SMS Based Remote Voting System using Cell Phone

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ABSTRACT

E-voting systems have the potential to improve traditional voting system by providing added security, efficient and flexibility to the voters. There are several electronic machines but do not have any security features. An E-voting, Electronic voting systems, also known as Personal Response Systems. To minimize the disadvantages of generic e-voting, we propose a method in which a voter uses its own GSM Mobile phone without a special registration for a vote. The E-voting promises the possibility of convenient, easy and safe way to capture and count the votes in an election.

KEYWORDS - Electronic voting, E-voting, Robustness, Mobile SMS.

1. INTRODUCTION

The voting process begins with persons manually going to an election office showing proof address to polling station's officer and then a national identification card (Id) will be issued for getting the authentication during the actual process of voting at the polling station. With this, a voters' list will be generated for each constituency. This is unique list which is provided to each polling station then Each and every voters will then have to go to a polling station to vote where they believe that their names are made or to be available and if so after identification with their Id, they will give their vote by giving a mark against the political party symbol of their choice.

Via SMS: Each voter can vote by sending an SMS using their mobile phone or any kind of mobile hand set to the system through the "Mobile Switch Center". these processes are often lengthy, tedious, inaccurate, and risky and unsecure and in some cases the final count may get unexpected and end up in court cases also in case of without using sms base voting system. This manual process leaves scope for errors to creep in, political dishonesty and political fraud, political war which is seen through the voicing of their feelings by people in the media in many countries using these systems. In countries that are developed good enough like in India, electronic voting is made possible and this technique encapsulates both electronic means of casting of votes and also counting of votes with accuracy. It cleared up lots of problems and barriers faced by the paper based voting process explained in above paragraph. But problems of long lines of voters on the day of voting to give their votes is still occur and consequently not enough persons come for voting thereby neglecting their civil rights. Another important reason is impersonation, voting by somebody before the actual person arrives at the polling station for voting to use his/her rights

1.1 Evaluation of Voting Equipment:

Below are the main voting techniques which are used generally.

(1) Paper-based voting:

Each ballot consists of two sides. One of them with white background is positive and the other with gray background is negative. There is three bubbles in each of the sides for each candidate and few of them are prefilled randomly. Number of positive and negative prefilled bubbles for each candidate in a package must be a fixed number. There is also a long number on bottom of each side of the ballot as its ID. It helps voter to recognize his ballot from his receipt after election.

(2) Lever voting machine:
Lever machine is equipment, and each lever is assigned for respective candidate. The voter pulls the lever to poll for his favorite candidate and this kind of voting machine can count up the ballots automatically. Because its interface is not user-friendly enough, giving some training to voters is necessary.

(3) Direct recording electronic voting machine:
This type of voting machine, which is abbreviated to DRE, integrates with keyboard, touch screen, or buttons for the voter press to poll. Some of them lay in voting records and counting the votes is very quickly. But the other DRE without keep voting records are doubted about its accuracy.

(**4) Punch card**
The voter uses metallic hole-punch to punch a hole on the blank ballot. It can count votes automatically; voter's perforation should be completed because if the voter's perforation is incomplete, the result is probably determined wrongfully.

(5) Optical voting machine:
After each voter filled a circle correspond to their favorite candidate on the blank ballot, this machine take the darkest mark on each ballot for the vote then computes the total result. This kind of machine counts up ballots rapidly. However, if the voter fills over the circle, it will lead to the error result of optical scan.

1.2 Effectiveness of E-voting Among Different countries: In last few years several countries apply or implement this e-voting system for their official election. Below are the some countries.

(1) United States Of America:
United States government use election system in many different ways, in other words, each state can choose the suitable way to hold elections independently. Because there are some debates about E-voting, such as some vote casts were not counted, or election system crashed during the Election Day because it is most often occur in each election.

(2) Japan:
Japan also implement E-voting system for local election in 2002, such as mayor and councilor election in Okayama prefecture in 2002; mayor election of Hiroshima city in 2003; and mayor election of Kyoto city in 2004. So most of people said in a survey that e-voting is trusted but more than 50 percent people said that both paper based and e-voting are same And the reason behind they don't trust paper based voting , is they thought that paper is don't fold properly.

(3) Belgium
In 2003 Belgium held the federal parliament election officially. In order to assist voters in being familiar with E-voting system, electoral center held short-term training. In a survey it is said that e-voting system is enough efficient than paper based voting.

(4) India:
In India, EVM stands for electronic voting machine is developed in 1980 by Mr. M.B. Haneefa . But it was commissioned in 1989 by election commission of India.   .

1.3 Advantage of SMS based Voting System:
1.3.1 Reduced cost:

In traditional voting system Instead of having thousands of polling stations scattered all over the country which will involve enormous logistics to is deployed deploy, the only 'polling stations' will be one counting center per service provider where the election polling software system, this makes it easier to monitor.

1.3.2 Increased participation and voting options:
People can vote from home or offices so no need of public holiday to enable people vote. Participation will be Higher because people do not have to leave their home and stand on long endless queues. Participation will generally be higher than ever before. Many people do not vote just because of the stress involved.

1.3.3 Reduced Risk:
The risks associated with road travel such as road traffic accidents and late arrival of electoral resources due to unforeseen delays during deployment of polling stations will be avoided.

