

DIGITAL NOTICE BOARD OPERATED VIA SPEECH

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ABSTRACT

In our current world wireless technology is being used to achieve better efficiency, productivity, faster data transfer, reduce human effort and reduce basic infrastructure. Along with the old notice boards are replaced by a smart notice board. On smart billboards the use of paper is very low and reduces physical activity and the cost of a smart billboard. Our project is a digital display that is accessible remotely at real-time institutional standards and can be very effective in Indian universities. Basically, our project uses discourse in textual translation technology. A client is required to send a message or data from an advanced mobile application. The Esp-32 Wi-Fi module receives the message or data and transfers it to Arduino. Arduino moves the data to Dot Matrix Display and eventually a message or data will be displayed on the Dot Matrix display. Until a new message is sent to the user Dot Matrix Display will continue to display the old message.

Keywords: Esp-32, Arduino, Dot Matrix Display.

I. INTRODUCTION

Smartphones are becoming increasingly important in human existence. They are simple to use, promising, and long-lasting technologies that assist with daily duties. Wireless communication is one of the most extensively utilized and efficient technologies, and it is continuously expanding in popularity. In this field of communication there is no need for long lines or infrastructure to transfer information from one point to another. These days text messaging is the most widely used system. This type of board is used in various schools, colleges and institutions. The main goal of this project is to create an Android-based notice board with material that can be easily updated using a Speech to Text Converter software that is implemented using an embedded system with a microcontroller. For this the user must install an application designed to turn the speech into a text conversion. The user when transmitting a message via an android device will be detected and downloaded via a Wi-Fi module and the message will be displayed on the Dot Matrix display. The real-time digital remote display has many applications such as educational institutions, banks, public places and railway stations.

II. LITERATURE SURVEY

Electronic notice boards with keyboard controls were utilized before the advent of Wi-Fi modules. This module will assist you in achieving your objectives. By typing the message into the keyboard, you may show instantly collected information on this notice board. The disadvantage of this technology is that we must input each message on a keyboard in order to show it on a notice board, which takes time as opposed to sticking it on the notice board in the usual manner.[1] Initially GSM technology was used to display the message. The GSM technology was used on the side with the MAX232 controller which used to perform at a high baud rate. The disadvantage of this infrastructure is that it conveys a message network where needed.[2] After the introduction of GSM Bluetooth technology and Bluetooth communication that made this technology faster and more efficient but due to the breadth of Bluetooth technology they are limited (about 10 meters). Due to this limited bandwidth feature in Bluetooth technology, it has been difficult to transfer data or message over a distance of 10 meters.[3] In an effort to increase the range of communication Zigbee notice boards were introduced but in this case the data rate was approximately 250kb per second.[4] Worldwide today, Wi-Fi-based displays are being used because of the possible range. Wi-Fi-based displays are over 50 meters and, in this range, data can be easily transferred.[5] To add to the functionality of a physical notice board, it is enhanced with digital features. When utilized with interactive pins with programmable lights, the notice board preserves its form factor and may be used to provide information to the user about the status of papers put on the board. Boards and enhanced pins are both simple to use and inexpensive to manufacture.[6] In this method,

a legal user sends a notice to the website, which then displays multiple messages on different LCD monitor panels at different times. For website building, this approach employs the PHP programming language, as well as my PHP admin server for database development. For display purposes, a Raspberry Pi microprocessor is used to project a web browser onto a monitor. The disadvantage of this technique is that it necessitates a large number of employees to maintain the website, which raises the expense of maintaining the notice board.[7] When a user sends an SMS from his phone to a registered number, the receiver device receives it using a SIM-loaded GSM modem. The GSM modem serves as an interface between the control unit and the user, allowing the latter to send and receive messages.[8]

III. PROBLEM STATEMENT

Usually, people used a bulletin board where any information or notice should be attached daily. This becomes unpopular and needs constant adjustment. This also costs a lot of time, human effort and material things. Because of this the scope was limited as one had to take text or write a message each time and the message had to be pasted on the board daily. Later clever billboards got into technology and were used instead of regular billboards to convey a message. This technology focuses on displaying text messages transmitted from a remote area using an android phone on a large display such as an LCD monitor. Thanks to this technology access to the bulletin board has increased but this program uses GSM technology. If there is a tower problem, it means it completely affects the display as the data or message sent by the user is inaccessible.

