



E-Voice Based Notice Board Using ATmega328

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ABSTRACT: The paper proposes an inventive approach of voice recognition notice board display which is used to display various notices without the message being typed manually. Using this, the user will dictate the message via an android phone which then the voice message is converted into a text message via an application i.e. “voice command”. The text message is then transmitted via Bluetooth to the microcontroller (ATmega328) and is displayed on the LED screen. The inventive system can be used in different places comprising government bodies, educative institutions, travel agencies etc. for displaying pass messages on the display instantaneously by dictating the message rather than being typed each time. Hence, voice based notice board has many advantages in major number of organizations. We have implemented this project by giving a delay (24 Hours) to avoid the workload of giving inputs at each and every time.

KEYWORDS: ATmega328, Bluetooth Module, Android Application, C-Sharp.

I. INTRODUCTION

In this era the leading edge of world in connectivity people demand simple and time saves method access information. Either by means of internet or television, people wants to be notified and be updated with the current matters occurring throughout the globe. Notice board is very primitive method used in institutions or public business places like bus travel stations, colleges, malls etc.

A specific person is required to take care of the notice displays in the conventional method. Bundles of paper are being used and this is followed by wastage of paper by the management. To meet the demands of the huge amount of paper causes immense deforestation hence, providing a pathway to global warming. The primary goal of this work is to create a smart notice board which can operate in a well-organized manner with respect to date and time which will help the user to constantly keep track of the notice board every time he uses the system and to convey the information more productivity. It works on a low-cost embedded device such as ATmega328 microcontroller, and for voice-recognition excellent solution used here is the developed Android App. We have used Bluetooth Module for communication. The host can speak out the message at any time within the Bluetooth Range. The text message can be displayed within fewer seconds. We have provided a delay to the message that displays the text message for the given Time period (i.e. 24 hours) and vanishes after the fulfillment of the time limit.

Speech Recognition is achieved by developing an App. The application is modified to input messages in English. Speech synthesizer employs a technique based on Hidden Markov Models. It is currently most reliable and flexible approach to speech recognition. The process entails the conversion an audible speech into a collection of words is accomplished by software components. The specialties of Android speech engine include:

- Highly flexible and reliable.
- Used in real world practical application.
- Entire sentence can be recognized and manipulated.

II. LITERATURE SURVEY

R.G.Gupta et al.:

In this paper it is primarily being focused on designing an electronic notice board for different sectors like schools. The notice can be sent wirelessly within a second. This creative technique can be used to display the latest information. The contents of notice can be changed anytime. The idea was to design an SMS based automatic display board which can reconstruct the current used programmable electronic display. It has been proposed to design a display board that has been programmed via a licensed mobile phone. The message to be displayed was transferred through an SMS from a transmitter. The microcontroller receives the SMS and confirms the sent Mobile Identification.



Ramchandra K. Gurav et.al:

In this paper, it was focused on GSM (Global System for Mobile) technology that designed a modern notice board, “Wireless Notice Board using a GSM System” it has a wireless module which sends the message wirelessly with the help of GSM module. Means user or designated person can equip to send the message from any place and the message is displayed on LCD display. In addition, this message is also sent to every one whose number is stored in memory. Everyone receives the message personally. Whenever a new message is received it gives an indication by the buzzer. As an engineer’s main intention through this project is to make life simple using this technology. This project had a detached notice board with a GSM modem at the receiver end. So if the user had to display any message, he could convey the information via SMS and consequently update the LCD display subsequently.

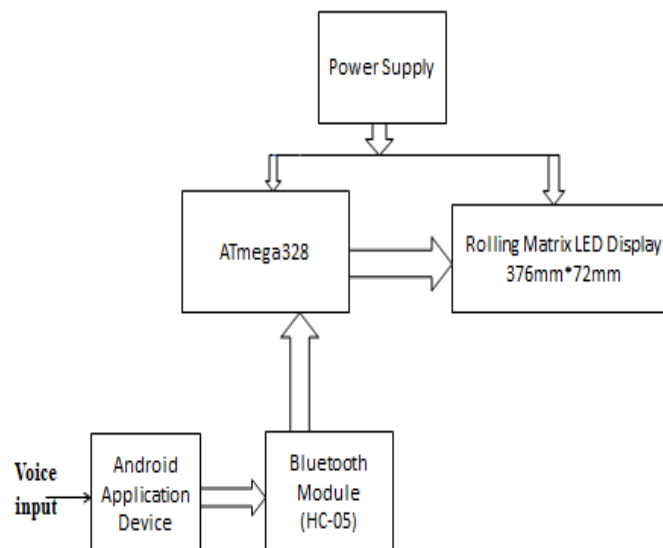
A.Meenachi et.al:

In this paper directing on Wireless E-Notice Board Using Wi-Fi and Bluetooth Technology. This document put forth an innovative idea of communicating the message to the people using a wireless electronic board which was integrated with the help of the Wi-Fi technology. This is being used in conveying any message almost instantaneously without any delay just by sending an SMS that is better and reliable than the old regular method of communicating the message on notice board. This advanced modern method can be used in huge institutions, several busy places, malls or in construction areas to increase the reliability of the security system and also alert the public in case of any emergency breaks out and avoid any devastating accidents. Using Wi-Fi module and Bluetooth module to showcase the message onto the display board.

