

## Notice Board using LED Matrix Display

**Project under the Guidance of: Prof. Pallavi U. Nehete<sup>1</sup>, Prof. Sulakshana S. Malwade<sup>2</sup>**

*<sup>1,2</sup>Professor, Information Technology Department, MAEER's MIT Polytechnic, Pune, Maharashtra, India*

**Akshada Kate<sup>3</sup>, Ankita Kharat<sup>4</sup>, Madiha A. Khan<sup>5</sup>, Mudra Yeole<sup>6</sup>**

*<sup>3,4,5,6</sup>Student, Information Technology Department, MAEER's MIT Polytechnic, Pune, Maharashtra, India*

-----\*\*\*-----

**Abstract:** - This is an IOT based project that focuses on the use of speech to voice input method to display notices on an LED matrix-based Notice board as output. We have projected our ideas to implement Speech to text conversion using Google Assistant and display the resultant output. This saves time and eliminates chances of forged authorization with the help of a secure Google account. The system is designed using Arduino. The proposed system uses Google's speech-to-text feature to convert the speech input that will be given by an authority person, into text which will subsequently be displayed on the LED matrix notice board.

**Key Words:** - IOT, Speech to Text, LED Matrix, Google Assistant, Arduino.

### 1. INTRODUCTION

This is a project that displays messages that the user desires, on an LED Display Matrix. The Display consists of 256 LED lights, sequentially arranged in 8 rows and 32 columns (8\*32). Apart from the display, the project consists of a Node MCU controller which helps the system to connect to the Wi-Fi. This system makes use of Google Assistant to accept speech inputs from user, through user's Android smartphone. User needs to login into their Google account. A USB cable acts as the power cable for the system. The speech input is converted into a text display in an alpha-numeric format which is predefined. The displayed message will either scroll or remain static, based on the size of display and length of message. This project can widely use in offices, schools, educational institutions as well as government and corporate offices to display important notices and messages. This can prove to help users save a lot of time as against the use of traditional pin and paper notice display.

### 2. TECHNOLOGIES USED

#### 2.1 IJSR-CSEIT, 17 May 2017: - Smart rolling LED Display using Arduino and Bluetooth

By Diptanuprasad Chakraborty, Shubham Yadav, Sonal Rathore, Sunil Kumar, Ruchita Agarwal, Pallavi Chandrakar.

#### ARDUINO

Arduino being an open-source hardware, is widely used for development of various projects and models. Arduino boards consist of Atmel AVR microcontroller of 8-bit with variations in the number of pins and different flash memories, features and pins. These boards are used to incorporate into circuits and make connections for programming. These microcontrollers are already programmed with the help of a boot loader that makes uploading programs, on the flash memory chip, easy.

#### BLUETOOTH

This is a wireless technology that facilitates easy data exchange between devices or mobiles over short span of distances which uses short wavelength radio waves and to build personal area networks (PANs). Bluetooth has made communication between devices easier and hassle free due to its wireless technology features. It has a low range. <sup>[1]</sup>

#### 2.2 IRJET, 3 March 2019- A paper on IOT based digital notice board using Arduino ATmega 328

by Pooja Pawar, Suvarna Langade, Mohini Bandgar.

#### ARDUINO ATmega

This is an 8-bit microcontroller variant with Reduced Instruction Set (RISC) based architecture. AT stands for Atmel and Mega stands for mega AVR with flash-memory. <sup>[2]</sup>

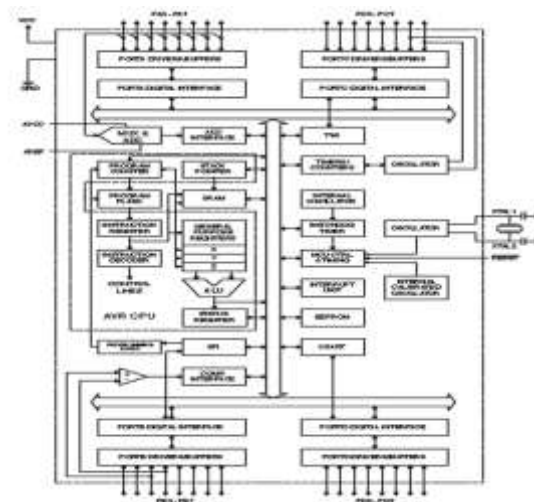


Fig -1: Microcontroller

### 2.3 IJEDR, 2014: - Scrolling LED Display using wireless transmission

By Anuradha Mujumdar, Vaishali Niranjane, Deepika Sange

#### WIRELESS TRANSMISSION

Wireless transmission aids communication between devices without connecting them manually. Data can be transmitted over a network connection. This is a hassle-free mode of data transmission which involves no cables or wires. Signals which are wireless are spread in the air which are sent, received and interpreted by antennas. [3]

