

# SMART VOTING SYSTEM TO PREVENT MALPRACTICE USING FINGER PRINT TECHNOLOGY

Sumanth Kashyap A<sup>(1)</sup>, Smriti Gururaj<sup>(2)</sup>

\*\*\*

**Abstract** - India is the largest democratic country in the world. The people choose their political leaders and government representatives. The primary objective of voting is to allow voters to exercise their right to express their choices with respect to citizen initiatives, political and other government representatives. The voting is a very huge and tedious task for highly populated countries like India. In the recent years, rigging and other malpractices are being carried out during elections which may lead to contrary results. To avoid problems mentioned above, this paper brings out the idea of biometric voting system that uses finger print sensor system thereby avoiding fake and repeated voting by an individual. The control unit is interfaced with finger print sensor and scanner which will automatically release an empty vote to the balloting unit when the voter is legitimate. Thus the proposed system will be portable, easily adaptable and cost-effective with minimum power consumption and minimizes the time taken to identify legitimate voter.

**Key Words:** Fingerprint sensor, Biometric voting system.

## 1. INTRODUCTION

The process of executing the power of citizens to elect their representatives without any discrimination is called voting. India as a democratic nation has given its citizens the right to vote during elections which are conducted by the election commission of India and this process will decide the fate of different political parties. In the early independence stages, ballot papers were used in which the citizens choose and impress the party name they were willing to vote. This process was not secure, time consuming, could be tampered easily and there may be many errors while counting of votes due to all these reasons Electronic Voting Machines were introduced which eliminated many drawbacks of paper ballot system. These EVM's provided fast and reliable systems which are easy to handle. It requires less power to operate and so these systems are used all over the country. In spite of all these advantages of EVM's, there are some issues with these systems like security tampering, repeated voting, rigging of votes etc. These malpractices cannot be identified easily so their rectification is a very tedious job. All these factors led to the invent of our idea biometric voting system where Finger print scanning technology will be used. As finger print of each person is unique, this feature of human body can be used to avoid many drawbacks of EVM.

## 2. PRESENT METHOD

India is a democratic nation, here the people will select MLA's and MP's and other candidates of different parties who make development to the nation or to their respective constituencies. In the recent years voting system in India has become technically advanced when compared to the previous methods where ballot paper was used and it was a tedious task to count the number of votes that a candidate has got. In the recent years EVM's have replaced these ballot papers which consist of balloting unit and the control unit. Control unit system will be under the control of election officer. When the database registered in the list matches with the voter id details of legitimate voter then the presiding officer presses the control machine which releases an empty vote in which the candidate has to cast his vote[3]. Ballot unit is the system in which the candidate claims his vote. When the control unit releases an empty vote the person presses the blue button in the balloting unit against the candidate or symbol which he likes. Later the officer marks left hand fore finger of the voter with indelible ink which shows that he cannot claim another vote in that election.

An EVM can record a maximum of 3840 votes and can cater to a maximum of 64 candidates. There is provision for 16 candidates in a single balloting unit and up to a maximum of 4 units can be connected in parallel. The conventional ballot paper/box method of polling is used if the number of candidates exceeds 64. The aim of the EVM is "ONE PERSON, ONE VOTE".



Fig 1. Sub- units of EVM

### 3. PROPOSED IDEA:

Introducing biometric scanning system in the elections can avoid malpractices. The electronic voting machine has a control unit and a balloting unit. The control unit is interfaced with finger print sensor and scanner. This finger print sensor and scanner is connected to the controller with external memory. When the person enters the booth to cast his vote, his details are checked manually by preceding officers. The next step is that he has to cast his vote where he has to give his thumb impression before casting the vote. This thumb impression is sensed, scanned and is stored in the external memory interfaced with controller. Initially the finger print of some person is loaded which comes as default which we use as reference for the first person who casts his vote. So when the first person gives finger print, it compares with the already present finger print since it doesn't matches an empty vote is released into the balloting unit with an alarm sound which indicates the person that he can vote. Now the person chooses his candidate hence empty vote is occupied by the respective values. The counter present in the EVM is incremented which indicates that the vote has been accepted successfully. The finger print comparison is done in the coding part with small amount of external memory sufficient for storing and comparing finger prints. When the same person tries to cast his more than once, the finger prints undergo comparison. Since they are matched with already stored finger print therefore LED screen displays that the person has already voted.

