International Journal of Advanced Technology in Engineering and Science
Vol. No.7, Issue No. 03, March 2019
www.ijates.com
ijates
ISSN 2348 - 7550

BIOMETRIC VOTING MACHINE USING IOT

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ABSTRACT:
It has always been an arduous task for the election commission to conduct free and fair polls in our country, the largest democracy in the world. Crore of rupees have been spent on this to make sure that the elections are riot free. But, now-a-days it has become common for some forces to indulge in rigging which may eventually lead to a result contrary to the actual verdict given by the people. 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. The system uses thumb impression for voter identification as we know that the thumb impression of every human being has a unique pattern. Thus it would have an edge over the present day voting systems. 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.

I. INTRODUCTION:

Electronic voting reefer's to voting using electronic means to either aid or take care of the chores of casting and counting votes depending on the particular implementation ,e-voting may use standalone electronic machine (also called EVM)or computer to the internet .This paper describe an online electoral system for Indian election is proposed for 1st time there are number of voting system develop all over the world with each of them having it's limitation's 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. This system used to displays 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.

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. The IOT allows objects to sense or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based system, and resulting in improve efficiency, accuracy and economic benefit in addition to reduce human intervention. In the broadest sense, the IOT encompasses everything connected to the internet ,but it is increasingly being use to define objects that "talk" to each other. Simply, the Internet of things is made up of device-from simple sensors to smart phones and wearable's-connected together. For making an IOT infrastructure where we configure the hardware with software and control the devices over the internet this can be with help of raspberrypi and Arduino. The raspberry pi and arduino is platform for developing the internet of things environment.

II. METHODOLOGY:
ELECTRONIC VOTING SYSTEMS

An electronic voting system is a voting system in which the election data is recorded, stored and processed primarily as digital information. E-voting is referred as “electronic voting” and defined as any voting process where an electronic means is used for votes casting and results counting. E-votingis an election system that allows a voter to record their ballots in a electrically secured method. A number of electronic voting systems are used in large applications like optical scanners which read manually marked ballots to entirely electronic touch screen voting systems. Specialized voting systems like DRE (direct recording electronic) voting systems, RFID, national IDs, the Internet, computer networks, and cellular systems are also used in voting processes.

A. Securities of the E-voting systems

The main goal of a secure e-voting is to ensure the privacy of the voters and accuracy of the votes. A secure e-voting system are satisfies the following requirements,

Eligibility: only votes of legitimate voters shall be taken into account;

Un reusability: each voter is allowed to cast one vote;

Anonymity: votes are set secret;

Accuracy: cast ballot cannot be altered. Therefore, it must not be possible to delete ballots nor to add ballots, once the election has been closed;

Fairness: partial tabulation is impossible;

Vote and go: once a voter has casted their vote, no further action prior to the end of the election;

Public verifiability: anyone should be able to readily check the validity of the whole voting process.

B. Issues of Present Voting System

There have been several studies on using computer technologies to improve elections these studies caution against the risks of moving too quickly to adopt electronic voting system, because of the software engineering challenges, insider threats, network vulnerabilities, and the challenges of auditing.

Accuracy: It is not possible for a vote to be altered eliminated the invalid vote cannot be counted from the finally tally .

Democracy: It permits only eligible voters to vote and, it ensures that eligible voters vote only once.

Privacy: Neither authority nor anyone else can link any ballot to the voter

verifiability: Independently verification of that all votes have been counted correctly.

Resistance: No electoral entity (any server participating in the election) or group of entities, running the election can work in a conspiracy to introduce votes or to prevent voters from voting.

Availability: The system works properly as long as the poll stands and any voter can have access to it from the beginning to the end of the poll.

Resume Ability: The system allows any voter to interrupt the voting process to resume it or restart it while the poll stands.

The existing elections were done in traditional way, using ballot, ink and tallying the votes later. But the proposed system prevents the election from being accurate. Problems encountered during the usual elections are as follows:

• It requires human participation, in tallying the votes that makes the elections time consuming and prone to human error.

• The voter finds the event boring resulting to a small number of voters.

