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Digital Notice Board using Bluetooth and Arduino

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Abstract

In this project, Bluetooth and Arduino microcontrollers are used to build and operate a wireless noticeboard system. To disseminate real-time information across many contexts, a cutting-edge, interactive platform is now being developed. On conventional noticeboards, there are just physical notes and human modifications, both of which can be tedious and time-consuming. This solution makes use of Bluetooth connectivity and the adaptability of Arduino to let users send messages wirelessly from their cell phones or laptops. The Bluetooth-enabled devices used in the wireless noticeboard system allow users to enter messages. An Arduino microcontroller with a Bluetooth module collects the messages, processesthem, and displays the results on a display device. Users can rapidly post messages to the noticeboard from their mobile devices using Bluetooth technology without having to engage with it physically. The system's core processing unit, the Arduino microcontroller, which also activatesthe display unit, receives and processes incoming messages before displaying them.

Keywords

Displaying Message, Bluetooth, Arduino.

Introduction

In the area of communication and information sharing, noticeboards are crucial for posting messages, announcements, and updates. Contrarily, manual updates or handwritten notes are frequently used on traditional noticeboards, which limits their usefulness and adaptability. These limitations can be overcome by creating a wireless noticeboard system using Bluetooth and Arduino microcontrollers.

This project aims to develop an innovative interactive noticeboard that enables users to wirelessly broadcast messages from their cell phones or laptops. This technology provides an innovative approach to transmit information in real time in a variety of settings, including offices, schools, community centers, and more. It accomplishes this by blending the robustness of Bluetooth connection with the adaptability of Arduino.

A message input device (like a smartphone, tablet, or laptop that supports Bluetooth), a message reception and processing device (like an Arduino microcontroller with a Bluetooth

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module), anda message display device (like an LCD screen or LED matrix) are the main components of this wireless noticeboard system. The display board systems are transitioning from traditional handwriting display to digital displayas technology advances daily. Following on from Wireless display units. This project creates a Bluetooth-connected wireless notice board system that displays the user's desired message via SMS in densely populated or busy areas. Here, we will introduce the idea of wireless technology in the communication field. We can speed up and increase the effectiveness of our communication.The messages can be displayed with fewer maintenance issues and problems [1].

The suggested approach uses an electronic notice board that can show messages and is managed by an android mobile. There used to be noticeboards where any news or announcements needed to be posted every day. This takes daily upkeep and grows tedious. By providing an electronic display notice board connected through Bluetooth to an android device, the project solves this issue. The message that the Android device sends to the Arduino is received by Bluetooth. Any institution, organization, or location that provides a public service, such as a bus stop, train station,or park, must have a notice board. However, daily notice sticking is a challenging task [2].

Methodology

A power source, an Arduino UNO, an LED module, a Bluetooth HC-05, and a smartphone app make up the suggested fix. We'll give them an external power source after the Arduino UNO has the application uploadedto it. Therefore, every piece of equipment is in use. We'll use a mobile device at that point to sendthe desired SMS or alarm. This SMS or notice will then be received via Bluetooth after that. This SMS or notification will also be shown on a digital notice board using Arduino [3].

The advertising sector, businesses, educational institutions, railroads, traffic management, and crime prevention are just a few areas where this project may soon find use. The fact that this program is a user-friendly, quick, and long-distance information source is really advantageous.

