

# Arduino Implementation In Voting System

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**Abstract** - The present voting process is conducted in centralized or distributed places calling polling booths. Every step of polling operation will be under the control of supervisors and also manual counting is used for counting the votes. By the development of technology the cryptographic methods are used to poll the votes. The proposed system is a simple and secured method of polling votes by using biometric and GSM. The security system is based on finger print Authentication. In this system the user has to use his/her finger print to poll the authenticated vote. The government database holds the finger print information about the particular citizen, thus making it best and safer solution for the problem. It also avoids the false voting. The person is allowed to poll the vote after comparing the finger print in government database and citizen's finger print. A GSM module is used to collect the polled votes. After the given particular time the result will be uploaded to the webpage. Poll results can be obtained instantly. The improvisations aim at increasing the flexibility security, reliability, scalability of the model and provide less time consumption to announce the result. The system leads to reduce the man power and error caused by man. Electronic voting machine is a unique and new concept which saves a lot of time and avoids the false voting by a false person.

**Keywords** - GSM Module, Finger print module, Arduino AT Mega 162.

## 1. INTRODUCTION

To increase the efficiency and accuracy of voting procedures. Large number of computerized voting systems were developed to help collecting and counting the votes. Which includes lever voting machines, Voting based punched cards and optical-sense scanners and direct recording electronic voting systems. Even though if we are having many technologies each and every advance technology having some disadvantages. Such as the electronic voting machine which we are using nowadays also has few disadvantages. Voter can hear the sound produced by electronic voting machine, but the person not getting the acknowledgement after the voting. And also the man power is required to identity. This may create some errors or electrical fraud.

### Secure system

The system is free from intentional tamper. It is not possible to locate the machine. In this system every user uses his/her finger print. The votes will be successful only after successful verification of their finger print.

### Reliable

The machine registers the votes with faith. A vote is never altered. A vote is eliminated from the final count if it is invalid and a valid vote is counted. The final vote tally must be perfect. Most important thing is the votes are stored in EEPROM memory, where the numbers of votes are stored permanently. More ram capacity components are used to increase the speed of transfer of information.

### Flexible

In this method the design of the system is such that it can be put to use in various polling systems with different requirements and mechanisms. And it can able to support all voters.

### Reduce false voting

For reducing the false voting a main authentication fingerprint is used and some authentication such as checking voter ID, license, etc., This method of authentication reduces the time that the finger print reader uses less than 3 sec to verify the finger prints in the database. The buzzer rings when the reader reads the registered voters fingerprint.

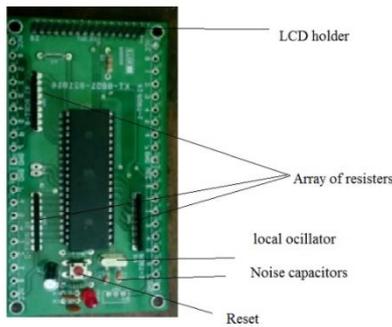
### Faster Result Updation

By using the advanced GSM technique, the results are uploaded earlier comparing to other voting methods. That after the registered time automatically the URL will close and the results get updated. To check the results enter the password registered in it. Type the code of area and check the result in that area. This needs no security for the vote.

## 2. SYSTEM MODEL

### Arduino at mega 162

The Arduino AT mega be the advanced type in Arduino. The specialty of the Arduino is to provide two serial ports at a time. Serial ports are to transmit and receive the data simultaneously. The finger print module and GSM module be connections in the serial ports. The Arduino is the processor that process information and make decision. It can connect the system with outside world. It sends status message commands to CD module. Arduino AT mega 162 works at 5V and have 16 pins with 16 MHz of frequency.



**Fig 1 Arduino At Mega162**

**Finger print module**

A finger print is used to narrow sense is an impression left by friction ridges of a human finger. The finger print recovery from a crime sense is an important method of forensic science purpose and the finger prints are easily deposited on suitable surfaces by the natural secretions of sweat from the ermine glands that are present in the epidermal ridges.

Optical finger print imaging involves capturing a digital image of the print using visible light rays. The scanner is used to scan the finger. In this type of sensor essences in a specialized digital camera. where top layers of the sensor is used to place the finger which is known as the touch surface. Down of this layer is a light emitting phosphor layer which illuminates the surfaces of the finger.

