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Voice based E-Notice Board using Android

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Abstract: ***For a long time notice board are a source of displaying important news and messages in educational facilities, hospitals, offices and public places etc. However, the drawback of these notice board was the manual effort was required to erase or take down the old messages in order to put up new ones. Therefore, new technologies where interested based on automatic systems to reduce the efforts and make notice board. We implement automatic e-notice board on wireless standard technology ln our project. We design the system using Arduino. Our e-notice board is totally voice operated. Voice based notice board based on android system is most helpful in various organisation. where emergency announcement can be displayed instantly just by speaking out the entire messages. Emergencies apart, this system has provided to be very user friendly. It also eliminates the option of printing out notice and saving tons of paper which initially used to display information. Another advantage is that messages are disclosed in a matter of seconds once typed without any delay in their transmission. As long as an appropriate networks coverage is maintained. Message can be sent to any area in the world. Morden times brings with modern digital advertisement system too. This means that sophisticated shopping centre and malls etc.***
Keywords: Arduino UNO, LCD display, Wi-Fi module, Android app.

I. INTRODUCTION

The paper proposes an inventive approach of voice recognition E-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 WIFI to the controller Board and is displayed on the LCD 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 to avoid the workload of giving inputs at each and every time.The main objective of the project is to develop a wireless notice board that display notices when a message is send from the user's android application device. Remote operation is achieving by any smart phone, tablet etc., with android OS, upon a GUI (Graphical User Interface) based touch screen operation. While the user sends the message from android application device, it is received and retrieved by the WIFI device at display unit. It is send to controller that further display the notice send from the user on to the electronic notice board.

II. METHODS AND MATERIALS

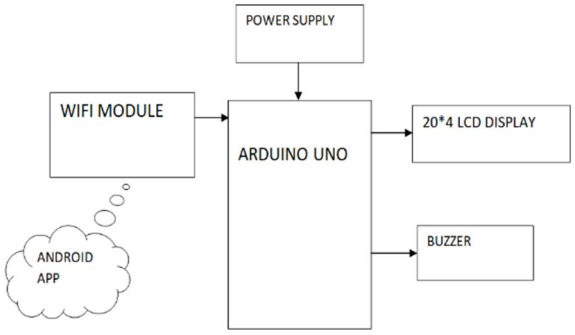


Figure1: Block diagram of System

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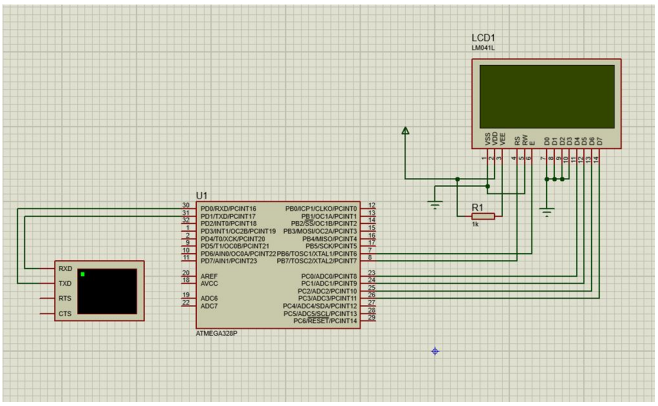


Figure2: Circuit diagram of system

This notice board consist Arduino uno and 20*4 LCD display which is used for display message which is sent through ESP8266 Wi-Fi module. The wi-fi module gets a message from the approved cell phone and the message is extricated by the microcontroller from the Wi-Fi module and is shown on LCD display. A transmitter is an equipment which converts a physical message into an electrical message. A receiver on the other hand is an equipment which converts the electrical signal back to the physical signal. The electrical signal from the transmitter is conveyed to the receiver through a particular channel, either it could be a wired communication or wireless mode of communication channel. As our project is based on an android application, we are using Wi- Fi module, a wireless mode of communication. While the user sends the message from the mobile, the remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based voice operation. Transmitting end uses an Android application device remote through which commands are transmitted. At the receiver end, these commands are converted to texts used which are displayed on a 20X4 LCD - interfaced to the Arduino. Serial communication data sent from the Android application is received by a Wi-Fi receiver interfaced to the Arduino. The transmitter part of our project is an Android application named as “Voice Display” depending upon the class selected for message display. The coding for the application part was done on an online application Android studio. That simply means this application can work on the basis of voice recognition after getting started manually. When the user wants to send a message to be displayed it’s just a matter of time, there’s no need to write and post anything as well as type anything. You, just have to connect your device to the Wi-Fi and only by tapping the app icon and saying what you want to be displayed. The receiver module placed at the remote end also has Wi-Fi connectivity to micro-controller with display device. Here wi-fi is connected to the Internet using Wi-Fi router. The connectivity is smart here cause for each Ethernet connected to internet has different IP addresses. The converted text message sent from smart phone has to be displayed on display connected to the Arduino terminal.

