



Wireless Notice Board with Wide Range Communication

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Abstract: Our project proposal is to design a low cost and high efficiency wireless notice board. Wireless electronics notice boards are a faster alternative to other notice boards (GSM based and low range communicating systems).The proposed system uses Bluetooth and Wi-Fi based wireless serial data communication using programmed (esp32 devkit v1) microcontroller for transmitting user data.At receiver end a low cost microcontroller board (ATMega328P) is programmed to receive and display any above information from the transmitting side (through user). A major constraint of this method used so far is of small size display board. We use advanced larger display board with low power consumption with reduced data transmission time from sender /user to the receiver end display. The developed system will therefore aim in wirelessly sharing the information through Bluetooth and displaying in a notice board.

Key words: ESP32 DVE module, ATMega328P, HC-12 SI4463, Arduino IDE, OLED display

I. INTRODUCTION

In today's world of connectedness, people are becoming accustomed to easy access to information. Whether it's through the internet or television, people want to be informed and up-to-date with the latest events happening around the world (J. S. Lee 2007). Wired network connection such as Ethernet has many limitations depending on the need and type of connection. Now a day's people prefer wireless connection because they can interact with people easily and it require less time. The main objective of this project is to develop a wireless notice board that display message sent from the user and to design a simple, easy to install, user friendly system, which can receive and display notice in a particular manner with respect to date and time which will help the user to easily keep the track of notice board every day and each time he uses the system. Wi-Fi is the wireless technology used and also using a Bluetooth technology.

This Document gives basic introduction to Digital signage which can operate using Wi-Fi and Bluetooth. Now a day we have very less option for advertising and it is very lengthy and boring process to advertise and also we have very less efficiency of that. So we have one good option to reach over a people is Digital signage system. Recently we have a digital signage but we have to change its content using USB drives or using internet when we

are in the local or in wide area network. So this document gives us better idea how to change the contents of Digital display using Wi-Fi and Bluetooth.

So for that we use some Embedded as well as communication idea and using ESP32devkit v1 board and HC-12 Bluetooth module we try to implement our system. The OLED used as to 16-bit level the information are to be displayed.it specifies the characters and to display it whenever type to show the text in to the user language. All major urban areas are currently covered by both WI-FI network providers, and soon every single corner of the peoples has used in mobiles in a very poor villages to call away. The method to need for constant communication with family and friends, coupled with the relatively cheap method of sending short text messages to them, has information a WI-FI revolution in the country. In fact, rarely will a used this method use his cell phone to make a phone call, Preferring to anything and everything. All mobile phones has available in WI-FI network. Then WI-FI network has been used to provide wide area network allows as to communicate with the information into text message through OLED display to move the notice board. Information can passing through for a specific service provide as chatting and to transmit and receive the information.



II. EXISTING SYSTEM

The simple and low-cost wireless android based notice board system is developed to remotely send the desired information instantly to the intended users using either Bluetooth or Wi-Fi transceiver modules interfaced with a low cost Arduino UNO microcontroller board.

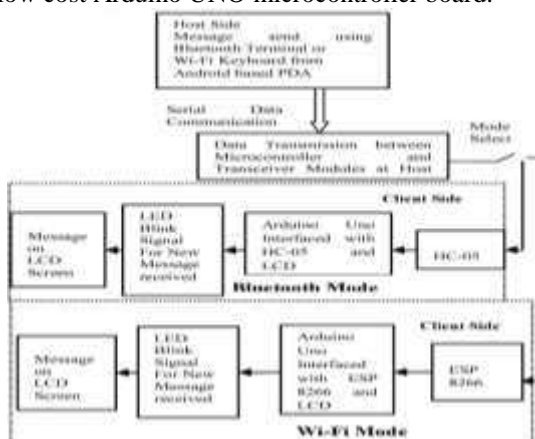


Figure: Existing System

DISADVANTAGES:

- ✓ Short Range communication
- ✓ Ac power consumption is high
- ✓ Transmission bitrate is too low
- ✓ Using an LCD screen

