Smart Board

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ABSTRACT

In this paper, the development of a smart working notice board. The Smart Board is a real time based Notice Board which can be controlled by Android Phone using Application. The connection between Android and Smart Board uses Wi-Fi connection. Android application used to send Notices. The Application is connected to web server to keep track of Records of Published notices in Notice Board. At receivers end a Wi-Fi embedded microcontroller board to Receive the Notice and Update the LED Display. Using SMART BOARD enable to use the Notice system in wirelessly and can be updated also by Voice speech. The smart board is completely based on real time usage.

Keywords: Arduino; PHP; Android; Wi-Fi; Node MCU

I. INTRODUCTION

Since past few years, circulation of notices in a college campus was never been a short term procedure. It consists of lots of paperwork duly signed with higher authorities and human labour for its circulation throughout the campus and to the students. Sometimes, the notice that is to be circulated might not reach where it was expected to. To overcome such problems and to reduce the expenditure of time and money involved, the development of simple and low cost Smart Board is presented. The proposed system uses a smartboard as a hardware which is controlled by the help of an android application. The smartboard comprises of two parts, hardware and the software. The hardware part consists of NodeMCU Wi-Fi module which is connected via LED Dot matrix display. On the software side, an android application is used to send the notices wirelessly by an authorised personnel in an authenticated way. The NodeMCU creates a local web server through which the user needs to connect wirelessly and post the notices using the application. The notices being published over the network are being recorded over a remote online database. This

data can be further used for research and analysis work. Since, the hardware is cheaper and can be easily setup, it has vast areas where it can be implemented and used for various purpose.

System Description

The system consists of a smart notice board which is developed to send the desired notice instantly to the display using Wi-Fi transceiver module interfaced with a low cost NodeMCU microcontroller board. The communication mode i.e. Wi-Fi module is selected for data communication using the corresponding transceiver module with microcontroller a client using Arduino software to receive the message from the remote user in Wi-Fi based wireless communication technology. The NodeMCU simultaneously update the LED Matrix Display with the data. The Web Application can be accessed remotely by URL and authorised person can log in and check the Notices Displayed and other historic Notices earlier updated.
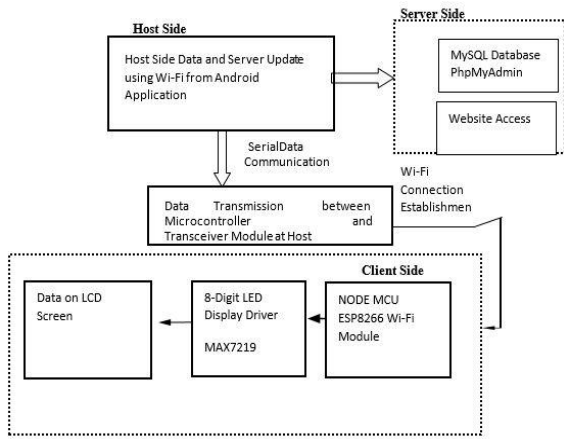
Figure 1. System Block Diagram

II. WIRELESS COMMUNICATION USING WI-FI TO ANDROID

To establish connection between Android Application and Smart Board, the Android Application and Smart Board has Some sequential process. The Proposed sequence are explained below.

a. Smart Board Android Application

The Android application creates a Wi-Fi hotspot network with a unique ssid/network name and password for smart board. Application allow to pass message as String to Node MCU.

The is fetched by Node MCU and Updated to the LED Display. The string can be sent by using both Voice Recognition system and text box as well.

b. Smart Board ESP8266

After Wi-Fi module initialization of ESP8266 module, it searches for the Wi-Fi networks available and connect with the Unique Network. Just after the successfully validation of the network the new data is updates on LED Display as "Device Connected". Further it waits for the String to receive from Android Application.

