Interactive Voice Response Based Voting System

Desale Aditee, Lambe Gayatri, Kothawade Dhanashree, Sayyad Jasmin
Department of Computer Engineering, NDMVPS's KBTCOE,
Udoji Maratha Boarding Campus, Near Pumping Station Gangapur road Nashik-13
Savitribai Phule Pune University
aditidesale123@gmail.com, gaytri16493@gmail.com',
dhanukothawade@gmail.com,jassisayyad@gmail.com

Abstract:- Voting is now a critical event in the state. So that it is necessary to give a proper system to the government. Now a days, for voting people are going out to the election center & standing in a line, here we will be able to vote through our cell phone or landline . In this project a phone connected to the voting system, will decode the DTMF pulses sent by another phone belonging to the voter. A database will keep a record of the voter's information & a 2nd database will have information about the election parties. The voter will call the toll free number assigned to the IVRS voting system. Then the voter will enter his voting number & his password. If he/she is authenticated then he/she will be allowed to vote. If the person has already voted then his record will be updated as "voted" in the database. Thus in this way voting can be done from anywhere, anytime. Using the voting card number we can find out the information of the voter ie (name, city, state etc.). And finally an administrator who has the authorization to access the database (voting system), will be able to see the report of the number of votes per party.

Keywords: *IVRS(Interactive Voice Response System), DTMF(Dual Tone Multi-Frequency)*

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1. INTRODUCTION

In developing nations like India, voice based telecommunication services are one of the most appropriate medium for information exchange as they overcome prevalent low literacy rate. Elections allow the people choose their representatives and express their preferences for how they will be governed. Naturally, the integrity of the election process is directly proportional to the integrity of democracy itself. The election system must be sufficiently sensiable to withstand a variety of dishonest behaviours and must be sufficiently transparent that voters and candidates can accept the results of election. However, voice based Interactive Voice Response (IVR) systems are still not exploited to their full potential and are commonly considered as frustrating to use. We work on a real world experiment to investigate the usability issues of a voice based system. Using IVRS and DTMF based voting system, we can save the time required for going to voting booth. This system is location freeable, so we can vote from anywhere in the country. In this system, it does not allow even administrator to log in during voting session, so corruption is not possible. We can vote through the toll free number. Hence this system is free of cost. It is used for reducing errors in voting and make the voting easier. It does not allow the person to vote who is already voted. Using this system, it is easier to count and display the voting result. Using IVRS technology citizen can call on toll free number and by using DTMF technology authenticate himself using his voting number and give his vote using his mobile keypad

2. LITERATURE SERVEY

Telecommunication services are a vital medium for information exchange and communication. They have a huge impact in developing countries, where reach of the Internet connection is relatively low compared to develop countries. At present, there are more than 5 billion mobile phone users compared to 2 billion Internet users in the entire world. Thus in developing regions, a phone based medium has much more reach ability than the Internet. It has always been a difficult task for the election commission to conduct free and fair polls in our country, have the largest democracy in the world. In our nation crore of rupees have been spent on this to make sure that the elections are riot free.Using IVRS and DTMF technology we can avoid rigging and enhance the accuracy and an Interactive Voice Response or IVR provides interactive communication between human and computer[1]. The human interface is usually performed on a phone keypad or a DTMF (Dual-Tone Multi-Frequency). IVR is a voice based system that is accessible through any mobile or land-line phone. IVR system has been mostly used in industry for call automation while providing customers service[3]. It also argued that IVR is easier to use when compared to the Internet, as Internet use requires certain skills and training. In comparison to traditional information dissemination media like Television or Radio, communication traditional media is passive whereas IVR enables interactivity for active communication. DTMF stands for Dual Tone - Multi Frequency and it is the basis for telephone system[2].

3. PROBLEM DEFINITION

If we have to cast our vote we have to physically visit at the polling booth and then cast our vote. But if a person is out of town or is unable to visit the polling centre due to any reason then he is deprived of fundamental right of voting. So that we are using IVRS technology to overcome this problem. From this application we can call to system so that everyone can vote from anywhere.