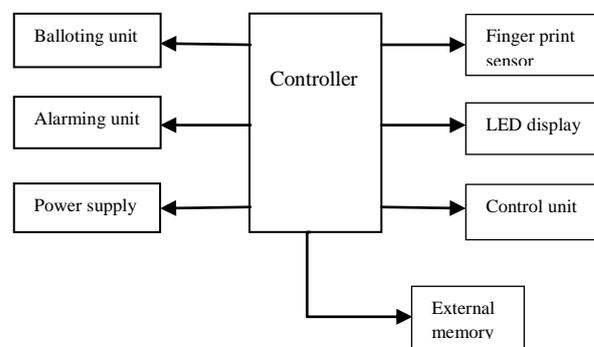


Fig 2. Block diagram

Fingerprint sensor named SM630 with the following specifications can be used with an Operating Voltage of 4.3V~6V and rating voltage of 6.5V. Operating Current is less than 80mA and it has 768 templates with a search Time less than 1.5seconds and Power-on Time is less than 200mseconds. This sensor is interfaced with controller named ATMEGA16 which is a 8bit controller where AT stands for Atmel and MEGA stands for balanced output and inputs and 16 stands for 16KB on chip flash memory which has the following specifications. It is a 40 pin DIP package and there are 32 programmable input/output Pins with the operating voltage of 4.5V~5.5V and it has an 8 channel 10 bit ADC. It has two 8 bit timers and one 16 bit timer and it also has four PWM channels. In our idea of obtaining the fingerprint from the voter, the fingerprint sensor is interfaced with the controller (ATMEGA16). The fingerprint sensor comes with four output pins which are TXD, RXD, VCC, GND. where a 5v constant dc voltage is supplied to the VCC pin, while GND pin connected to ground and the TXD pin of sensor is connected to PD0 (RXD) and RXD pin of sensor is connected to the TXD pin of the controller that is PD1.

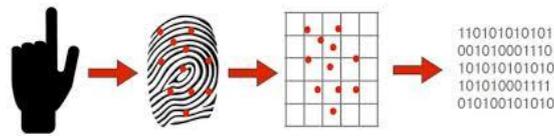


Fig 3.Finger print scanning process

The next step is to receive the binary pattern of the voters fingerprint, this binary pattern is formed by an image processing technique where the voter's finger print is scanned and the received print is imposed on a grid like structure. The binary pattern is formed based on the intersections of the valley between the corresponding lines of finger print which are crossing lines of the grid (4\*4 or 5\*5). In order to receive the message from the sensor the baud rate is set and since there is requirement of external memory in order to store the fingerprint pattern of such a large amount of fingerprints obtained from the voter's, We interface an external memory with PORT A of the controller and the controller is coded in such a way that the received fingerprint (binary pattern) if not found on the memory then it is stored on the external memory with the details of the voter. And in case if a match of the binary pattern is found then the voter is not allowed to vote and will be considered guilty for multiple voting's.

