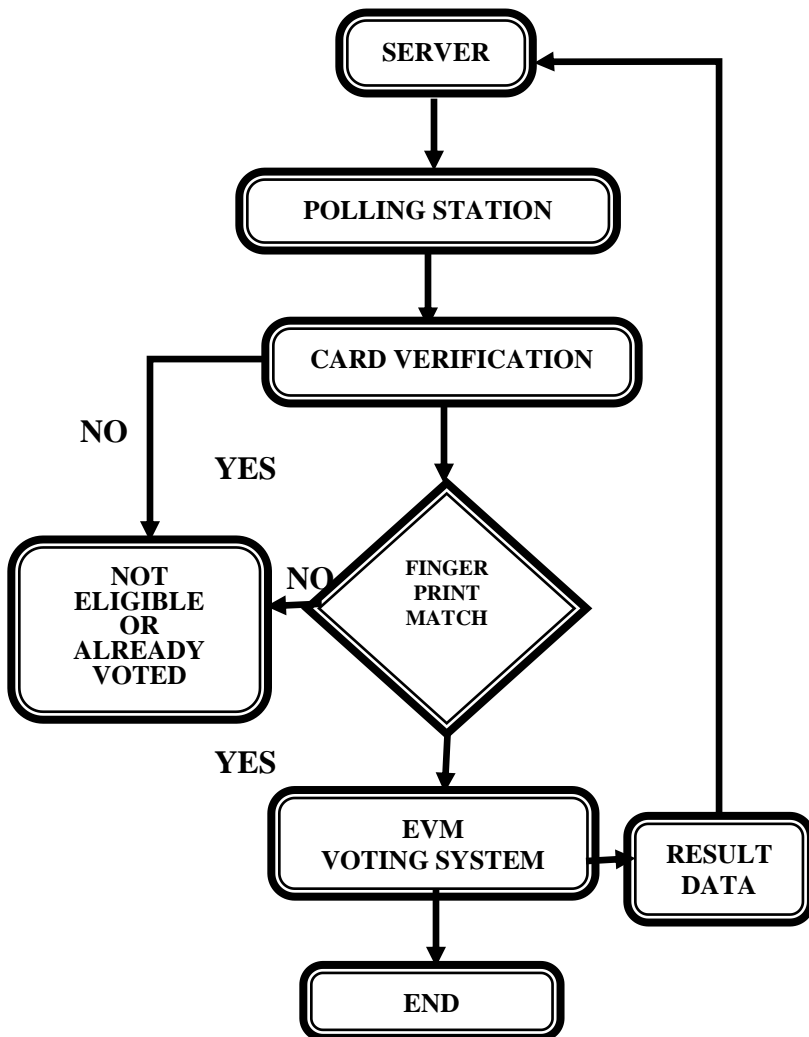
both card verification and finger print verification will be allowed for voting. When finger print is matched in LCD “authorized voter .....please vote” will be displayed. in LCD display If finger printAuthentication display is not matched , “press the match key to start system” or the person is already voted in lcd “already voted will be displayed”. In LCD display

The person who have eligible to vote, will vote to the favorite candidate and in lcd “candidate number.... vote submitted” will be displayed in LCD. Then all the total, result switch will be in the control of polling station controller. When the controller pressed the close button only result button will work, the controller can check the total in between the election and also after the election. The controller will press the close

button and then the result button, then the output will be displayed in both in lcd and in thingspeak using server [IoT]. This result will be announced on the day of election itself.

Here in server the output will be seen by private or public using thingspeak. The election commission can make the result visible for all the people at time of voting or at the end of election also. This can be made by election commission only. This system of voting is very secured and to Highaccuracy, and better compared to existing system.It can avoid rigging and malpractice.

### III. FLOW CHART AND STAGES OF PROJECT



#### IV. CONCLUSION

This Paper “IOT BASED ADVANCE E-VOTING SYSTEM” was developed as a fingerprint based advanced Electronic Voting Machine (EVM) which helps in free and fair way of conducting elections which are basis for democratic country like India. Electronic voting systems have many advantages over the traditional way of voting. Some of these advantages are lesser cost, faster tabulation of results, improved accessibility, greater accuracy, and lower risk of human and mechanical errors. Our project enables secured voting and

reduces man power efficiently. In this system we introduced some new concepts and that is implementing by Arduino mega 2560. We developed a voting system for 8 candidates. it consists of two-unit balloting unit where voter can register their vote. Control unit where polling center officer will have control over to start & stop the voting. verification of the candidate can be done by scanning the card and finger print authentication. it is a highly secured voting machine which will be needed for current scenario.

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#### AUTHORS BIOGRAPHY



**Mr. DANIEL** A received his BSc degree in Electronics and Communication System in Bharathiar University, India. He is pursuing MSc degree in Electronics and Communication System in Sri Ramakrishna College of Arts and Science, Coimbatore, India.

**email:** danielbrayan.a@gmail.com  
**Phone Number:** (+91) 9894315918



**Ms. NAVEENA J** received her BSc degree in Electronics and Communication System in Bharathiar University, India. She is pursuing MSc degree in Electronics and Communication System in Sri Ramakrishna College of Arts and Science, Coimbatore, India.

**email:** naveena271996@gmail.com  
**Phone Number:** (+91) 9597319114



**Prof. INDIRA S** received her MSc, and M.Phil. degrees in Applied Electronics in Bharathiar University, India. She is currently a Full time Professor with the Department of Electronics in Sri Ramakrishna College of Arts and Science, India. Areas of her research interests include real-time embedded system, Sensor and Medical Electronics.



**email:** [indira@srcas.ac.in](mailto:indira@srcas.ac.in)

**Phone Number:** (+91) 9952263241

**Prof. ASHOK KUMAR K** received his MSc, and M.Phil. degrees in Applied Electronics in Bharathiar University, India. He is currently a Full time Professor with the Department of Electronics in Sri Ramakrishna College of Arts and Science, India. Areas of his research interests include real-time embedded system, VLSI System Design.



**email:** [ashokkumar.k@srcas.ac.in](mailto:ashokkumar.k@srcas.ac.in)

**Phone Number:** (+91) 9944313282

**Prof. RAMESH A P** received his MSc, and M.Phil. degrees in Applied Electronics in Bharathiar University, India. He is currently a Full time Professor with the Department of Electronics in Sri Ramakrishna College of Arts and Science, India. Areas of his research interests include real-time embedded system and Industrial and Power Electronics.



**email:** [ramesh.ap@srcas.ac.in](mailto:ramesh.ap@srcas.ac.in)

**Phone Number:** (+91) 9952176226