IV. METHODOLOGY

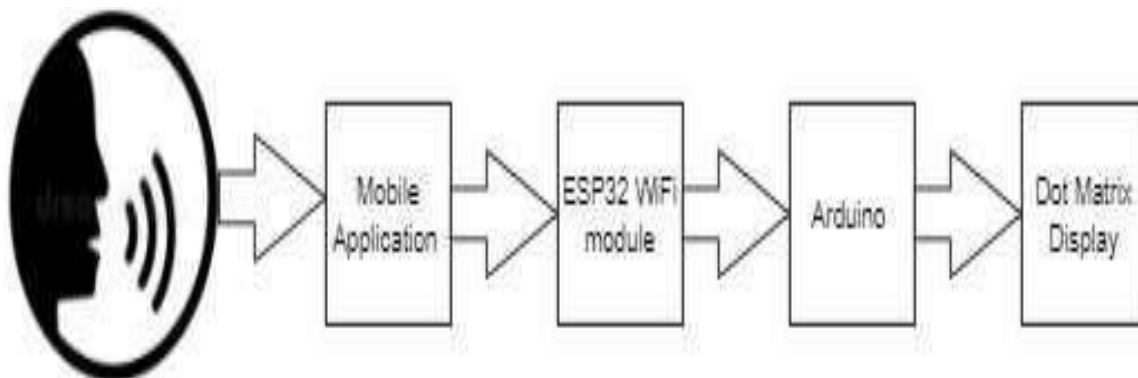


Figure 1: Block Diagram Of Proposed System

Here in the input section of the proposed system, using an android phone with installed program. Here, the app is a text-to-speech conversation where a user-sent message is converted to text. The converted data is then transferred to the ESP32 Wi-Fi module connected to Arduino or DMD. Here, the android app acts as a transmitter that converts speech signal into text message. ESP32 acts as a speech receiver to the converted signal text and sends data forward to the Dot matrix display via Arduino. ESP32 is a means of communication between sender and receiver. When Arduino receives data from ESP32, it will forward the message to DMD and the message will be displayed in DMD.

V. FLOWCHART

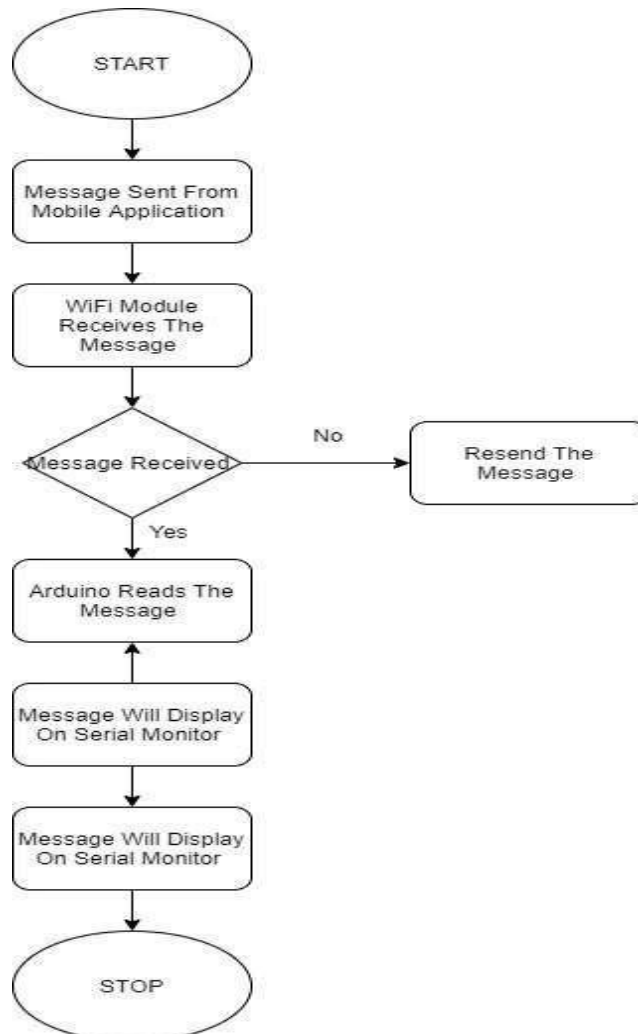


Figure 2: Flow Chart Of Proposed System

VI. IMPLEMENTATION

Mobile Application

For MIT app developer, the android app included in this project was developed, tested, and updated. The application is shown in the diagram. When the app is launched on an Android phone, the user must speak any data they wish to see on the dot matrix display after turning on the microphone. After that, a specific statement will be translated into text.