1.3.4 Reduced time Consumption:
Due to its electronic nature, the results of the Poling will be available immediately after voting with the GSM sms voting.
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2. System Architecture
Our implementation uses c language with mobile phones. Furthermore, we utilize mobile for user to use SMS to send message to center. The E-voting system can divide into two parts: SIM card, each user can take from center who can vote by sending sms and the second is eeprom to store sms. .
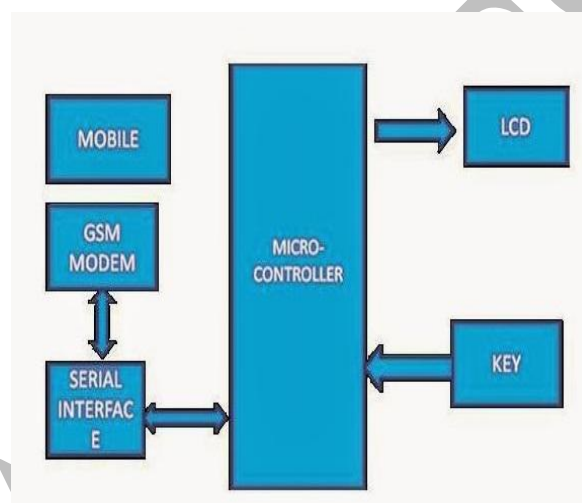
System Architecture

2.1 SMS server
Is application software which is used for receiving messages (SMS). It listens for incoming messages to arrive, processes the message if it's in a valid format. Note the processing of arrived messages depends on the application which will be discussed later. I am going to explain the following things:
Communication Port Settings
1. Receive Incoming Message
2. Read All Messages (Sent by the users)
3. Delete Messages (One or All)
4. I have used the GSM Comm Library for Sending and Receiving SMS. You require a GSM modem or phone for sending an SMS.

2.1.1 Communication Port Settings
Comm Setting class is used for storing comm port settings

```
void read_text()
{
ABC:

portc.f0=1;
                    delay_ms(1000);
                 portc.f0=0;
for(j=0;j<=15;j++)
                    {
                    arr[j]=32;
                    b[j]=32;

                    }
uart1_write_text(am1);
uart1_write_text("F");
uart1_write_text(am2);
uart1_write(13);
delay_ms(300);
uart1_write_text(am1);
uart1_write_text("R");
uart1_write_text(am2);
uart1_write(13);
```

Comm is an object of type GSM Comm Main which is required for sending and receiving messages. We have to set the Comm port, Baud rate and time out for our comm object of type GSM Comm Main. Then try to open with the above settings. We can test the Comm port settings by clicking on the Test button after selecting the Comm port, baud rate and Time out. Sometimes if the comm port is unable to open, you will get a message "No phone connected". This is mainly due to Baud rate settings. Change the baud rate and check again by clicking the Test button until you get a message "Successfully connected to the phone." Before creating a GSM Comm object with settings, we need to validate the port number, baud rate and Timeout.

The Enter New Settings() does validation, returns true if valid, and will invoke Set Data(port, baud, timeout)for comm setting. The following block of code will try to connect. If any problem occurs "Phone not connected" message appears and you can either retry by clicking on the Retry button or else Cancel.

### 2.1.2 Receive Incoming Message
We are going to register the following events for GSM Comm object comm.

1. Phone Connected This event is invoked when you try to open the Comm port. The event handler for Phone connected is comm_ Phone Connected which will invoke On Phone Connection Change (bool connected) wit h the help of Delegate Connected Handler.
2. Message Received This event is invoked when a message arrives at the GSM phone. We will register with Message Received Event Handler. When the incoming message arrives, the comm_Message Received method will be invoked which in turn calls the Message Received () method in order to process the unread message. GSM Comm object comm has a method Read Messages which will be used for reading messages. It accepts the following parameters phone status (All, Received Read, Received Unread, Stored Sent, and Stored Unsent) and storage type: SIM memory or Phone memory.

The above code will read all unread messages from SIM memory. The method Show Message is used for displaying the read message. The message may be a status report, stored message sent/un sent, or a received message.

3. System Implementation
4-1 First step each voter must receive SIM card from center, it is useless after message where it was sent. 4-2 server calculates and counts each millisecond and send data into database.
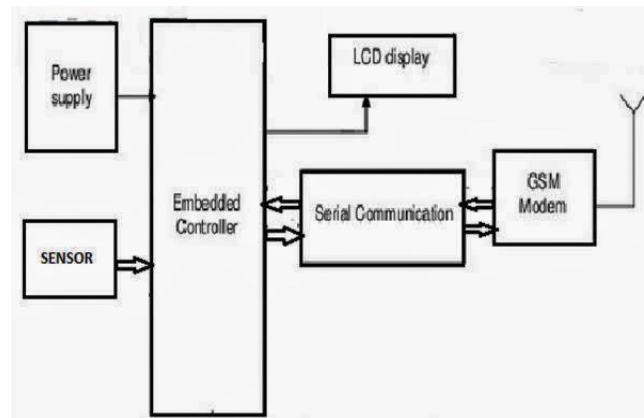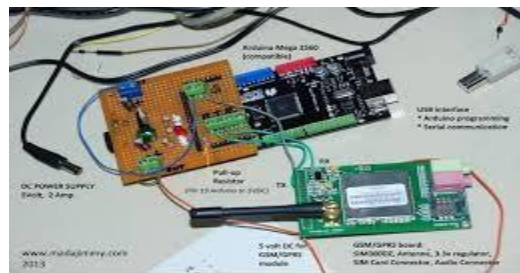
System Diagram

CONCLUSION

E-Voting System Using GSM Mobile SMS is an excellent program to receive SMS messages this is the best solution. The manual voting process can be very tedious, prone to electoral fraud and costly. The time that is been consumed and the resources often times runs into expensive projects. With all this, security is compromised because of the inability of all the human factors to provide efficient security needed for robust operation of the system.

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