

Voice Controlled LED Matrix Display

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ABSTRACT:

In communication speech plays a major role, without speech it is very difficult to communicate with others. The noticeboard is a common thing in every institution or organization to display the information among the partners. In present days conventional sticking paper notice system takes more time and by using this we don't share the information quickly. The main purpose of this project is to display the information in the LED matrix through the microcontroller. This display is used in the bus stands, offices to share the information; this will help the impaired persons. Voice-controlled LED matrix display can share information quickly. In LED matrix display, the Arduino board is serially connected with the HC-06 Bluetooth module and a mobile to send speech signal to the Bluetooth.

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I. INTRODUCTION:

In the present technology, information is conveyed in different forms based on our needs. I came up with a new technology: voice-controlled LED matrix display. By using this device, we are providing the solution for the people who are not able to speak (or)

listen. In this speech reorganization, the information is being perceptibly transmitted from the dot matrix display uniformly to the viewers. LED matrix display converts speech into text [1]. In this project, we are interfacing with an application. By using this display, we have to share the information quickly without use of any mediator. This display is used in public places like bus stands, railway stations etc... It is mainly developed for the sake of the impaired persons to reach the destination easily. The user can send the notice without typing the message. It is a wireless network mostly used in offices. In emergency conditions, we are easily sending the message by using voice.

SYSTEM MODEL:

In previous, we have used LED display for displaying the information which is helpful for people who cannot listen, but this display has a fixed program and there is no chance of reprogramming, so we cannot change the

information as the user required. To overcome this problem, we have proposed this voice-based controlled LED matrix device. By using this speech-based device, we can change the displaying information as per the user's requirement. It is difficult to construct and maintenance is easy. The output will be exact replica of input i.e. whatever the input we are giving at the speaker, the same output will be displayed at the LED matrix display.

II. MICROCONTROLLER:

The controller used for the voice-controlled is the Arduino. Arduino Uno is a microcontroller board. It is an 8-bit ATmega328P microcontroller. Arduino is an open source electronics platform based on easy-to-use hardware and software. These boards design use a variety of microcontroller and processors. These boards are able to read the inputs: light on sensor, a finger on a button etc. Arduino boards are used in many applications why because these are inexpensive compared to other microcontrollers. Especially these microcontrollers run on Windows and Linux operating systems, most microcontroller systems are limited to Windows.

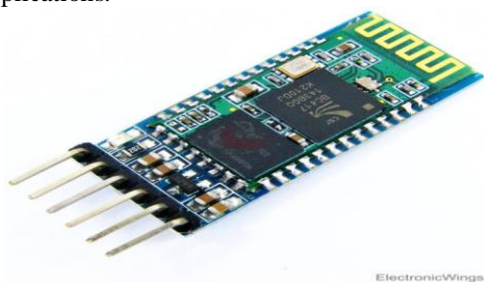
→ It consists of crystal oscillator, serial communication, voltage regulator.

→ These are having 14 input/output digital pins

→it consists of 6 analog input pins, a USB connection
→the input voltage is 3.3v and the operating voltage is 5v
→analogpins are from A0-A5 , digital pins are(D0-D13)
→some pins have specific functions as serial pins (0,1) , external interrupt pins 2 and 3 ,PWM (3,5,6,9,11), SPI (10,11,12,13) , in built led (13), AREF ,reset pin .

BLUETOOTH:

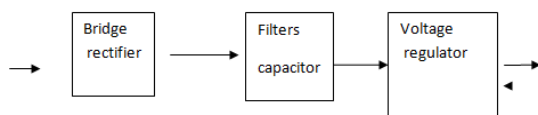
HC05 is the Bluetooth model. It is a wireless communication protocol use to communicate over a short distance and it uses a serial communication to talk with microcontroller.It has 3.3v level for transmission and reception and a microcontroller can detect3.3v level.It is used in many applications like wireless head sets,game controllers and many more consumer applications.



HC-05 Bluetooth Module

It consisting of 6 pins i.e vcc,ground,transmitting pin,receiver pin state pin and enable .in this we are using only 4pins only .it consist of two modes .they are 1.Data mode and2. command mode

POWER SUPPLY:



From the mains we get 230v power supply it is given as a input to the stepdown



transformer it will convert 230v in to 12v ac. The bridge rectifier converts voltage regulator it will convert 12v dc to 5v dc. And the output of a voltage regulator is 5v.The led can operate at 3.3v only so the output of a voltage regulator is 5v and it will given to the resistor the resistor will oppose the flow of current the output of a resistor is 3.3v.In the power supply section we are using led for power indication only.