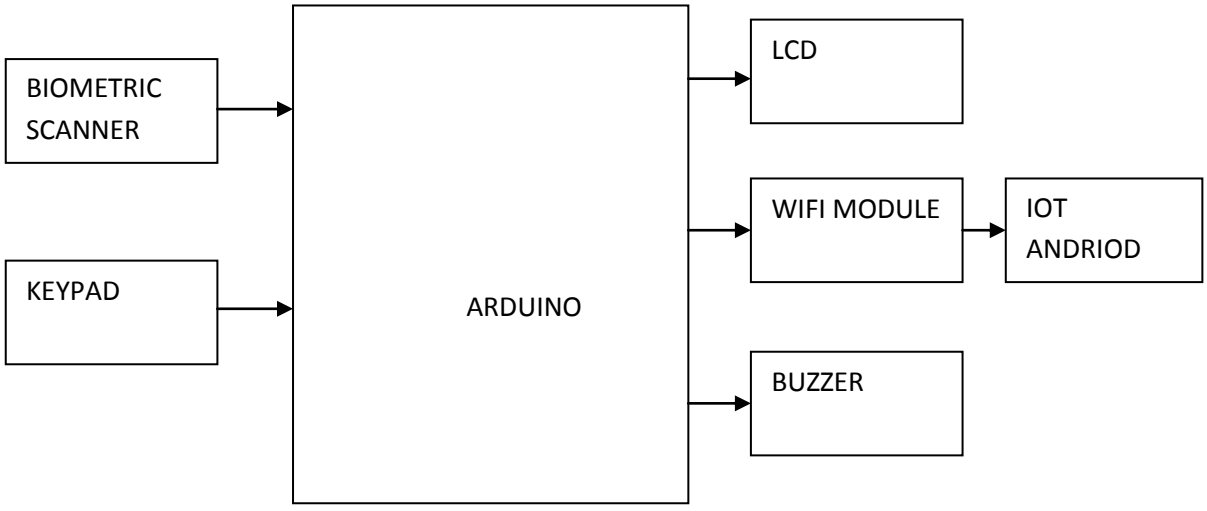
• Deceitful election mechanism.

• Constant spending funds for the elections staff are providedSo, the proposed electronic voting system has to be addressed with these problems.

C. Proposed system of online e-voting

The process of voter registration before the election process is always done by Administrator as follows the before. Registration phase begins by storing the Voter information such as Unique Voter ID (11-digit number TN/99/0000012—In this, TN specifies the State, Next two digit specifies District Id and third one specifies the Unique id for each eligible voter), Name, Age, Sex, Address and District in the database, polling questions answer and GSM one time password .this condition are stratification means person has valid the polling section.

1. BLOCK DIAGRAM:



2. OFFLINE E-VOTING SYSTEMS

A. Fingerprint Recognition

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of many forms of biometrics used to identify individuals andverify the iridentity. A fingerprint looks at the patterns found on a fingertip. There are a variety of approaches to fingerprint verification. Some emulate the traditional police method of matching pattern; others use straight minutiae matching devices and still others are a bit more unique, including things like moiré fringe patterns and ultrasonic. A greater variety of fingerprint devices are available than for any other biometric. Fingerprint verification maybe a good choice for in e-voting systems, where you can give users adequate explanation and training, and where the system operates in a controlled environment. It is not surprising that the work-station access application area seems to be based almost exclusively on fingerprints, due to the relatively low cost, small size, and ease of integration of fingerprint authentication devices that will be implemented is shown in Fig.1. Fig. 1.Finger Print Environment and Verification.

