



# Electronic Voting Machine using Arduino

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## ABSTRACT

*Election may be a key issue when it involves deciding who the subsequent leader(s) or representative(s) are visiting be through democratic means. the prevailing prevalent processes of voting in these elections are slow and strenuous and also the outcome is usually inaccurate. Thus, people lose faith within the electoral process and consequently in their leaders still. This work developed an electronic electoral system that aids the method of choosing such leaders in an exceedingly manner that's fast, free and fair. The device was developed by interfacing fingerprint sensor, a keypad, GSM module, real clock, an LCD and a private computer to an Arduino.*

*Mega Algorithm is used to code and develop with the help of the Arduino IDE. Different information regarding the voters - specifically the biometric information, that is collected during registration before elections and the secure voting pins (which are assigned randomly) and the registered mobile numbers. Before voting, it checks for a match with the stored data during the authentication by comparing biometric so pin of a voter thereto within the database. Upon successful authentication, the voter is given permission to make their votes. The voting can be both open ballot or closed ballot. The device collates results of voting including time of every vote and might deduce the winner supported majority votes. The device was deployed and evaluated against a mock election using the key ballot system and was found to not only produce expected results but was also found to eliminate possible irregularities like vote inflation while also reducing both voting and collation times.*

**KEYWORDS:** Arduino, Election, Finger-print.

## I. INTRODUCTION

Casting a ballot could be by open voting form where the electors line up as indicated by their inclination or via mystery polling form in which electors pick a favored applicant by making a choice regularly on paper for their up-and-comer. The significant contrast to note between the two kinds is that in open polling form, results are somewhat hard to

Control since every citizens aim is known to everybody at the scene while the mystery polling form can without much of a stretch be controlled. Albeit the mystery polling form gives the citizen more certainty to adjust to their decisions as opposed to controlled. Albeit the mystery polling

form gives the citizen more certainty to adjust to their decisions as opposed to potentially adjusting to another because of compulsion in open voting form. Maybe mystery voting form is generally utilized for its security furthermore, the way that less time is needed by an elector to close and leave the scene. Mystery voting form tends to be controlled during grouping and consequently individuals have certainty issues with its result. Another factor influencing this mode is time spent in authorizing electors which takes up a decent level of the complete political race time, while considering whenever thought about piece of the political race, takes up to 40% of the time.

## STRUCTURE OF PAPER

The paper is organized as follows: In Section 1, the introduction of the paper is provided along with the structure, important terms, objectives and overall description. In Section 2 we discuss related work. In Section 3 we have the complete information about image processing tools. Section 4 shares about ease of use. Section 5 tells us about the methodology and the process description. Section 6 tells us about the future scope and concludes the paper with acknowledgement and references.

## OBJECTIVES

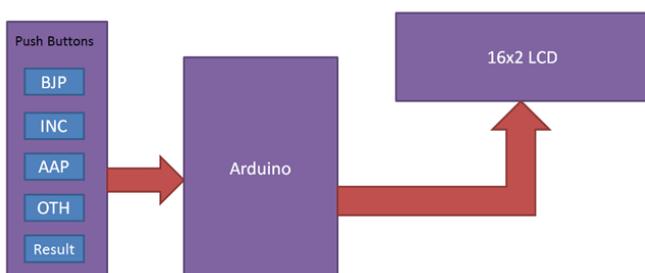
To prevent the certainty issues just as develop the accreditation to guarantee that lone qualified what's more, enrolled citizens vote and furthermore to lessen (nearly dispose of) the grouping (tallying) time, electronic democratic (e-casting a ballot) was presented. Races go back to old occasions, most prominently to the Greek city-states and conservative Rome. Athens in the fifth and fourth hundreds of years BC is frequently viewed as the main direct popular government – a framework in which residents vote on open strategies and laws straightforwardly. Races in Nigeria dates as far to the primary republic, in the overall appointment of 1959 to figure out which gatherings would run in the prompt postcolonial period.

