Electronic Voting Machine Using Obstacle Sensor

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Abstract: India is the largest democratic country in the world. Active involvement of the public in the formation of government is essential aspect of a democratic government this is confirmed by on election. Conduction election in a populated country like India is a difficult task in this corona situation. In this corona situation the people were scared to connect with other people. So that many people using one voting machine is difficult to serve the people. During the election it may keep the social distance but all the people using only one voting machine. Without touching vote is not possible in traditional voting machine. The corona virus is spread by touching, in this situation voting through the buttons is not safe. To overcome this problem we can use obstacle sensor for replacement of buttons with the help of arduino. So the touching is not required for our votes and it give the safe zone for us.

Keywords: Electronic Voting Machines (EVMs), Arduino board, Obstacle sensor, LED, LCD display

I. INTRODUCTION

Voting is the responsible of the people who are the citizen of the Country and it also very important part of any democracy[1]. In traditional voting methods has the some problems like illegal voting, so overcome this problem now a days we use Electronic voting machines. It can reduce the illegal voting [10]. Because its circuit and structures are digitalized. The Electronic Voting Machine was developed and tested by the state- owned Electronics Corporation of India and Bharat Electronics in the 1990s. They were introduced in Indian elections between 1998 and 2001, in a phased manner. The electronic voting machines have been used in all general and state assembly elections of India since 2014[2][3].A candidate can know how many people from a polling station voted for him. This is a significant issue particularly if lop-sided votes for a candidate are cast in individual polling stations and the winning candidate might show favoritism or hold a grudge on specific areas. The Election commission of India has stated that the manufacturers of the EVMs have developed a totalling unit which can connect several balloting units and would display only the overall results from an Assembly or a Lok Sabha constituency instead of votes from individual polling stations. Once you press the button your vote is counted. But today we have the problem in touching things. Due to the Corona virus all countries are paralysed. The researchers are said this virus is spread by touching. So that people all are touching the buttons in voting machine is not safe. Anyone corona positive person touch the voting machine then the corona cases was increased. It is not good for the country and the environment. These all problems are solved this project. Instead of the buttons we use obstacle sensor E18D80.This obstacle sensing our finger in 5 cm distance and the touching was not required. The LCD display will helps to shows our vote is received or not .Once our vote has received it shows increments in votes and finally its shows who is the winner. It's really helps to handle the pandemic situation and helps to the government to avoid the spread of corona virus too.

II. ELECTRONIC VOTING MACHINE

Electronic voting technology intends for speed the counting of ballots, reduce the cost of paying staff to count votes manually and can provide improved accessibility for disabled voters [3]. Results can be reported and published faster. FIG.1 Shows model of EVM reduces the chance of doubtful or invalid votes.EVM provides a faster way than the conventional method of calculating votes. It preserves the effort and money of the election staff. It is an eco friendly approach because it does not involve the use of paper that helps save trees [4]. EVM is a cost-effective method because only one ballot paper or document is required in each voting place, and the transportation costs of EVM are also lower than the traditional ballot boxes. It can be carried or moved from one location to the next without any difficulty. In less time, more people will be able to cast votes. The data can be stored for future reference for a prolonged period.In this project, Smart Electronic Voting Machine Using Arduino, we have used four push buttons for four different candidates
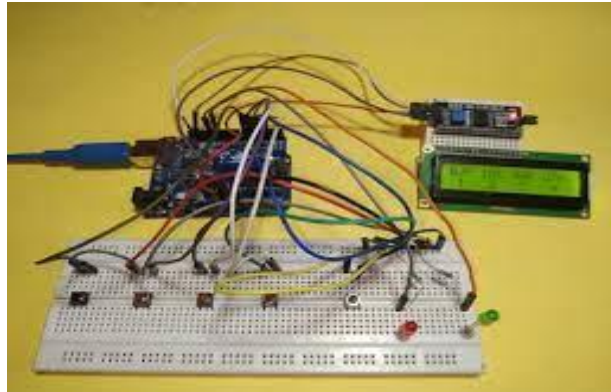
who are taking part in the election.

FIG.1 Electronic Voting Machine

We can increase the number of the candidate as per requirement. When any voter press any of four buttons then respecting voting value will increment by one each time. After the whole voting process, the result button can be pressed to display the result. Use reset button for the next voting process. Once as press reset button the count of the candidate will be "0"previous count is deleted in that electronic voting machine.