III. LITERATURE SURVEY

Vinod B.Jadhav, Tejas S.Nagwanshi, Yogesh P.Patil, Deepak R, Patil (2016) had propose a remotely send notice to digital monitor from authorized pc on raspberry pi card .A Wi-Fi is using for data transmission. Wireless is a popular technology that allows an electronic device to exchange data wirelessly over a computer network

S.Arulmurugan, S.Anith, A.Priyanga, S.Sangeethapriya At (2016)-notice board is commonly used in variety of institution which we come across in a daily basis.In the present generation the advertisement notice board are being manually. This process is difficult to involve in order putting a notice on the notice board

Duruchinedu, Ochonu Regina, Okoronkwo C.Onyinye (2017)-design and implementation of a wireless notice board with interface for remote update, a mobile phone controlled wireless notice board operation system by sending an SMS(short message service) to a system which display the received SMS on a screen for public viewing

IV. PROPOSED SYSTEM

Our project proposal is to design a low cost and high efficiency wireless notice board. wireless electronics notice boards are a faster alternative to other notice boards (GSM based and low range communicating systems) .the proposed system uses Bluetooth and Wi-Fi based wireless serial data communication using programmed (esp32 devkitv1) microcontroller for transmitting user data .at receiver end a low cost microcontroller board (ATMega328P) is programmed to receive and display in any above of the communication mode.

ADVANTAGES:

- ❖ High efficiency data transmission through the transmitter and receiver
- ❖ The data will be send long range of distance through serial communication Wi-Fi module
- ❖ Power consumption in dc characteristics is too low
- ❖ As the project prototype can be operated in both AC and DC power supply

METHODOLOGY:

- We are using IoT and long range data processing technique
- The main component used here is esp32 devkit v1
- The Wi-Fi and Bluetooth technique to reduce man power and time.
- Interfaced with a low cost Arduino UNO microcontroller board.

V. BLOCK DIAGRAM

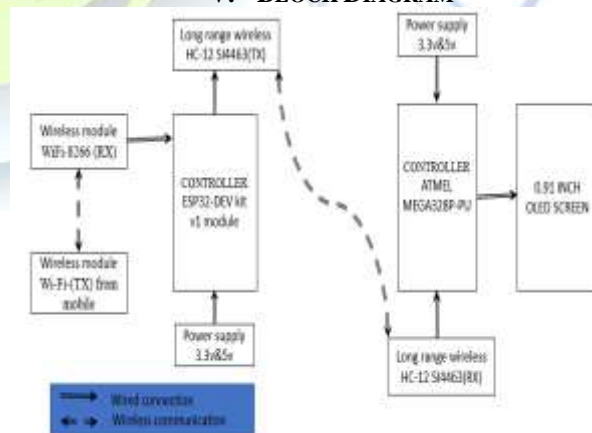


Figure: Wireless Notice Board



VI. HARDWARE

ESP32 module is a highly-integrated solution for Wi-Fi-and-Bluetooth IoT applications, with around 20 external components. ESP32 integrates an antenna switch, RF balun, power amplifier, low-noise receive amplifier, filters, and power management modules. As such, the entire solution occupies minimal Printed Circuit Board (PCB) area

HC-12-Wireless Transceiver Module- SI4463:



Figure: Hc-12-Wireless

This module offers a wireless data transmission and reception range of approximately 1.8 Km in open air. It's a low power radio chip which is ultra-easy to use. This module has an onboard STM8S003F3P6 MCU which is communicating with the SI4463. So that the user can communicate with the module using a simple TTL 2 wire serial interface (RX, TX, and GND).

7.3 0.91INCH OLED DISPLAY:

This is a 0.91 inch blue OLED display module. The display module can be interfaced with any microcontroller using SPI/IIC protocols. It is having a resolution of 128x32. The package includes display board, display, 4 pin male header pre-soldered to board. OLED (Organic Light-Emitting Diode) is a self-light-emitting technology composed of a thin, multi-layered organic film placed between an anode and cathode. In contrast to LCD technology, OLED does not require a backlight. OLED possesses high application potential for virtually all types of displays and is regarded as the ultimate technology for the next generation of flat-panel displays. OLEDs basic structure consists of organic materials positioned between the Cathode and the anode, which is composed of electric conductive transparent Indium Tin Oxide (ITO). The organic materials compose a multi-layered thin film, which includes the Hole Transporting Layer (HTL), Emission Layer (EML) and the Electron Transporting Layer (ETL).