A. Arduino UNO

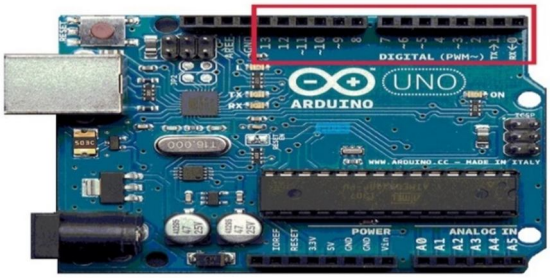


Figure 3: Arduino UNO

It is a microcontroller board developed by Arduino.cc and based on Atmega328. Arduino is an open-source prototyping platform in electronics based on easy-to-use hardware and software. Subtly speaking, Arduino is a microcontroller based prototyping board which can be used in developing digital devices that can read inputs like finger on a button, touch on a screen, light on a sensor etc. and turning it in to output like switching on an LED, rotating a motor, playing songs through a speaker etc. UNO is based on ATmega328P microcontroller.

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There are two variants of the Arduino UNO: one which consists of through – hole microcontroller connection and other with surface mount type. Through-hole model will be beneficial as we can take the chip out in case of any problem and swap in with a new one. Arduino UNO comes with different features and capabilities. As mentioned earlier, the microcontroller used in UNO is ATmega328P, which is an 8-bit microcontroller based on the AVR architecture. UNO has 14 digital input – output (I/O) pins which can be used as either input or output by connecting them with different external devices and components. Out of these 14 pins, 6 pins are capable of producing PWM signal. All the digital pins operate at 5V and can output a current of 20mA. The Arduino board can be programmed to do anything by simply programming the microcontroller on board using a set of instructions for which, the Arduino board consists of a USB plug to communicate with your computer and a bunch of connection sockets that can be wired to external devices like motors, LEDs etc. The aim of Arduino is to introduce the world of electronics to people who have small to no experience in electronics like hobbyists, designers, artists etc. Arduino is based on open source electronics project i.e. all the design specifications, schematics, software are available openly to all the users.

B. Wi-Fi Module

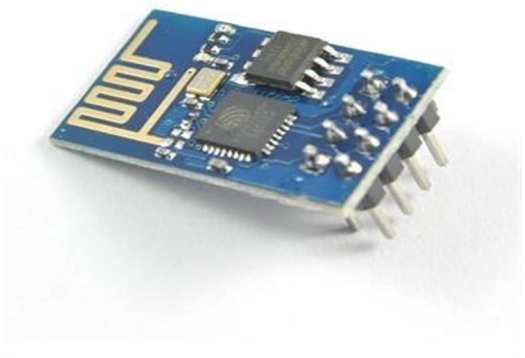


Figure 4: Wi-Fi Module

ESP8266 is a complete and self-contained Wi-Fi network solutions that can carry software applications, or through Another application processor uninstall all Wi-Fi networking capabilities. ESP8266 when the device is mounted and as the only application of the application processor, the flash memory can be started directly from an external Move. Processing and storage capacity on ESP8266 powerful piece, it can be integrated via GPIO ports sensors and other applications specific equipment to achieve the lowest early in the development and operation of at least occupy system resources. The ESP8266 highly integrated chip, including antenna switch, power management converter, so with minimal external circuitry, and includes front-end module, including the entire solution designed to minimize the space occupied by PCB. The system is equipped with ESP8266 manifested leading features are: energy saving VoIP quickly switch between the sleep / wake patterns, with low-power operation adaptive radio bias, front-end signal processing functions, troubleshooting and radio systems coexist characteristics eliminate cellular / Bluetooth / DDR / LVDS / LCD interference. ESP8266 specifically for mobile devices, wearable electronics and networking applications design and make the machine to achieve the lowest energy consumption, together with several other patented technology. This energy-efficient construction in three modes: active mode, sleep mode and deep sleep mode type. When ESP8266 using high-end power management technology and logic systems to reduce non-essential functions of the power conversion regulate sleep patterns and work modes, in sleep mode, it consumes less than the current 12uA, is connected, it consumes less power to 1.0mW (DTIM = 3) or 0.5mW (DTIM = 10). Sleep mode, only calibrated real-time clock and watchdog in working condition. Real-time clock can be programmed to wake ESP8266 within a specific period of time. Through programming, ESP8266 will automatically wake up when detected certain to happen. ESP8266 automatic wake-up in the shortest time, this feature can be applied to the SOC for mobile devices, so before you turn Wi- Fi SOC are in a low-power standby mode. To meet the power requirements of mobile devices and wearable electronics products, ESP8266 at close range when the PA output power can be reduced through software programming to reduce overall power consumption in order to adapt to different applications.