Then the light is reflected from the finger passes through phosphor layer to an array of solid state pixels which captures a visual image of the finger print which used to authentication. But, a scratched or dirty touch surface can cause a bad image of the fingerprint.



**Fig 2 Finger print reader**

**GSM MODULE**

A GSM module is a specialized type of modem which accepts Arduino output results). The GSM connected with the personal computer collects the votes registered and updated it in pc time to time. The GSM SIM 00 is used which works t AT commands.



**Fig 3 GSM Module**

**Working summary**

A personal computer is used to collect and store the database of the people before voting. The ARDUINO AT MEGA 162 is connected with a PC. A module of 16X2 dual lines LCD show the details of the processing which is happened in the voting machine. An optical fingerprint module is used to scan the fingerprint of the voters. The fingerprint scanner sends the scanned signals to the processor for verification. The processor verifies the finger print with the database which is stored in the PC. A buttons are used to give the input to the processor to select the candidate. An alarm is used to produce the sound after the selection of the candidate. Finally the GSM module is used to send the result to the PC, Which helps them to announce the result with the short period.

**3. PREVOIUS WORKS**

In [1], Voting system using Visual Cryptography VC) aims at providing a facility to cast vote for critical and confidential internal corporate decisions.

It has a flexibility to allow casting of vote from any remote place. Administrator sends share 1 to voter email-id before election and share 2 will be available in voting system for his login during election.

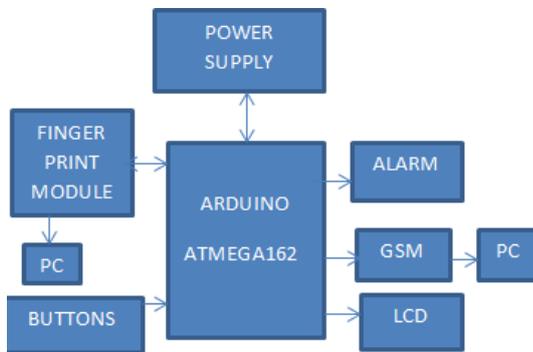
Voter will get the secret password to cast his vote by combining share 1 and share 2 using VC. Phishing is an attempt by an individual or a group to get personal confidential information from unsuspecting victims. Fake websites which appear very similar to the original ones are being hosted to achieve this. Internet voting focuses on security, privacy and secrecy issues, as well as challenges for stakeholder involvement and observation of the process.

In [2], remote electronic voting continues to attract attention .A greater number of election officials is opting to enable a remote electronic voting channel. More and more scientific paper has been published introducing or improving existing remote electronic voting protocols. However, while the scientific paper focuses on different aspects of verifiability, most of the system in use does not provide verifiability. This gap is closed in this paper by extending a widely used remote electronic voting system, the POLYAS system, to

provide verifiability. It has been in use since 16 in various national and international elections.

#### 4. PROPOSED METHODOLOGY

##### Block Diagram



**Fig 4 Block Diagram**

The power supply provides power to all the components present in the system. All the components uses 5V. That the LCD screen (16\*2) is used to display the current activity done in the system that if a finger print gets registered when someone reach the age of 18, and it can be assigned to the respective data holders, moving the data in the database, deleting or removing the already existing finger print in case the person died. Making the password to check the recently updated results. Arduino at mega is used as a processing unit. The system works that when a finger print gets read; the Arduino program helps to compare both the finger print. If it gets matched the vote gets poll will be registered.

If it doesn't matches with anyone, the buzzer connected with it gets work and it rings a sound. Vote polled becomes invalid. After all the votes registered or at the end time automatically the system gets closed.

And the corresponding results get uploaded to verify the results the registered password along with the code to be given as input. Verifying it the results are shown to the respective person.

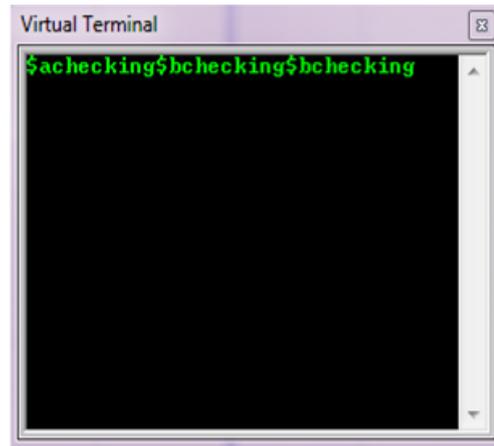
#### 5. SOFTWARE

The software used for the system be AVR studio, using the embedded C program the coding part will be filled. Each and every pin of the Arduino gets assigned to some particular functions.