III. METHODOLOGY

Here the announcer/administrator may speak out the message through his/her android phone, the message is then transferred wirelessly and displayed on the screen. To demonstrate this concept we here use rolling display to display messages. The rolling display is interfaced with a microcontroller (ATmega328). We also use a Bluetooth receiver to get the android transmitted messages, decode them and send them to the microcontroller for further processing. The microcontroller then displays the message on the rolling display. The entire circuit is powered by a 12V supply through a transformer.

A.BLOCK DIAGRAM



B.ATMEGA328

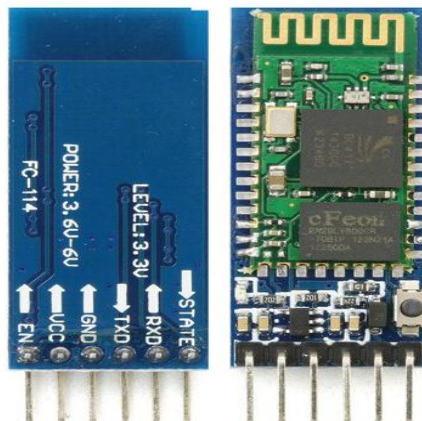
A low cost programmed microcontroller (ATmega328) is used at the receiver to receive and display messages in the Rolling display. Instead of sticking notices manually on the notice board, the authorized user can speak and the verbalized voice is sent through a Bluetooth and displayed on the Rolling display. ATmega328 includes following Technical features:



- It has an EEPROM memory of 1KB and its SRAM memory is of 2KB.
- It has 8 Pin for ADC operations, which all combines to form PortA (PA0 – PA7).
- It operates ranging from 3.3V to 5.5V but normally we use 5V as a standard.

C. BLUETOOTH MODULE (HC-05)

Bluetooth is one of the most efficient short-distance wireless communication devices in our daily lives. Bluetooth HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. It is used for the transmission of data from android device to microcontroller. The Bluetooth module HC-05 is a MASTER/SLAVE module. By default the factory setting is SLAVE. The Role of the module (Master or Slave) can be configured only by AT COMMANDS. The slave modules cannot initiate a connection to another Bluetooth device, but can accept connections. Master module can initiate a connection to other devices.



Technical Features:

- Operating Voltage: 4V to 6V (Typically +5V)
- Operating Current: 30mA
- Range: <100m
- The HC-05 Bluetooth Module has 6 pins. They are as follows:
 - ENABLE
 - VCC
 - GND
 - TXD & RXD
 - State
 - Button Switch

D. SCROLLING MATRIX LED DISPLAY

A monochrome (single color) LED dot matrix display is used for displaying the Characters and Symbols which is interface with microcontroller. The dimension of rolling display is **376mm*72mm**. The complete Rolling display is made up of 6 blocks of individual matrix LEDs.



A single matrix display is made up of 8 by 8 LEDs. It means 8 rows and 8 columns of LED which makes it 64 LEDs in one block. So in total, there are 48 columns and 8 rows of LEDs. All LEDs are Red in color.

E.ANDROID

Voice recognition is done in the Android application. The user has to install this Android application on his/her smartphone or tablet. Then the user has to give voice commands to this android app. The android app then passes these commands to the microcontroller using wireless communication.



Android app on smartphone or tablet will be used for speech recognition.

F.C-SHARP(C#)

It is an object-oriented programming language created by Microsoft that runs on the .NET Framework. C# allows code to be reused, lowering development costs. ATmega328 allowing programmers to work in C# using Microsoft Visual Studio. Step-by-step debugging can be very useful to trace errors.



Using the .Net framework it is quick to write a test program to just try stuff out before writing the proper code. The code of the program is easily understandable; In the program, first of all we include library for LED display and then we defines data and control pins for LED and some variables.

IV. RESULT

The unifying idea of this project is that when the user speaks to the android which incorporates an app that converts speech-to-text, the text messages will be displayed on the LED display.



- The proposed method was successfully designed and the required data was displayed on the LED.
- The Serial data is sent form the android application and the data is received by the Bluetooth receiver that is interfaced to the microcontroller.

V. CONCLUSION

By introducing the concept of wireless technology in the Field of the communication we can make our communication more efficient and faster, with greater efficiency. We can display the messages with less errors and maintenance. This system can be used in college, school, offices, railway station and commercial as well as personal used. The above technical paper explains how we can develop as well as modify voice control Android based wireless notice board. Wireless operations permit services, such as long range communications, that are impossible or impractical to implement with the use of wires. It provides fast transfer of information and is cheaper to install and maintain. It also provides user authentication in order to avoid any misuse of proposed system. With the development of software and hardware capabilities of mobile devices, there is an increased need for device-specific content, what resulted in market changes. Speech recognition technology is of particular interest due to the direct support of communications between human and computers.

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