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C. LCD Display



Figure 5: LCD Display

The LCD stands for liquid crystal display, that works on the light modulation features of liquid crystals. It is available in electronic visible display, video display and flat panel display. There are numerous categories and features are exits in markets of LCD and you can see it on your mobile, laptop, computer and television screen. The invention of LCD gives new life to electronic industries and replaces LED and gas plasma techniques. It also replaces the CTR (cathode ray) tube that used for visual display. The input power consumed by the liquid crystal display is less then light-emitting diode and plasma display. In today's post, we will have look at 20 x 4 LCD, its features, working, applications, and practical implementation in different electronic devices. So let's get started with the Introduction to 20x4 LCD Module. A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. Here, in this we're going to use a monochromatic 20x4 alphanumeric LCD. 20x4 means that 20 characters can be displayed in each of the 4 rows of the 20x4 LCD, thus a total of 80 characters can be displayed at any instance of time.

D. Android App

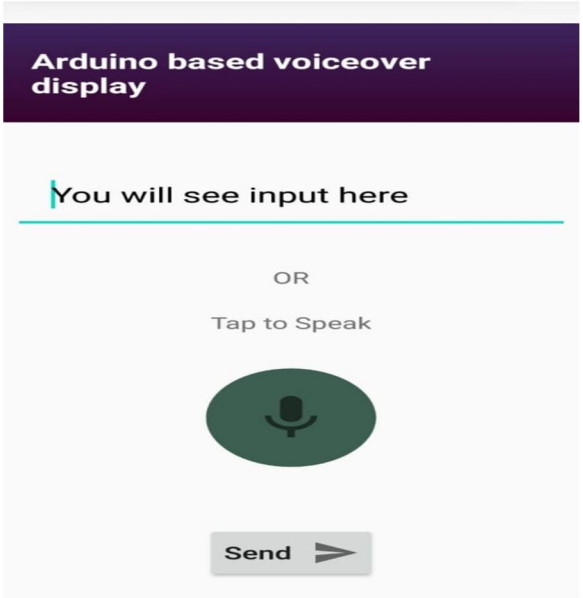


Figure 6: App Layout

The project is an electronic notice board that is controlled by an android device and displays message on it. Traditionally, there was notice board where any information or notice had to be stick daily. This becomes tedious and requires daily maintenance. The project overcomes this problem by introducing an electronic display notice board interfaced to an android device through WIFI connectivity. The WIFI receives the message from the android device.

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III. RESULT AND DISCUSSION

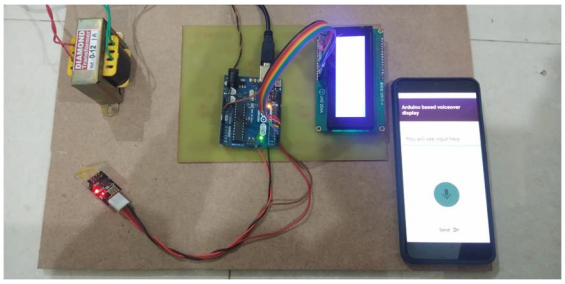


Figure 6: System Result

This is our system after completion the all process. Now we will see how it works and what its result occurred.

1) Transmitter Side

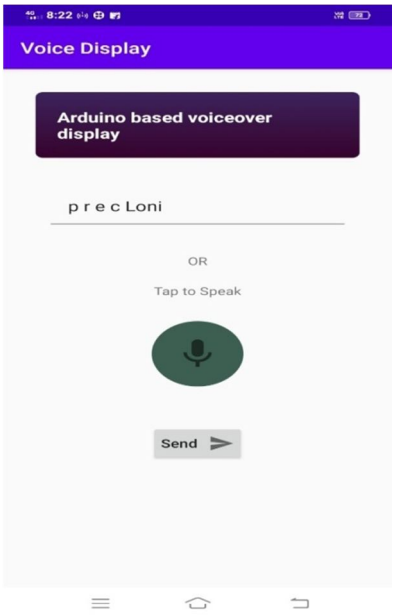


Figure 7: Message sent

In this section message is transmitted by android application. In this we will send the voice command through our smart phone.