Figure 3: Voice To Text Conversion App

ESP-32

Espressif Systems has developed the ESP32 line of low-cost system-on-chips (SoCs). Advances in addition to the popular ESP8266, commonly used in IoT systems. ESP32 is a multimedia chip capable of Wi-Fi and Bluetooth, making it ideal for IoT applications and most embedded systems. At 160MHz, the standard ESP32 consumes between 27 and 44 milliamperes, while the single-core consumes about 30% less, between 27 and 34 milliamperes. It can be connected to computers, but in order to connect to the ESP 32 network, the user must first know the password. ESP 32 is used in the receiver part of the system to transfer data. The ESP 32 module receives data or message through the system and transfers it to Arduino.

Arduino

The ATmega328P, an 8-bit microcontroller with 32 KB of flash memory and 2 KB of RAM, is used in the Arduino Uno Rev3. It comes with everything you'll need to get started with the microcontroller, simply plug it into a computer via USB or use an AC-DC converter or battery to power it.

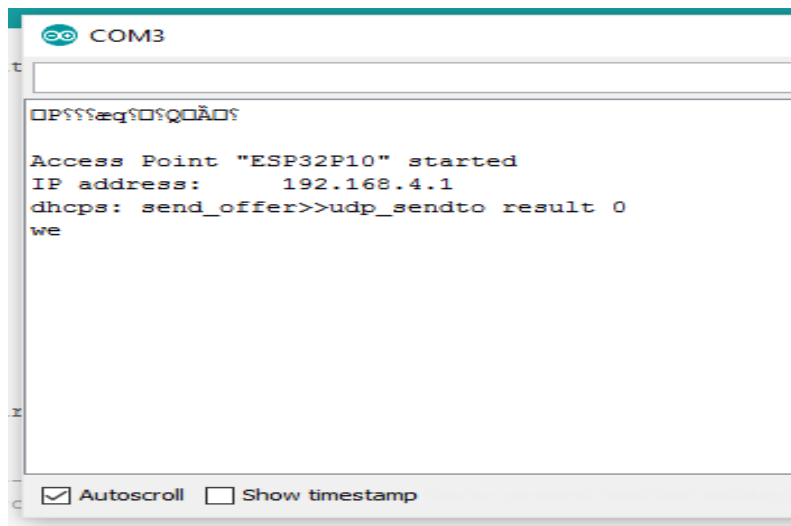


Figure 4: Output On Serial Monitor

Arduino uses a range of 1.8 to 5 volts voltages. The Arduino UNO is designed to start using DMD and the Trans receiver ESP32 module. Data from ESP32 is accepted by Arduino, and then imported into the dot matrix display using the required instructions. The information provided by the program will also be displayed on the monitor.

Dot Matrix Display

Data from Arduino will then be sent to a dot matrix display, which we will display. It has 16 rows and 32 columns. Every number of LEDs is displayed on a single red display. It has a solid frame and a large 512-led matrix display, as well as an on-board controller that makes it easy to use outside the box. It can also be seen up to 40 feet [12 m] away, and it keeps showing past messages until a new one arrives.



Advantages

- This message board is accessible from anywhere within Wi-Fi range.

- It entails faster data transfer while maintaining high quality.
- Because it requires user identification, this method is more secure.
- This system is simple to use.

VII. FUTURE SCOPE

- The date and time can be shown with the notice texts.
- Other than English, local language messages can be shown.
- Custom animation may be used to make the presentation more appealing.

VIII. CONCLUSION

The suggested system receives the message, saves it, confirms it, and displays it on the LED display. Messages are displayed on LED screens. Allows very fast data transfer and is easy to set up and maintain. This project uses Wireless Technology to provide an effective way to display messages on the Notification Board and to receive automated notifications. The proposed method allows users to access important information or messages quickly. The project demonstrates Digital Notification Board System using the Arduino microcontroller, which uses voice control to display the required text messages in a multi-LED matrix. A few notifications can be delivered at once. The use of the pre-message and pre-message password board system has also improved security.

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