RESET:

Reset pin is used to connect the microcontroller to the reset circuitry.when ever power goes above or below threshold voltage reset circuitry triggers an active low signal.reset is nothing but returns to zero.It acts as a trigger.

OSCILLATOR: The oscillator will converts dc to ac or without giving any input to the circuit it will gives the ac. In many applications we are using crystal oscillator it is used to produce timing delay.

LED MATRIX DISPLAY:

Led matrix display is a device which consist oflight emitting diodes are arranged in the form of matrix.These matrix are used to display the symbols, graphics etc.and also these displays are comes in different colourslike green,yellow,red,orange.Led matrix is a dot matrix of large display, low resolution value and is useful for both industrial or commercial display. It is It can be driven in 2 ways

1. Television sets
2. Computer monitors
3. Head mounted displays
4. Medical monitors

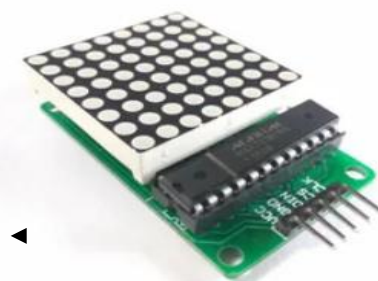


Figure 1: 8*8 led dot matrix display

In the above existing system model they have used controller like8051, 8052 and PIC. These controllers and having some

drawbacks like, these controllers cannot interface with high power devices, complex and there will be only limited number of executions. To overcome these drawbacks we are using arduino in our proposed devices. the advantages of arduino are low cost, independent of external programmer, no external power supply needed and lots of shields available.

III. PROPOSED METHODOLOGY:

This block diagram consists of PSU, oscillator, Bluetooth, led matrix, Arduino, serial data receiver, trans receiver, speaker, led driver, output sink driver, reset, connector. Here the bluetooth module is used for communication between the led and microcontroller.

Block diagram of voice controlled led matrix display

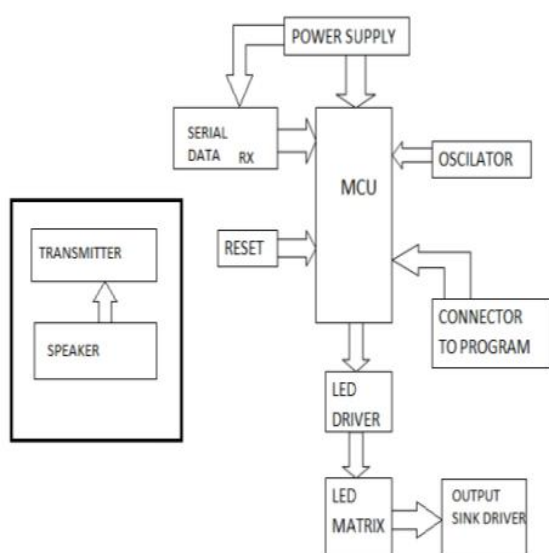


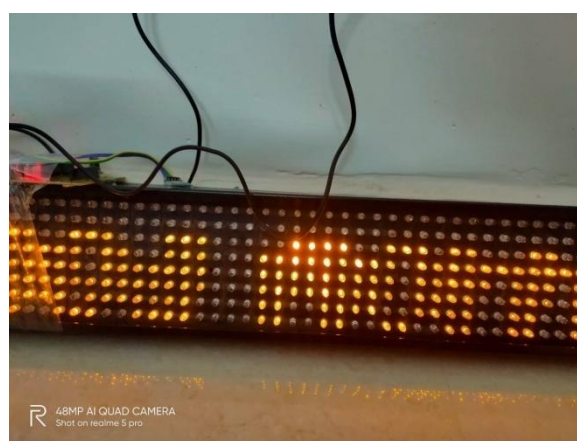
Fig. 1 Block Diagram

IV. CONCLUSION:

This proposed method is used to display the information efficiently and used in restaurants, colleges, public places like bus station, railway station and at some emergency places. The smart noticing system can be very useful media for quick sharing information, as well as small and large organizations. This is a password protected system. It is very easy to operate and protecting cost is low. The responsible has to share the information from any place to his customers or employees

in the world, we can send SMS from the mobile.

V. EXPERIMENTAL RESULTS:



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