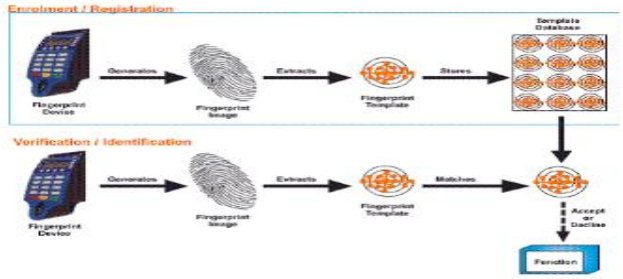
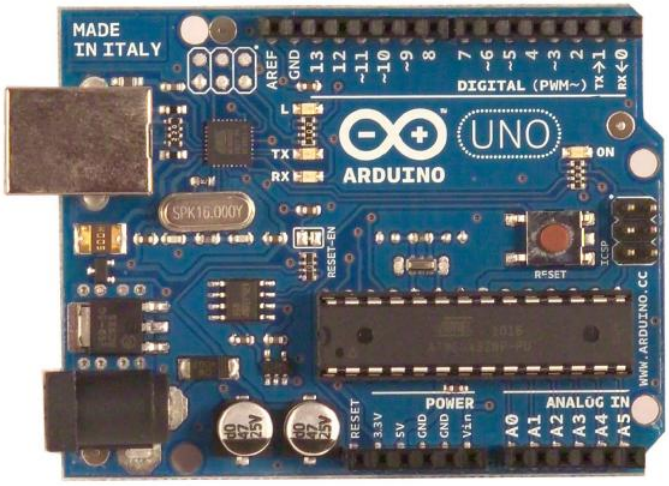


Fig. 1. Finger Print Enroiment and Verification

III. HARDWARE DESCRIPTION:

ARDUINO UNO



Arduino *is a single-board microcontroller to make using electronics in multidisciplinary projects more accessible. The hardware consists of an open-source hardware board designed around an 8-bit Atmel AVR microcontroller, or a 32-bit Atmel ARM. The software consists of*

a standard programming language compiler and a boot loader that executes on the microcontroller.

Arduino boards can be purchased pre-assembled or as do-it-yourself kits. Hardware design information is available for those who would like to assemble an Arduino by hand. It was estimated in mid-2011 that over 300,000 official Arduinos had been commercially produced.

IV. SOFTWARE DECRIPTION:

ARDUINO IDE:

PREFACE TO THE ARDUINO TUTORIALS

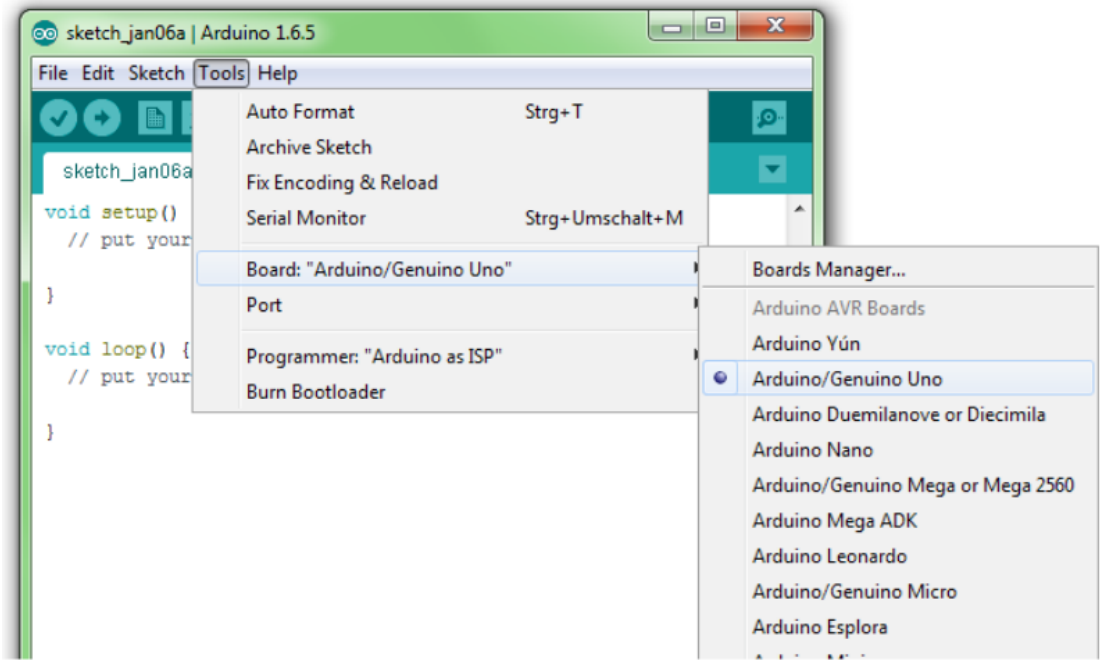
These tutorials are meant to be an entry to the Arduino basis. Beginners should get an interesting lead-in the world of Arduino. Our tutorials are all based on practical tasks with theoretical introductions at the beginning. We really recommend to read the theoretical partto successfully complete the practical tasks. These tutorials were created in the context of a teaching unit. They can be used for free to learn about Arduino, but it's not allowed to copy and use the tutorials without any permission. These tutorials have been created carefully and are continuously maintained, however we can't give any warranty about the accuracy and completeness of the tutorials. For the practical tasks you'll need some technical equipment. On our website www.funduinoshop.com you can buy especially customized Funduino kits for our tutorials.

