

Wireless e-Notice Board with Text to Audio Conversion

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Abstract—This paper describes the improvements that can be brought in the current method of displaying a notice by use of wireless transmission techniques. The paper puts forth a display device which is controlled through an arduino microcontroller. The arduino receives input in the form of text from a SIM-300 GSM module from an authorized user. The text is displayed on Video Graphics Array (VGA) display device by interfacing the arduino controller with MicroVGA. This text can also be made available in audio form by using a text to speech converter like EMIC2

Index Terms—Arduino,GSM,VGA,EMI2,text to speech conversion

I. INTRODUCTION

A notice board is an important medium of communicating information to many people at the same time .It is widely used in educational institutes to display notices regarding examinations, results, schedules and other curricular and extra-curricular activities. Apart from schools and colleges a notice board has applications in government and non-government organizations, shopping malls, railway stations, bus-stops and parks. The notice boards that had been in use till now, required a certain individual to stick the notice on the board. But this process of sticking notices on a day-to-day basis was time consuming and tedious .Also it led to wastage of paper. In order to overcome these drawbacks of the traditional notice board, the concept of wireless notice board was introduced. In a wireless notice board, an authorized person can send a message from his mobile phone irrespective of his location from the display device. The GSM technology is responsible for the transmission of message from the phone .The GSM modem is interfaced with an arduino controller. This controller is connected to a VGA display device via a MicroVGA. The VGA display which is of the size of a desktop screen displays the information. This displayed data is in the form of text. The text format is not convenient for the visually impaired, blind and elderly people. Thus to cater to the needs of such people there is a facility of text to audio conversion included in this system. The message that was transmitted by a user in the form of text can be converted to speech by using a text to speech converter like the EMIC2. This component converts the input text to audio output. This type of wireless notice is thus useful as it displays a notice immediately without any delay and saves a considerable amount of time.

II. WHY ARDUINO ?

Arduino board actually is a specially designed circuit board for programming and prototyping with Atmel microcontrollers. The nice thing about the Arduino board is that it is relatively cheap, plugs straight into a computer's USB port, main advantage of using arduino in this project is it is easily compatible with zigbee module, GSM module as well as LCD screen by using VGA cable.

III. TEXT TRANSMISSION

GSM SIM 300 used in this project can operate with any network provider. It is highly flexible with any controller. In text transmission process first required message is transmitted from user. This transmitted message is received by using GSM SIM 300 on receiver end. Content of received message is converted in to hexadecimal numbers of their ASCII value and then to stream of bits. This stream of bits transmitted to the arduino by serial ports. This received stream of bits is then converted into the hexadecimal no and then to the actual message. Message generated in the arduino is displayed on the LCD screen by using VGA cable.

IV. TEXT TO SPEECH CONVERSION

The arduino is interfaced with text to speech converters like EMIC2 or SpeakjetTTS256 to convert stored messages in audio format. The input and output of both the converters are same and they have a similar functioning. The audio format is available at the speaker connected at output of EMIC2 or SpeakjetTTS256. But EMIC2 is preferred because SpeakjetTTS256 contains over 600 rules for pronouncing English text and has 5% error rate in most sentences that is it will mispronounce some words.

The Emic-2 was designed by Parallax in conjunction with Grand Idea Studio to make voice synthesis a total no-brainer. Simply connect the Emic-2 to a 5VDC power supply and send it a stream of serial text at 9600bps. The module contains all of the smarts necessary to parse the text into phonemes and then generate natural sounding speech , all your controller has to do is send serial strings. The command set for the module is entirely comprised of ASCII-based printable characters and allows you to change languages (English or Spanish), change between 9 different voices and even control speech parameters on the fly. The

module also communicates back to your system so one can get settings, version information and even “finished speaking” flags back from the board. The only disadvantage of EMIC-2 is its high cost i.e. \$59.95 whereas the cost of Speakjet TTS256 is \$24.95.

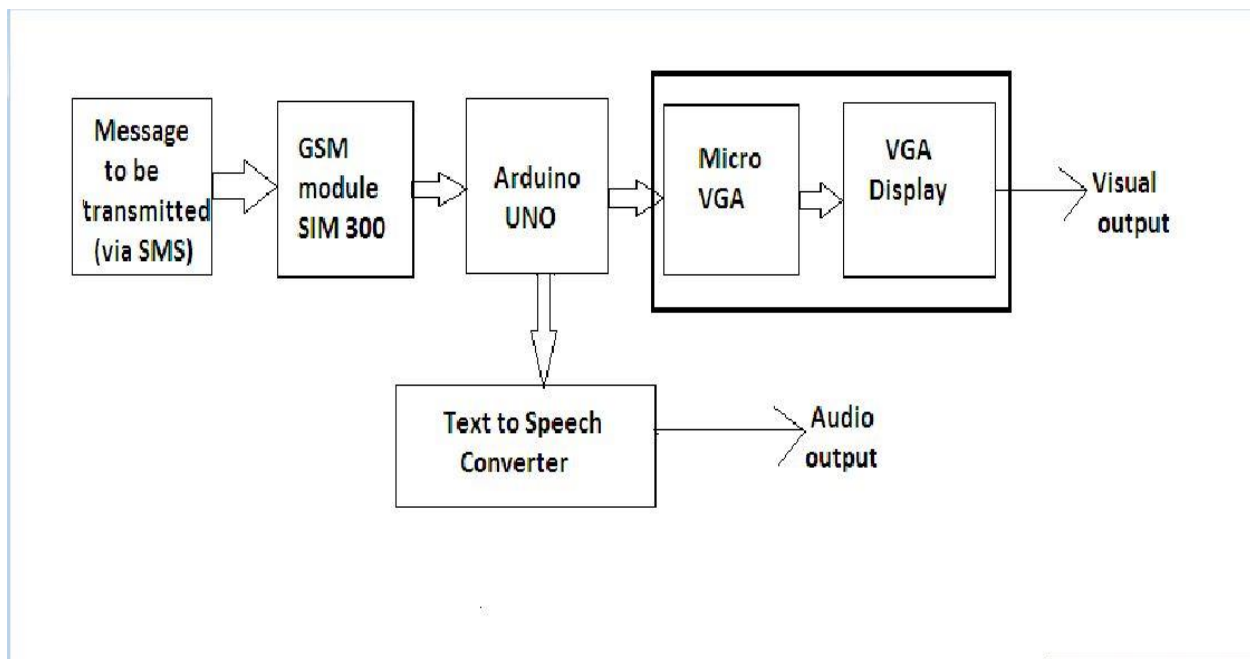


Figure1:Block diagram of wireless notice board with text to speech conversion

V. CONCLUSION

In this paper, we have suggested methods of displaying data on a VGA display device in text format, and at output of EMIC2 in audio form. This data is transmitted from authorized user through wireless transmission using GSM Modem and controlled at the receiving end with Arduino controller. The proposed system can change manual system of notice display at professional institutions, offices and railway stations. It is a more effective method at the time of emergencies when manual change of notices is not possible. In future the project can be improvised by making database of all transmitted messages and programming the controller so that display is changed automatically after a stipulated time.

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