Figure: 0.91inch OLED Display

7.4 ATMEGA328P MICROCONTROLLER:

ATMEGA328P is High Performance, Low Power Controller from Microchip. ATMEGA328P is an 8-bit Microcontroller Based on AVR RISC Architecture. It is the Most Popular of All AVR Controllers as it is used in Arduino Boards. Arduino is used for Building Different Types of Electronic Circuits Easily Using of Both a Physical Programmable Circuit Board Usually Microcontroller and Piece of Code Running on Computer with USB Connection between the Computer and Arduino. Programming Language Used in Arduino is Just a Simplified Version of C++ that Can Easily Replace Thousands of Wires with Words.



Figure: Arduino Uno R3 Boards

8. RESULT AND DISCUSSIONS:



Figure: Transmitter mobile application

Result 1:

```
const char* ssid = "Samsung j5 2016";
const char* password = "kaviarasan";
```

How are you

Result 2:



Figure: Receiver Window
incomingByte = HC12.read();
How are you

VII. SOFTWARE SETTINGS

Introduction to Arduino IDE

IDE stands for "Integrated Development Environment". It is an official software introduced by Arduino. That is mainly used for editing, compiling and uploading the code in the Arduino Device. Almost all Arduino modules are compatible with this software that is an open source and is readily available to install and start compiling the code on the go. The IDE environment is mainly distributed into three sections 1. Menu Bar 2. Text Editor 3. Output Pane bar appearing on the top is called Menu Bar that comes with five different options as follow

File – You can open a new window for writing the code or open an existing one.

Edit – Used for copying and pasting the code with further modification for font

Sketch – For compiling and programming

Tools – Mainly used for testing projects. The Programmer section in this panel is used for burning a boot loader to the new microcontroller.

Help – In case you are feeling skeptical about software, complete help is available from getting started to troubleshooting.

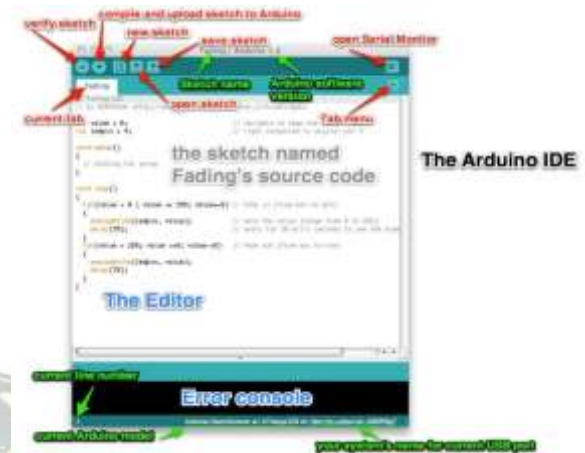


Figure: Arduino IDE Window

VIII. USE CASE DIAGRAM

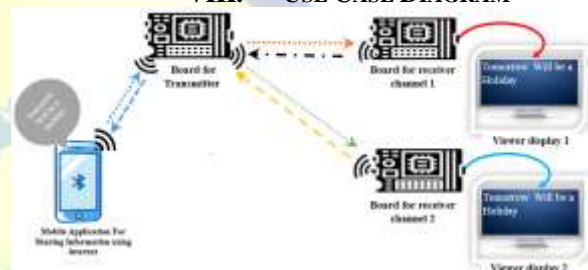


Figure: Use Case Diagram

IX. CONCLUSION

Wireless operations permit services, such as long-range communications, implement with the use of wireless. It provides fast transfer of information and are cheaper to install and maintain. This paper provides an efficient way of displaying messages on Notice Board using Wireless Technology. It also provides user authentication in order to avoid any misuse of proposed system.

Electronic Notice Board is one of the application where WIFI and Bluetooth can be used effectively. It can also be used in Malls and Highways for Advertisement purpose. A moving display with variable speed can also be used in place of static display. Notice Board is the Most Important Thing in All Institution, Organization, and Public Place like Bus Stands, Airports, Railway Stations, and Shopping Malls & Parks.

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