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IOT Based LED Electronics Board

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A B S T R A C T

Every institution or organization, as well as public facilities such as bus stations, train stations and parks, should have a bulletin board. But keeping up with the warnings day in and day out is hard work. This disclosure will require the attention of a different person. Bulletin boards can effectively display detailed information to the public, but bulletin boards are difficult to keep up to date. This project involves high-quality technical references with advanced features. The Node MCU will be used to feedback information to the display area via the Google voice assistant. The user can add, remove, or change information at any time according to his/her needs.

This voice-controlled bulletin board offers a user-friendly and versatile solution for a variety of applications including public spaces, offices and educational institutions

Keywords: MCU ESP8266 (Wi-fi module), Arduino UNO, SMPS board, P10 LED.

1. Introduction

In our daily lives, bulletin boards are an important information gathering device. In our daily life, bulletin boards can be found in various places, including educational institutions, railway stations, shopping malls, bus stops and offices Consequently, bulletin boards can be defined as places where public information, resides as advertising, publicity or public knowledge. Today, it takes a separate employee to put those reports on the report board. It would be a waste of time and resources. Paper is the primary medium for exchanging information from traditional analog type notice boards. We are well aware that the amount of data available is unlimited. As a result, a lot of paper is used to show those never-ending numbers.

A digital bulletin board can be used instead of a traditional bulletin board to create a more flexible and interactive bulletin board. This reduces manpower and resources. The exhibition space uses digital technology and electronic components/modules. It is used to present information or messages in a more friendly manner in a friendly manner that involves posting, editing and viewing information or messages. People can use the internet to live and work smarter, and to have complete control over their lives. IoT is also important for businesses transforming the home. IoT enables companies to learn how their systems perform over time, providing insights into everything from equipment performance to supply chain to supply chain [4, 5,6] The Internet of Things enables businesses to transform operations and reduces labor costs. It reduces waste and increases service delivery, makes manufacturing and distribution more cost-effective, and enables clearer communication with customers. As a result, IoT is one of the most important social technologies, and it will gain more traction as businesses realize its potential.

1.1 Literature Survey

Wifi Controlled panel is the task that is associate with E- board it's managed with the aid of a robot system and display message on that. Historically, any statistics or apprisal needed to be stuck day by day onboard. This turns into dull and needs all day care. It reduces this disadvantage by way of introducing an digital show board linked to a tool through Wi-Fi property. The observe is received by using the receiving device from the tool that brought it to an ARM7 tool. The ARM7 controller exhibits the message on an alphanumeric display screen. For showing any statistics this project may be used at varied locations like railway stations, workplaces, faculties, or airports:

It says " modern and many forward thinkers. "Colleges all over the world use tree reports Board will put advertisements on the walls. As Many challenges are encountered, identified in this pursuit at Associate in Nursing universities or. There are not enough institutions to distribute profits notice. This allows them to focus on the story A survey of organized schools, with statistics and. Information is important to keep up with the business Developments. The purpose of this book is. Make it easy for students to access posts and issues not just on school grounds, though and everywhere to be found

1.2 Existing System

Given the context, The GSM-based The board is used to display endless diaries or periodically regularly throughout the operative period. A GSM receivers and show toolkits usually do He worked out the passengers that happened Permission is granted. It gets an SMS, and after that.

Appropriate code changes, indicating required information. It is often used as a board, a very important exhibit Real-time notifications to eliminate delays.

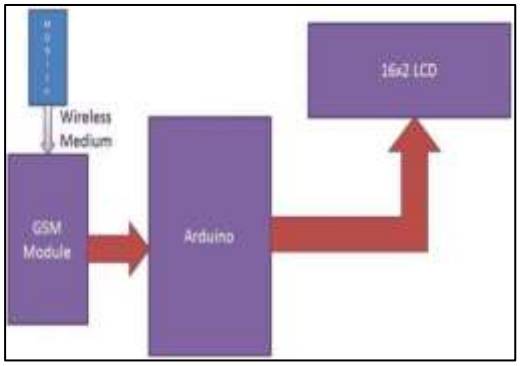

Fig: 1. Block diagram of existing system

1.3 Proposed System

An Arduino serves as the number one controller, with a Node MCU serving as the secondary controller and an LED serving as the notification display. Using Google voice assistance, the notification that has to be updated on the attention board is sent to Arduino through Node MCU, which is linked to the Arduino. Users have to be able to send messages from any region

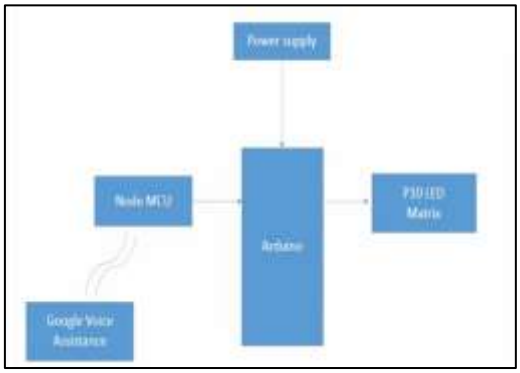

Fig: 2. Block diagram of proposed system

1.4 Hardware Components

- ARDUINO

Arduino microcontroller is a popular hobby and a single working board computer that is easy to use while and powerful. Because Arduino is open source, the hardware is cheap and the development software is free.