## II. RELATED WORK

Circuit of this project is quite easy which contains Arduino, push buttons and LCD. Arduino controls the complete processes like reading button, incrementing vote value, generating result and sending vote and result to LCD. Here we have added five buttons in which first button is for BJP, second for INC, third is for AAP, fourth is for OTH means others and last button is used for calculating or displaying results.

## III. IMAGE PROCESSING

The image processing used to describe the system works as shown in the image:-



## III. EASE OF USE

This project is real and can be implemented it can run in phone and other compatible devices as we can see corona crisis is going on so people have to keep distance from each other to protect themselves but at the time of election in a democratic country like india people will come outside to vote creating a heavy increase in cases so in this time of crisis electronic voting machine will play a important role.

The development of this web app will follow an Iterative Software development model where in a basic product is implemented first with a small set of the software requirements and then there are iterative enhancements and the evolving versions until the complete system is implemented and ready to be deployed.

## IV. METHODOLOGY

**Arduino Uno:-** It is an open Source prototype platform Based on an Easy-to-use Hardware and Software Arduino Uno is a Microcontroller Board Based on the ATMEGA328(Datasheet).

It has 14 digital input/output pins [12] (of which 6 can be used as PWM outputs), 6 analog inputs, a 16

MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button.

Microcontroller: ATmega328, Operating Voltage: 5V,

Input Voltage (recommended): 7-12V, Input Voltage

(limits): 6-20V, Digital I/O Pins: 14 (of which 6 provide PWM output), Analog Input Pins: 6, SRAM: 2 KB (ATmega328), DC Current per I/O Pin: 40 mA,

DC Current for 3.3V Pin: 50 mA, Flash Memory: 32

KB of which 0.5 KB used by boot loader, EEPROM: 1 KB (ATmega328), Clock Speed: 16 Mhz..

**Optical Finger Print Sensor:-**A fingerprint sensor is an electronic device used to capture a digital image of the fingerprint pattern [10]. The captured image is called a live scan. This is a Fingerprint sensor module with TTL UART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user can store the finger print data in the module [11] and can configure it in 1:1 or 1: N mode for identifying the person. The FP module can directly interface with 3v3 or 5v Microcontroller. A level converter (like MAX232) is required for interfacing with PC serial port. Basic Power: 8-12v AC/DC,

Interface: RS232, Matching Mode: 1:1 and 1:N, Baud rate: 9600 – 115200. Default: 57600, Storage Capacity: 256, Average Search Time: < 1sec, Image Acquire Time: <0.5sec

### Process Description

**VOTING MACHINE:** Voting machine consist of Arduino Uno, Fingerprint sensor, LCD display, SFG Demo V2 Software, switches. Arduino UNO act as the controller unit. In order to unlock the device and as security a Finger print sensor has been attached to the machine. LCD and switches is used

In this project we have used four push buttons for four different candidates. We can increase the number of candidate but for better understanding we have limited it to four. When any voter press any of four button then respecting voting value will increment by one each time. After whole voting we will press result button to see the results. As the "result" button is pressed, Arduino calculates the total votes of each candidate and show it on LCD display. Circuit of this project is quite easy which contains Arduino, push buttons and LCD. Arduino controls the complete processes like reading button, incrementing vote value, generating result and sending vote and result to LCD. Here we have added five buttons in which first button is for KMK, second for AKMK, third is for SMK, forth is for SDK and last button is used for calculating or displaying results.

### VI. FUTURE SCOPE AND CONCLUSION

The concept of electronic voting systems is not a new one. However for its use to widely spread it is important to aim for a system that properly is able to fulfill all the requirements expected as well as the standards achievable by the use of technology. The system provided by this paper goes the lengths to cover the necessities that met the requirement for a fair, transparent and reliable election tool. This project assures that, if this system is brought into practice it will reduce the rate of Corruption in a honest and sincere way. This system is a small contribution for a fair election. But corruption in voting system cannot be erased through this system if there is no sincerity.

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