2) Receiver Side



Figure 8: Message Received

This is output of our system. The voice command gives by android app through the smart phone is displayed on LCD screen.

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IV. CONCLUSION

Wireless operations permit services, such as long range communications, that are impossible to implement with the use of wires. It provides fast transfer of information. System is cheaper to install and maintain. This paper provides simple way of displaying messages on Notice Board using Wireless Technology i.e. wi-Fi. It also provides user authentication to avoid any misuse of proposed system.

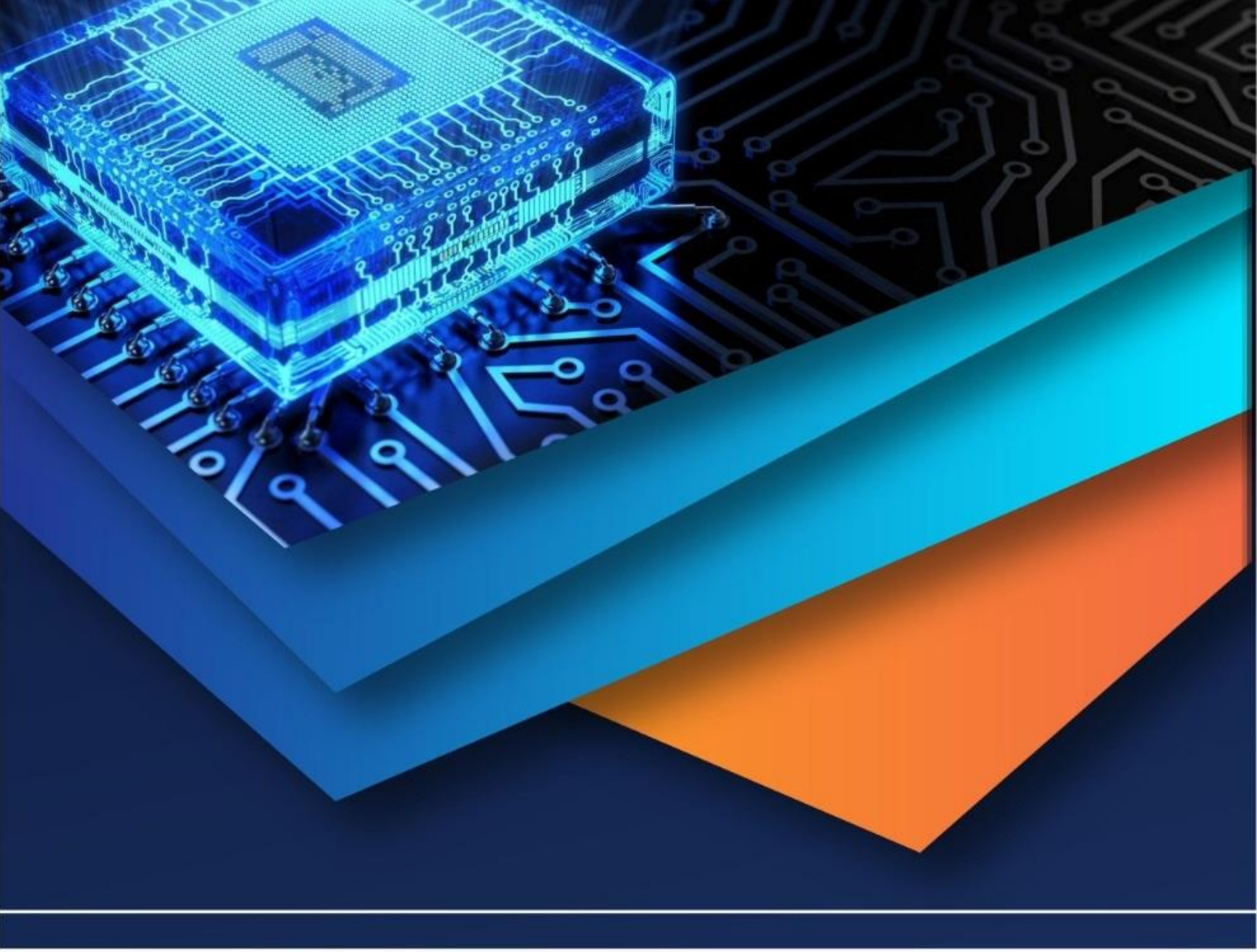
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