Arduino is a simplified C / C ++ editing language. C will be used to edit Arduino. There is no need to worry because only a few commands are needed to perform useful tasks. A key feature of Arduino is the ability to write control software to a host PC, download it to Arduino, and activate it automatically

Fig: 3. Arduino UNO

- NODE NCU

Node MCU is freeware used for programming. It is a compilation of firmware and hardware.ESP8266 module has a wifi chip and can connect to the internet. It is compact, easy to program, and is very low cost. The program can be done by Arduino IDE software and used in most IoT applications.

Fig: 4. Node MCU ESP8266(WiFi module)

- P10 LED DISPLAY

A LED Display Module is perfect for making any size LED display advertisement board, whether it's for the outside or the indoors. For best display effects, 512 high-brightness LEDs are mounted on a plastic housing. Any number of these panels can be joined in any row and column combination to create an appealing LED signboard.

Fig: 5. P10 LED Display

- SMPS BOARD

A switched-mode power supply (SMPS) is an electrical circuit that converts electricity using switching devices that turn on and off at high frequencies, as well as storage components such as inductors or capacitors to provide power while the switching device is not conducting. Computers and other sensitive equipment that requires a steady and efficient power source use switching power supplies.

Fig: 6. SMPS Board

- GOOGLE VOICE ASSISTANCE

Google Assistant is a Google-developed virtual assistant software programme that is largely available on mobile and home automation devices. Unlike the company's prior virtual assistant, Google Assistant, which is based on artificial intelligence, can have two-way conversations. It sends a note to the Node MCU, which show it on the LED panel. The command should be given as “Display”. It plays a role of transmitting the signal to the NodeMCU to display.

1.5 Software Components

The Arduino Integrated Development Software is for programming and dumping of code to the components. It communicates with and transfers programmes to Arduino hardware. It's an opensource programming tool that's free to use. Arduino is a simplified version of the C/C++ programming language. Programming the Arduino will be familiar, downloading it to the Arduino, and having it execute automatically is a key feature of the Arduino.

1.6 Working Principle

If the user wants to display or update the bulletin board, the system can operate in various modes to display documents, daily events, and schedule and then be programmed to receive messages from a WIFI bulletin board system, and Arduino is programmed to receive messages when the built-in programming language can then view messages on the serial port through the WIFI transceiver Once the message is written to the PC, the information begins to flow on the display system. A message appears on the P10 display. The system is designed to minimize time consumption and be updated at any time. It's really easy to use. It has been shown that you can use serial WIFI to send data through the serial port. This means that the information is displayed one pixel at a time, encoded, then stored, and finally displayed in the P10 module.

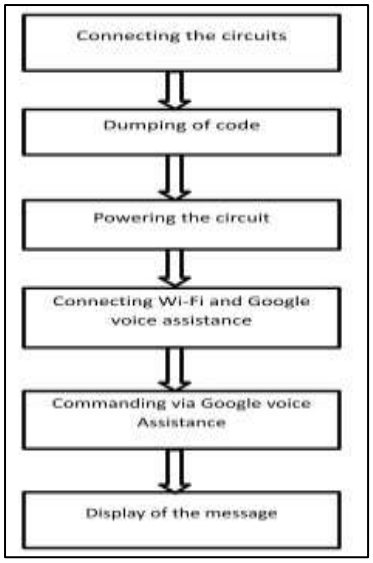

Fig: 7. Flow of working

ADVANTAGES

- There are no cords required to display the updated information on the LED display.
- It is simple to use and consumes little energy.
- The entire notice board system is transportable.
- Only authorized users can access the notice board.

APPLICATIONS

- Wireless notice boards are commonly used to show information in public spaces such as bus stops, train stations, airports, shopping malls, and

parks.

- This project is also used in businesses, schools, and universities.
- Used in food courts and hotels for distributing orders and take outs.

1.7. Result and Discussion

Tests with LED boards have shown better performance than existing systems. The proposed solution is based on Arduino UNO and NodeMCU, provides security and simplifies the process. The proposed solution uses the Arduino IDE and other software as a platform to work within an organization. It is used in the organization in which the information will be presented. The results of the LED record are shown in Figure 8 and Figure 9. Figure 8 shows the LED roll "Monday" and Figure 9 shows the LED roll "Test".

Fig: 8. Scrolling of LED “monday”

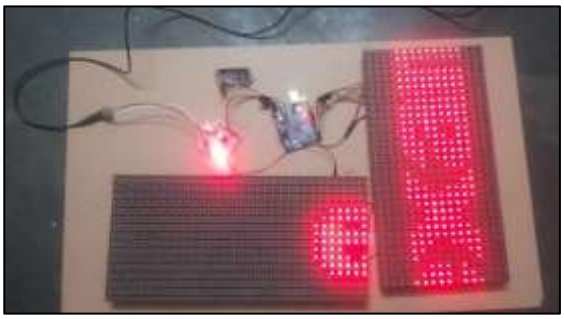

Fig: 9. Scrolling of LED “exam”

2. Applications

This voice-activated notification panel offers a wide range of applications:

- Public areas: To display real-time information such as bus schedules, train times, flight schedules.
- Offices: To update project deadlines, meeting schedules, or company announcements.
- Educational Organization: Identify lesson plans, important content, or motivational messages.

3. Future Scope

In the future, organizations will employ IOT-based LED Notice Boards to show information, and they will be tailored for a variety of institutions. Only recognized individuals have access to the board, which is properly protected for usage. It will save time and money in the near future if it is done this manner.

4. Conclusion

This technology can be incorporated into networks to improve and speed up communication. It can convey a very simple and pragmatic message. This system can be implemented in academic institutions, schools, offices, railway stations and private and business premises.

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