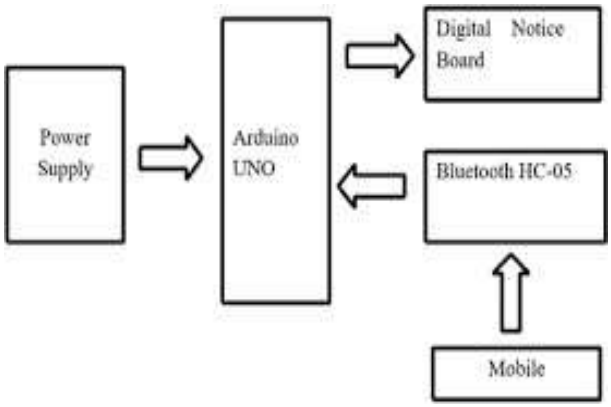

Figure 1. Block Diagram

Power supply, Arduino UNO, LED module, Bluetooth HC-05, and a mobile application make upthe suggested solution. We will provide them with an external power source after uploading the application to the Arduino UNO. As a result, all equipment functionalities are active. At such point, we will use a mobile device to send the SMS or notice that we desire. After then, Bluetoothwill receive this notification/SMS. Additionally, this SMS or notification will be shown on a digitalnotice board using Arduino [4].

A. Bluetooth Module:
The Bluetooth module is the interface that enables wireless communication between the digital notice board and other devices, such as smartphones, tablets, or computers. It uses Bluetooth technology to receive messages from these devices and pass them on to the Arduino for processing and display.

B. Arduino Microcontroller:
The Arduino is the heart of the system. It acts as a control unit and processes the incoming messages received via Bluetooth. Arduino is programmed to decode the data and control the display on the electronic notice board.

C. Message Input Device:
The message input device is the source from which messages are entered into the system. This could be a smartphone app, computer software, or any other device with Bluetooth capability thatallows users to compose and send messages to the digital notice board.

D. Message Storage:
Once the messages are received by the Arduino from the Bluetooth module, they are temporarily stored in a memory buffer. The Arduino processes these messages one by one for display.

E. Display Unit:
The display unit is the electronic notice board where the messages are shown. It could be an LED matrix display, an e-paper display, an LCD, or any other type of screen that can visually present the messages.

F. Power Supply:
The power supply module provides the required voltage and current to run the entire system. It ensures that the Arduino, Bluetooth module, and display unit receive sufficient power for their proper functioning.

Results and Discussion

The entire procedure can be explained using the transmitter and receiver's parts. With permission, mobile devices can communicate with the Bluetooth module. The microcontroller then extracts the message from the Bluetooth module and displays it on the matrix display board.The Bluetooth module communicates serially to the microprocessor and in parallel to the matrixdisplay throughout the entire process. Additionally, an LCD display is used for acknowledgment.

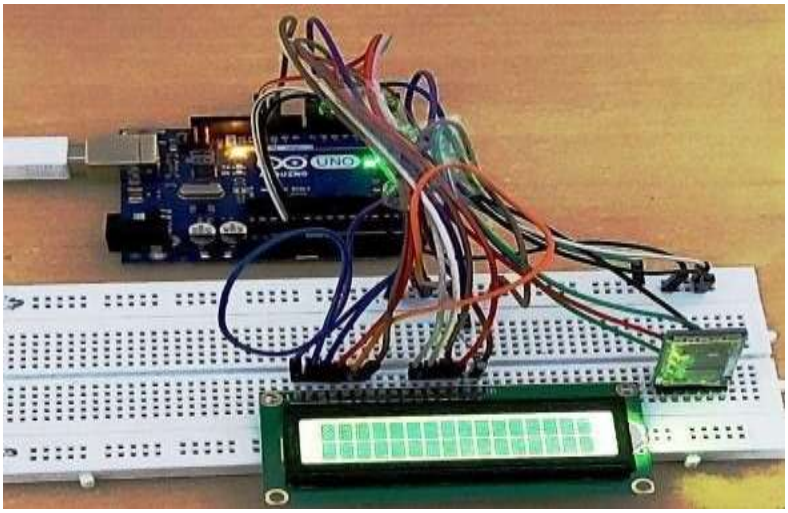

Figure 2. transmitter and receiver's parts

Conclusion

Display board systems are transitioning from traditional handwriting display to digital displayas technology advances on a regular basis. Wireless display units in the listed sequence. This project creates a Bluetooth-connected wireless notice board system that displays the user's customized message via SMS in congested or densely populated areas. Let's now talk about wireless technology from the perspective of communication. We can speed up and improve theeffectiveness of our communication. It's possible that there will be problems with message display and less frequent maintenance.

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