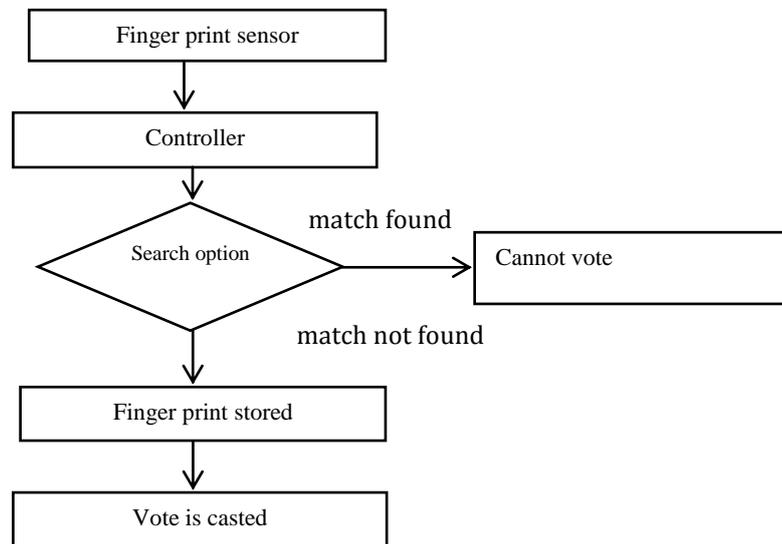


Fig 4. Flowchart

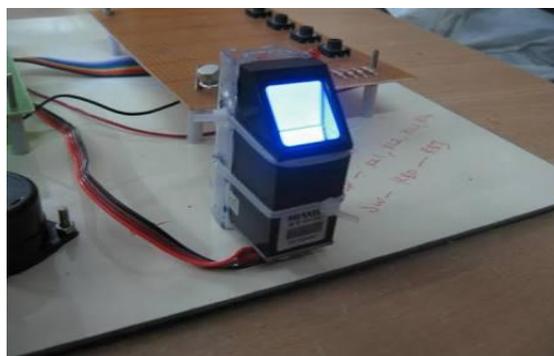


Fig 5. Finger print sensor

#### 4. ADVANTAGES

The manual operation of control unit can be eliminated. Illegal practices like rigging, fake and repeated voting can be eliminated[2]. The system is highly reliable, low maintenance cost, tamper-proof and relatively more secure compared to previous methods. Also it is possible to get instantaneous results with high accuracy.

#### 5. FUTURE SCOPE

The biometric system can be implemented in advanced way for the future election process. The biometric system can further be developed in the following ways to overcome the shortcomings of proposed methods. The system can be implemented in such a way that the thumb impression scanned can also be stored in cloud. Also the finger print can be merged with database of that person there by in future elections, system will detect the finger print impression with the previously stored data base. The system can be implemented in such a way that the result of the voting can be announced on the same day. This can be implemented by connecting a counter to the system which helps us to get the accurate result without any faults in the counting. This also avoids the malpractice that can be done during counting.

The system can be developed which includes a biometric scanner in the ballot machine i.e., instead of using ballot buttons a biometric scanner can be used to scan and store the finger print impression in the data base. Further the database can be linked with the Aadhar card or any other documents.

#### 6. CONCLUSIONS

The elections in India would no longer be tedious job. This paper provides an overview of biometric voting system using fingerprint technology which enhances the security by eliminating bogus voting, fake and repetitive voting. This can bring revolutionary change in electoral procedure by hosting fair elections in India. This will preclude illegal practices like rigging and so the citizens can choose their leaders and government parties by exercising their right in democracy. The same method can be implemented in other countries and so the electoral procedure can be changed drastically using this technology.

#### 7. REFERENCES

- [1] Sanjay kumar, Manpreet Singh "Design a Secure Electronic Voting System Using Fingerprint Technique", IJCSI International Journal of Computer science Issues, Volume 10, Issue 4, 2013.
- [2] Shanu Agrawal, Pradeep Majhi, Vipin Yadav, "Fingerprint Recognition Based Electronic Voting Machine", International Journal of Engineering and Technical Research ISSN: 2321-0869, special issue 2014.
- [3] M.Sudhakar, B.Divya Soundarya Sai, "Biometric System Based Electronic Voting Machine Using Arm9 Microcontroller", IOSR Journal of Electronics and communication Engineering, Volume 10, Issue 1, 2015.