III. HARDWARE IMPLEMENTATION

The microcontroller board (Node MCU) is programmed in a manner that after successful connection with Android Application, a welcome message "Device Connected" will be displayed in LED Matrix display. The user will access the Application using android device and can be able to update the data to Smart Board. The Android application will be connected to the unique Media Access Control address (MAC) address.MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment. The interacting of Android Application and Smartboard using Wi-Fi network using ESP8266 Node MCU is shown in Figure 2.
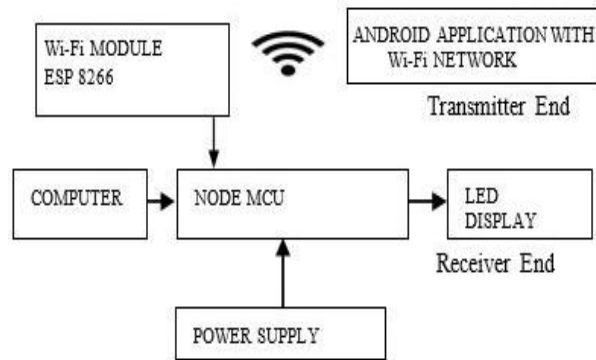

Figure 2. Wi-Fi Communication for Android application and Node MCU

IV. SYSTEM IMPLEMENTATION

Usage of the developed system, Smart Board can be display data to the digital LED Screen and can Monitor the messages using Android application through Wi-Fi connection. Smart Board is and Android application program that allow android device to communicate reliably using Wi-Fi network. Smart Board application enable user to send data through key board and Voice as well. The application gets the message string to it and transfer the string to node MCU. At the same time the application updates the phpMyAdmin with the new data. The Wi-Fi network is initialized just after launching the Smart Board application in the Android device. Wi-Fi can

range up to 20 Metres which uses 2.45GHz frequency band for connection. A ESP8266 Wi-Fi interfaced as a built in NodeMCU matches the connection credential of Network and gets connected to the Network.
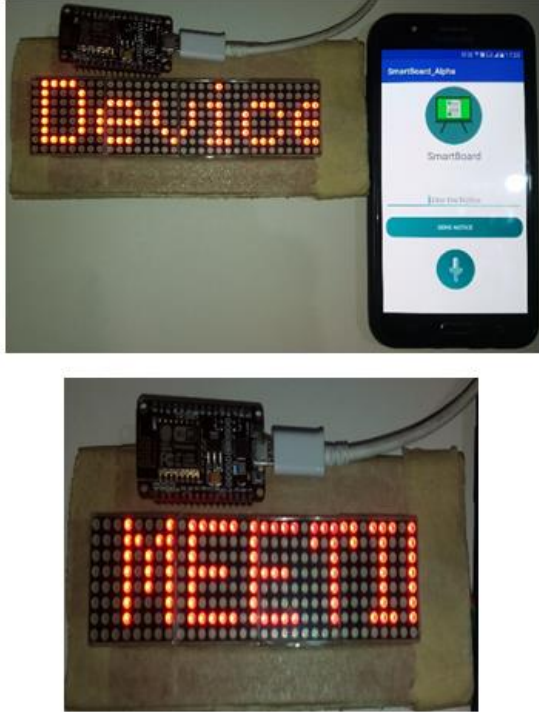
Figure 3. Connection Establishment of Smart Application and Node MCU

The Smart board application allows to enter the string in text box in the application. Initially after successful connection a "Device Connected" message is displayed in the notice board (as shown in Figure 3.) which informs the user that NodeMCU is ready to accept any new message to display in LED display.

Figure 4. Scrolling Message in the LED Display

The new message is being ready to entered such as string "THERE IS A MEETING" is entered in the text box (as shown in Figure 4.) in the Smart Board application the message gets updated in LED display MAX7219 and Message keeps continuously scrolling in the display until user update it with any new message.

Figure 5. Message Update in the LED Display by Voice

User can also send their message to LED Display using their voice commands. The smart board application also has the build in voice recognition tool which recognizer the users voice in real time and convert the voice into the string and then the string as message is updated to the notice board.

After the successful string message update to LED displayed string is also passed to the PhpMyadmin and the data is stored in the database. A web interface is developed which allows the Log in validation for authorized person to check the website to analyse the updated notices in the display.

V. CONCLUSIONS AND FUTURE SCOPE

In this paper the advanced technology of the notice board is implemented that will help in easy and reliable notice update by saving time and resources and making notice available in an instant manner. The smart board is a Low cost and simple module which allow users to update notice in a reliable manner. The smart notice board can be used in various applications such as banks, schools, restaurants, colleges, hospital etc. The buzzer and radio voice transmit feature can be added in the smart board with recitation of the notice for an

enhanced system usage in railway, airport and bus stations.

VI. REFERENCES

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