A. *Design of Electronic Voting Machine*

An EVM consists of two units, namely, Control Unit (CU) and Balloting Unit (BU) with a cable (5 mt. long) for connecting the both. A Balloting Unit caters upto 16 candidates. There are number of variants available for the EVMs. Time-to-time, it has evolved and has become more robust. In case of pre-2006 (M1) and post-2006 EVMs (M2), 4 (Four) Balloting Units can be cascaded together to accommodate upto a maximum of 64 candidates (including NOTA), which can be used with one Control Unit. In case of upgraded post-2006 EVMs (M3), 24 (Twenty Four) Balloting Units can be cascaded together catering to 384 candidates (including NOTA) which can be used with one Control Unit. It runs on a power pack (Battery) having 7.5 volts. In case of M3 EVM, power packs are inserted in 5th, 9th, 13th, 17th & 21st Balloting Units, if more than 4 BUs are connected to a Control Unit. On the right side of the BU along the candidates' vote button, digits 1 to 16 are embossed in Braille signage for guidance of visually impaired electors[5]. The design and application of EVMs in the elections are considered a significant achievement in global democracy. It has brought more transparency, swiftness, and acceptability in the system. It has also helped in creating a vast pool of election officials well versed in its use[9]. In its evolution, the Commission has issued series of instructions, frequently asked questions, and technical guidelines. During this period a number of judicial pronouncements has also helped in making the EVMs an integral component of our electoral system.

III. SENSOR BASED VOTING MACHINE

Fig 2 shows the electronic voting machine, but one different is the replacing the obstacle sensor instead of buttons. The obstacle sensor senses our finger in 5 cm distance .If we entering the voting booth the LCD display shows "t"[6]. Then we can put our finger in 5cm up to which party we want to vote. If the sensor was sensed nearby LED was blinked. After the LCD display shows the incremental of vote. If our vote is received then after 2 minute the LCD display will go for its default condition.
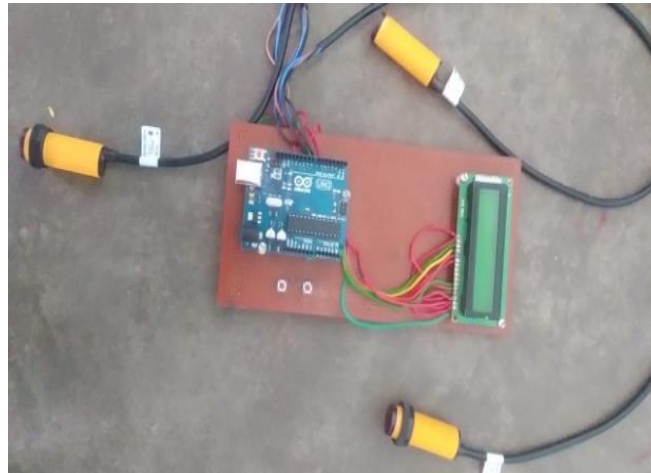
FIG 2. Sensor Based Voting Machine

A. *System Requirements for EVM Using Obstacle Sensor*

The following components required for sensor based EVM, such as
- Obstacle sensor(E18D8ONK)
- Battery
- Crystal Oscillator
- Voltage regulator
- Resister
- LED
- LCD Display

B. *Obstacle Sensor*

FIG3 shows the obstacle sensor. It's a very cheap, easy to assemble, easy to use infrared sensor with a long detection distance and has less interference by visible light [7]. The implementations of modulated IR signal immune the sensor to the interferences caused by the normal light of a light bulb or the sun light. This sensor has a screw driver adjustment to set the appropriate detected distance to make it useful in many applications, and then gives a digital output when it senses something within that range. This sensor does not measure a distance value. It can be used for collision avoidance robot and machine automation. The sensor provides a non-contact detection.

FIG 3.Obstacle Sensor

- Red wire : +5V
- Green wire : GND
- Yellow wire : DIGITAL OUTPUT

C. *Battery*

A battery works on the oxidation and reduction reaction of an electrolyte with metals. As a result of the oxidation reaction, one electrode gets negatively charged called cathode and due to the reduction reaction, another electrode gets positively charged called anode.

D. *Crystal Ocillator*

FIG 4. Crystal Oscillator

FIG 4 .Shows a crystal oscillator. A crystal oscillator is an electronic oscillator circuit that uses the mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a constant frequency.

E.*Voltage Regulator*

Voltage regulators are very common in electronic circuits. They provide a constant output voltage for a varied input voltage. In our case the 7805 IC is an voltage regulator IC that finds its application in most of the projects. The name 7805 signifies two meaning, "78" means that it is a positive voltage regulator and "05" means that it provides 5V as output. So our 7805 will provide a +5V output voltage. The output current of this IC can go up to 1.5A. But, the IC suffers from heavy heat loss hence a Heat sink is recommended for projects that consume more current.