### 3. COMPARISONS

Table-1

Parameter	IEEE	IJSR-CSEIT	IRJET	IJEDR
Costing	High	Low	Low	High
Time span	Long	Short	Long	Short
Objective	Display text to Speech using Google Assistant.	Display message using Android Bluetooth	Display to digital LED & desired information after necessary code conversion.	Display public messages to the masses on the LED matrix.
Features	Easy to operate at any distance location.	More efficient and Faster	Easy to use	Flexibility
Applications	Bus stationmaster and Notice boards	Railways and airport	School, banks and Offices.	Public places

### 4. BLOCK DIAGRAM

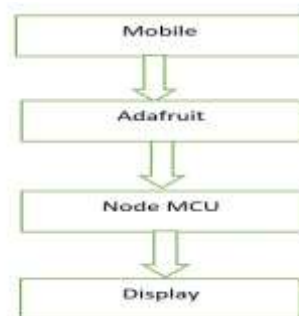


Fig-2

### 5. ARCHITECTURE- HARDWARE, SOFTWARE

Data presentation is an important part of using it, as data can be efficiently used if it is represented properly. This system follows a very simple and user-friendly architecture that can be understood by all, thus maintaining data flow. The smart display collects data from users (here, an administrator). Then, this data is further processed by Arduino and fed to the display, in a format that is predefined. The user can give inputs in the form of important schedules or upcoming events after which the controller (Arduino) will notify the user accordingly. Subsequently, the system gives an alert and displays the consequent event or schedule that was fed. This system also consists of a speech synthesizer module which takes raw speech in the form of an input, processes it and passes it on to the Arduino. These commands can then be processed into particular functions as required.

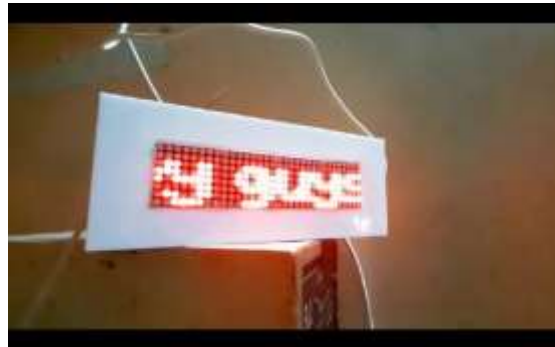


Fig-3

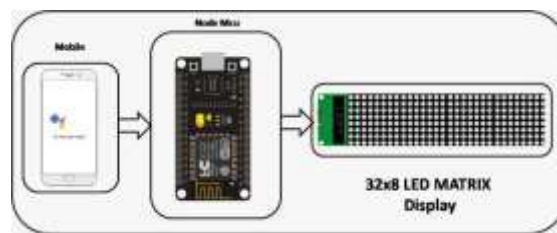


Fig-4

### 6. FLOWCHART

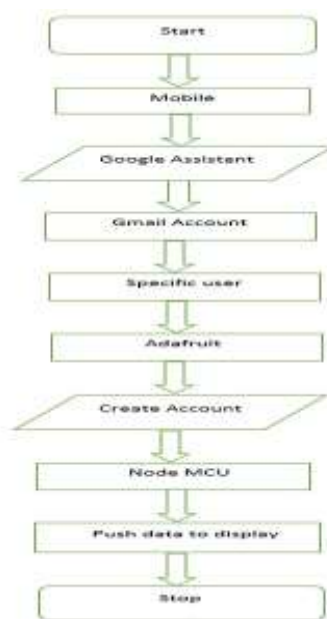


Fig-5

## 7. ADVANTAGES

Use of LED provides many advantages like

- low cost
- high brightness
- low power consumption
- ease of maintenance
- easily available

## 8. LIMITATIONS

- At a time only one user can login into the Google account.
- Every time Wi-Fi connection source changes, changes are required to be made in the code.
- Heavy hardware.

## 9. CONCLUSIONS

This is a Notice that uses LED Matrix Display. In this project we are going to develop a display, to which speech input will be provided, using Google Assistant. The speech input will be converted to text output using Google's speech-to-text feature & subsequently will be viewed on the LED display.

Our goal with this project is to revolutionize, rather digitalize the traditional use of Paper-Pin notice boards in schools & colleges, etc.

## REFERENCES

1. IJSR-CSEIT, 17 May 2017: - Smart rolling LED Display using Arduino and Bluetooth by Diptanuprasad Chakraborty, Shubham Yadav, Sonal Rathore, Sunil Kumar, Ruchita Agarwal, Pallavi Chandrakar.
2. IRJET, 3 March 2019- A paper on IOT based digital notice board using Arduino ATmega 328 by Pooja Pawar, Suvarna Langade, Mohini Bandgar.
3. IJEDR, 2014: - Scrolling LED Display using wireless transmission by Anuradha Mujumdar, Vaishali Niranjane, Deepika Sange
4. November, 2015: - A survey on digital notice board by Jaiswal Rohit, Kalawade Sanket, Kore Amod, Lagad Sanket.
5. Internet.