4. DESIGN GOAL

The main stress on election committee being the protection of ballot boxes EVM(Electronic voting machine).On the day of counting votes, higher security is needed. People have to stand in lengthy queues, in hot sun , sometimes in rains. Older people have to face more troubles. Remote area peoples have to travel by boats, horses, bulls and even elephants. These factors reduce the voting rate. Hence, the mobile communication the way for new generation of voting. Hence, we can expect "GOOD DEMOCRACY" can flourish in the country.

5. BLOCK DIAGRAM

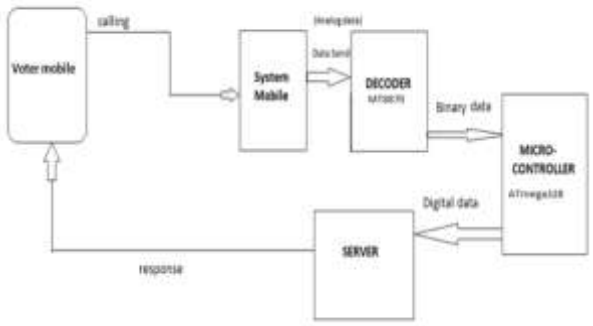

Fig.5.1:Block Diagram of IVRS Technology

In telephony, interactive voice response, or IVR, is a phone technology that allows a computer to detect voice and touch tones using a normal phone call. The IVR system can respond with pre-recorded or dynamically generated audio to further direct callers on how to proceed. IVR systems can be used to control almost any function where the interface can be broken down into a series of simple menu choices. When voter(he/she) want to vote for the respected candidate, but at the present time the respected person is not present at the voting place. Then he call from his/her mobile phone to the IVR system. And then as shown n the diagram the process begins. Voter calls to the system mobile and the mobile is connected to the decoder IC. Then decoder converts this signal from analog to binary data. This binary O/P of decoder is given to the Microcontroller as I/P. Microcontroller converts binary data into the digital one. Decoder and Microcontroller both are implemented on a small circuit board. This circuit board is connected to the admin's system. Then as per the voter choice the he/she gets the response back. Once constructed IVR systems generally scale well to handle large call volumes. A caller dials a telephone number that is answered by an IVR system. The IVR system executes an application which is tied to the number dialled. As part of the application, pre-recorded audio files explain the options available to the caller. The caller is given the choice to select options using DTMF tones or spoken word. Speech recognition is normally used to carry out more complex transactions and simplifies the application menu structure.

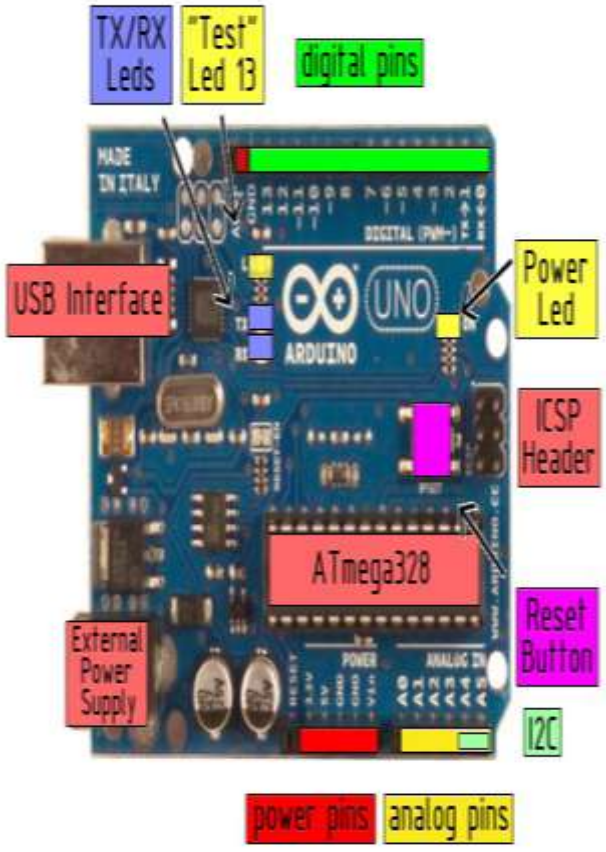

Fig.5.2:ARDUINO circuit

The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and Vin pin headers of the

POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5Vpin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

The power pins are as follows:- **VIN:** The input voltage to the Arduino board when it's using an external power source.

Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data.

External Interrupts: 2 and 3. These pins can be configured to trigger an interrupt on a low value, arising or falling edge, or a change in value.

PWM: 3, 5, 6, 9, 10, and 11. Provide 8-bit PWM output

LED: 13. There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off .power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.

5V: The regulated power supply used to power the microcontroller and other components on the board. This can come either from VIN via an on-board regulator, or be supplied by USB or another regulated 5V supply.

3V3: A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50 mA.

GND: Ground pins.

Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the corresponding pins of the ATmega8U2 USB-to-TTL Serial chip .

PWM: 3, 5, 6, 9, 10, and 11. Provide 8-bit PWM output .

LED: 13: There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.

AREF: Reference voltage for the analog inputs.

Reset.: Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.[1]

6. MODULE FLOW DIAGRAM

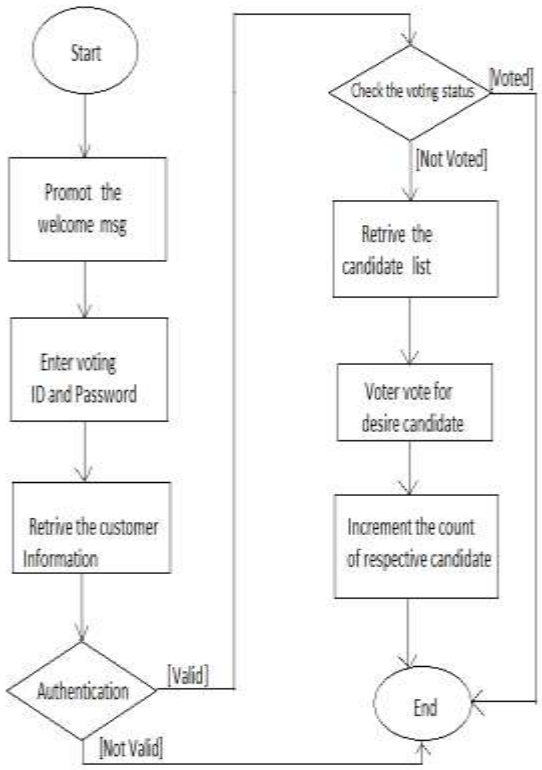

Fig.6.1**:Detail Architecture of IVRS based voting system**

ADVANTAGES

1. Duplicate voting banned
2. Secures System
3. Instance result of voting
4. Time Independent
5. Location Independent
6. Admin can view statistic reports
7. Time saving

APPLICATIONS

- Our system is itself is a application
- Our system is usable for all type of votings e.g. college level voting,etc.

CONCLUSION

By using IVRS and DTMF based voting system, voter can vote through this system and can give vote to the candidate. The voting result will be display suddenly after the end of the voting period. That result can be display in the form of bar chart or pie chart which reduces the human efforts and take less time.

PROJECT SCOPE

In today's world everything needs to be done from the comfort of every person's home or office. This application is prepared in such a way that users can be easily accessed through telephones. Due to this project the traditional manual way of handling the customers queries will be handled in a more technological and unique way. This type of system performs operations similar to that of a human telephone operator. The purpose of the project is its relevance to the field of telephony and its cost that will be bearable even by a small concern due to its simpler and easily available components.

FUTURE SCOPE

Now a days everything needs to be done from the comfort of every person's home or office. This application is prepared in such a way that user can be easily accessed it through telephones. In the same way our project's aim is to provide the entire information to the user at the tip of his fingers. Due to this project the traditional way of handling the customers problems will be handled in a more technological and unique way. This type of system performs operations similar to that of a human telephone operator. The scope of the project is its relevance to the field of telephony and its cost that will be bearable even by a small concern due to its simpler and easily available components.

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