SOFTWARE

The software that is used to program the microcontroller is open-source-software and can be downloaded for free on www.arduino.cc. With this “Arduino software” you can write little programs which the microcontroller should perform. This program are called “Sketch” .In the end the sketches are transferred to the microcontroller by USB cable. More on that later on the subject “programing”.

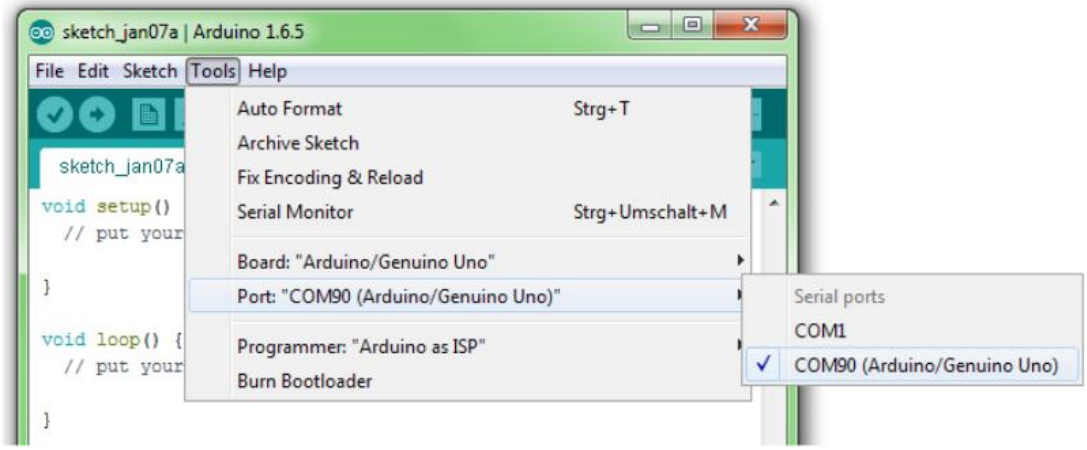
INSTALLATION

Now one after another the Arduino software and the USB driver for the board have to be installed. 2.2.1.1 Installation and set up of the Arduino software1. Download the Arduino software on www.arduino.cc and install it on the computer (The microcontroller NOT connected to the PC). After that you open the software file and start 6 the program named arduino. Exe Two set ups on the program are important and should be considered. a) The board that you want to connect, has to be selected on the arduino software.The “Funduino Uno” is here known as “Arduino / Genuino Uno”.



At the moment the Arduino isn't connected to the PC. If you now choose “Port”, under the field “Tool”, you will already see one or more ports here (COM1/ COM2/ COM3...). The quantity of the shown ports doesn't depend on the quantity of the USB ports on the computer. When the board gets connected to the computer, YOU WILL FIND ONE MORE PORT.

INSTALLATION OF THE USB DRIVER



2.2.1.2 Installation of the USB driver

How it should be:

1. You connect the board to the computer.

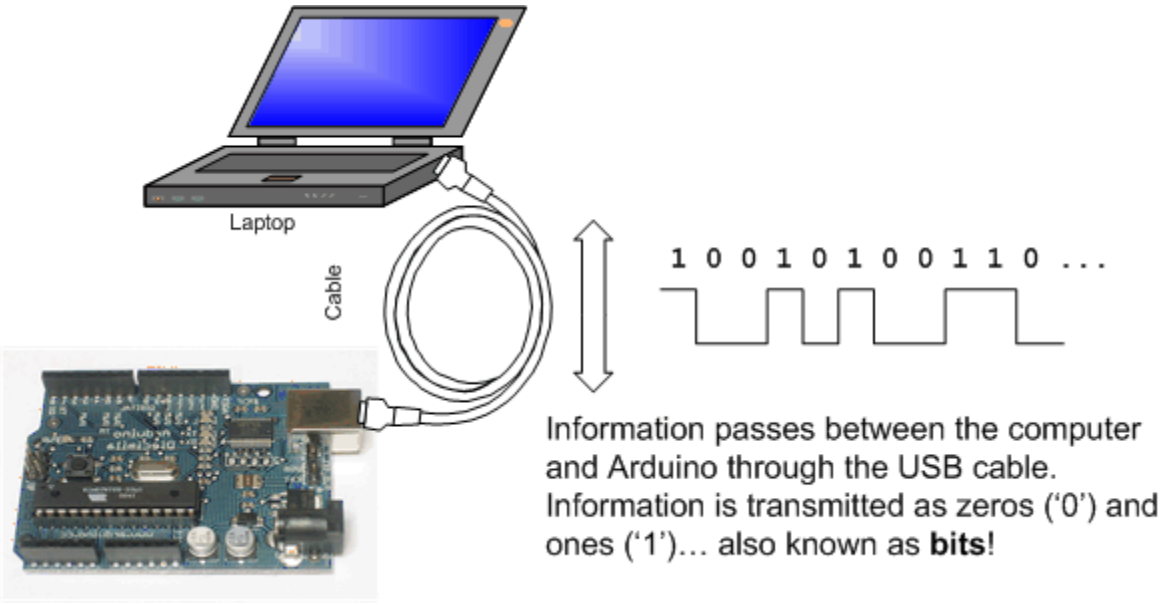
2. The Computer recognizes the board and suggests to install a driver automatically.

ATTENTION: Wait a second! Most of the time the computer can't find the driver automatically to install it. You might choose the driver by your own to install it. It can be found in the Arduino file under "Drivers" Control: At the control panel of the Computer you can find the "Device manager". If the board has been installed successfully, it should appear here. When the installation has failed, there is either nothing special to find or you will find an unknown USB device with a yellow exclamation mark. In this case: Click on the unknown device and choose "update USB driver". Now you can start over with the manual installation.

CONNECTING THE BOARD WITH COMPUTER

Serial data transfer is when we transfer data one bit at a time, one right after the other.

Information is passed back & forth between the computer and Arduino by, essentially, setting a pin high or low. Just like we used that technique to turn an LED on and off, we can also send data. One side sets the pin and the other reads it. It's a little like Morse code, where you can use *dits* and *dahs* to send messages by telegram. In this case, instead of a long cable, its only a few feet.



(Now, people who are all geeked-out will probably get angry at this point because I'm simplifying things. Well guess what, its an Arduino tutorial, not a OSI Physical Network Architecture tutorial.)

V. CONCLUSION:

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. It is very difficult to design ideal e-voting system which can allow security and privacy on the high level with no compromise. Future enhancements focused to design a system which can be easy to use and will provide security and privacy of votes on acceptable level by concentrating the authentication and

processing section .In case of online e-voting some authentication parameters like facial recognization, In case of offline e-voting some authentication parameters like, Finger Vein and iris matching detection can be done.

The online voting system requires investment in terminals, establishment of communication, integrating the databases, and a little education to the end users. But can achieve great advantages.1.Increasing voting percentage.2.Duplicate voting or tendering is reduced to nil.3.Reduced man power.4.It also reduces cost for the voter to reach his native polling station if he is staying away. This model is proposed by considering the current practices of election procedures. So it can be very easy for migrating to this system. The biometric authentication systems might identify the voter even without providing his identity numbers, but searching through the databases for his details with available biometric information reduces the efficiency of the system hence the voter is asked to introduce himself with his voterID/ Aadhar number/ Voter list number .Inclusion of Algorithms to detect security breaches should also be incorporated along with this model. Limitations of the model are that this requires the one stage election procedure. Or at least both the pooling stations should have the voting on the same day.In this module we only discussed the polling of votes only the next procedures of counting votes and results is not discussed.

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