The software part gets verified in AVR studio software or ATMel software.

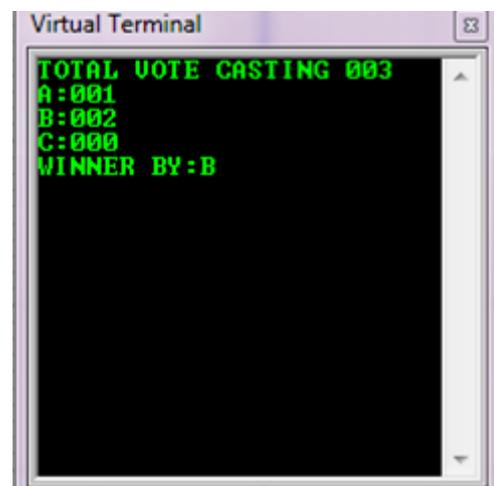
Embedded C programming, C program be the familiar type of programming language understandable by all the compiler mainly GCC, GNU compiler collection.

The simulated output be,



**Fig 5 software output (Input screen)**

By using the proteus for the simulation part, it refers to the input part .



**Fig 6 software output (output screen)**

The output page refers the the total number of votes counted .and displays the winner in the elaction.

#### 6. CONCLUSION

Its is concluded that really hard to make an electronic voting system to satisfy all the voters. Many user requirements and justified security concerns by academic communities make a tough job for all those developers . The proposed system enebles the a voters to cast his/her vote using a mobile number ,the results can be updated amd verified. Although there are the multiple party protocal the system helps to provide security to the polled votes. A GSM mobile voting scheme ,where the efficiency ans secreacy.

#### 7. FURTHER ENHANCEMENT

##### Online voting using GSM

It is a combination of internet and GSM mobile voting scheme. where the GSM and the internet authentication infrastructure is used to provide voter authentication and to improve the voter mobility.

### Iris detection for the authentication

Fingerprint is one of the best authentication method used. With addition to this the Iris detection is used. The process based on scanning the retina and the image gets registered. By comparing both the registered image and scanned image, the authentication can be done.

### Face recognition using MATLAB Technique

The Face recognition authentication is the best method. With reduced surveillance the voting can be done. While using all authentication methods. This one method fulfills all authentication with fingerprint.

### REFERENCES

- [1] Adam Stubblefield, Johns Hopkins Dan S Wallach 'Analysis of an Electronic Voting System', pp., 27, 2004 vol.00
- [2] Amir S. Elsafrawy and Emad S. Hassan (2015) 'Reliability Evaluation for wireless Sensor Network Based on eighted Voting System with Unreliable Links', pp. 223-233, Vol 9.
- [3] M. Faheem Rana and Ayesha Altaf (2013), 'Enhanced real time system of E-voting using Fingerprint', pp. 27-30, ISBN No 978-1-4673-6609-0.
- [4] Haijun Pan and Edwin Hou (2015), 'M-NOTE: A Multi-part ballot based E-voting system with clash attack protection', pp. 7433-7437, ISBN No 978-1-4673-6432-4.
- [5] Hanna Choi and Sungbum Pan (2009), 'A Survey on Smart E-voting system Based on Fingerprint Recognition', pp., 1-6 ISBN no. 978-1-4244-4999-1.
- [6] Kelvin Ly and Jacob Wurm (2016) 'Voting System design pitfalls: Vulnerability and exploitation of a model platform', pp. 149-152 ISBN No. 978-1-5090-514-7.
- [7] Maina M. Olembo, Patrick Schmidt and Melaine Volamer (CASED, TU Darmstadt (2011)), 'Introducing Variability in the POLYAS Remote Electronic Voting System'.
- [8] Mariella Berger and Filipe Wallmutz (2012), 'VRank: Voting System on Ranking model for Human age estimation', pp. 309-314. ISBN No 978-1-4673-5119-5.
- [9] Nisha S and Neela Maheswari. A 'Prevention of Phishing attacks in Voting system using visual Cryptography', pp. 1-4. ISBN no 987-1-4673-6725-7.
- [10] Vishal and Vibhu Chinmay (2016) 'Online voting System linked with AADHAR', pp. 3239-3240, ISBN No. 978-9-3805-4421-2.

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