F. *Light Emitting Diode*

In the simplest terms, a light-emitting diode (LED) is a semiconductor device that emits light when an electric current is passed through it. Light is produced when the particles that carry the current (known as electrons and holes) combine together within the semiconductor material. Since light is generated within the solid semiconductor material, LEDs are described as solid-state devices. The term solid-state lighting, which also encompasses organic LEDs (OLEDs), distinguishes this lighting technology from other sources that use heated filaments.

G. *LCD Disply*

LCDs were a big leap in terms of the technology they replaced, which include light-emitting diode (LED) and gas-plasma displays. LCDs allowed displays to be much thinner than cathode ray tube technology. LCDs consume much less power than LED and gas-display displays because they work on the principle of blocking light rather than emitting it. Where an LED emits light, the liquid crystal in an LCD produces an image using a backlight.

IV. BLOCK DIAGRAM OF SENSOR BASED VOTING MACHINE

FIG 5.Shows the block diagram of sensor based Voting machine using arduino, we have used four obstacle sensor for four different candidates who are taking part in the election [8]. We can increase the number of the candidate as per requirement. When any voter finger is sensed respecting voting value will increment by one each time. After the whole voting process, the result button can be pressed to display the result.
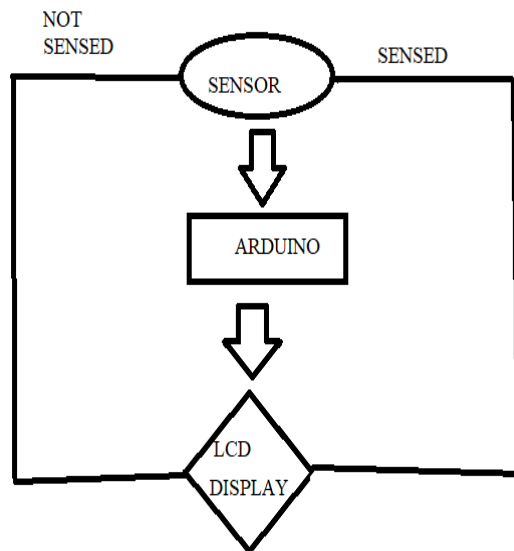
FIG 5. Block Diagram of Sensor Based   Voting Machine
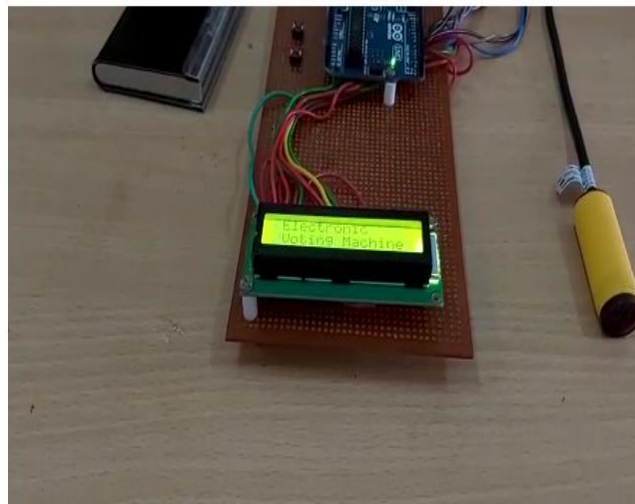
V. RESULT AND DISCUSSION

FIG 6. Hardware Model of Based Voting Machine

FIG 6. Shows the hardware model of the sensor based voting machine ON and OFF buttons is there in the arduino board. When the power supply is given in the arduino board ,the power button is pressed the LCD display shows the "ELECTRONIC VOTING MACHINE "after few seconds its shows "A B C D". Then you give our vote through the sensor. The sensor works as the button. So the vote will be counted then the LCD display shows the increment of votes in respected party. The LED Display shows number of candidate's .The LCD Display shows the result after the voting process was done. This project is helpful to handle this pandemic situation. It can overcome the fear about Corona spread to a people during the election period. This project will help the country to away from the corona spread, so that we can implementing this project .In future this project is give the big support of the government to product the people to the corona suspects.

A. *Future Scope*

We have planned to add the

- SMS system to the voting machine and the illegal vote is blocked though our mobile.
- To avoiding the voting fraud image processing Techniques included.
- Finger print system will be introduced in the voting through the mobile phones.
- Swipe machine introduced in voting system using aadhar card.
- Face recognition system was introduced for avoiding fraud.

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