

IOT Based Smart Circular System Using Voice Recognition

S. S. Deekshit, Dr. M. Pala Prasad Reddy, M. G. Mahesh

Dept.of Electrical Engineering, AITS, Rajampet, Kadapa, AP, India

deekshitkoushika@gmail.com, prasadreddy.mule@gmail.com, mahi.leo5611@gmail.com

Abstract : *This paper focuses on design of smart circular system (SCS) using internet of things (IoT), which is used for digital displaying. The digital notice boards have more advantages than conventional one such as paperless, printer less and less manpower. SCS is capable of recognizing the voice as well as text given at sending end and displaying it on the notice board. Here the data is transmitted through wireless medium and displayed it on the corresponding places like classroom, lecturer hall and some other places. This system is very useful and more accurate information communicating systems in today's busy world.*

Keywords: Smart circular systems, IoT, digital notice board, analog notice board, microcontroller.

I. Introduction

Notice boards are commonly used in variety of institutions which we come across in a daily basis. In the present generation the advertisement notice boards are being managed manually. This process is difficult to involve in order to putting a notices on the notice board. This waste a lot of things like paper printer ink, manpower and also brings the loss of time. Educational institutions, and other organization use circulars and notice boards for conveying information to the employers and students. This methodology takes additional time. The problems faced by the wooden or conventional type notice boards are resolved by the implementation of our digital notice board. It will bring an advanced means of passing notices around the world in a much easier and efficient way. Due to the popularity of internet, we choose internet as a medium for transferring information. In conventional analog type notice boards, paper is the main medium for information exchange.

The information displayed on notice boards due to non-eye catching notices. educational institutions, the organization use circulars and notice boards for conveying information to the students. This methodology takes additional time for updating also many students may not be aware.

The problems faced by the wooden or conventional type notice boards are resolved by the implementation of our digital notice board[i-iv]. It will bring an advanced means of passing notices around in the world in a much easier and efficient way. Due to the popularity of internet, we choose internet as a medium for transferring information. In conventional analog type notice boards paper is the main medium for information exchange. We know that information counts are endless. So there is a usage of huge amount of paper for displaying those endless counts of information.

Designing a LCD based scrolling message display controlled from an Android mobile phone over IoT and Bluetooth voice recognition[v-vii]. The proposed system makes use of IoT and Bluetooth technology to communicate from Android phone to LCD display board with voice

recognition. The messages to be displayed are sent over android phone based voice recognition app to microcontroller[viii,ix,x]. Microcontroller decodes the message and sends over IoT (WiFi) network to two receiver modules that are kept 100meters apart. We have options of sending messages simultaneously or selectively to individual receivers. Upon receiving the message it will be scrolled on LCD displays connected to receivers.

The main controlling device of the whole system is a Microcontroller. WiFi and Bluetooth modem and buzzer are interfaced to Microcontroller. The message sent through predefined application from user Android mobile phone is received by the Bluetooth modem. Bluetooth modem feeds this information to microcontroller which process it and displays it on the LCD display. Also, the Microcontroller horns a buzzer for every new message. To perform this intelligent task, Microcontroller is loaded with an intelligent program written using embedded 'C' language[xi,xii].

II. Smart Circular System

The main function of the proposed system is to develop a Digital notice board that display message sent from the user through internet and to design a simple, 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. The block diagram of SCS was shown in fig.1.

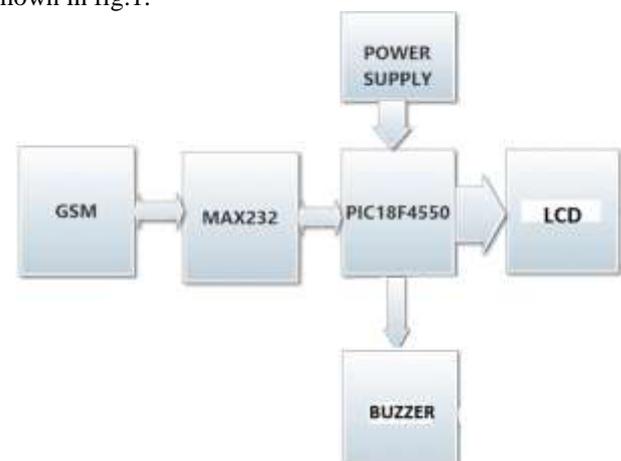


Fig. 1: Block diagram of IOT based smart circular system

System consist of two section called as sender and receiver, which shown in the figure Sender is responsible for sending valuable information through the wireless network. The block diagram of Transmitter is as shown in fig.2.

In order to access Digital notice board the sender must enter into the corresponding web address. For preventing unauthorized access web address we provide security authentications like username and password. If the username and password entered are invalid then the user can't access the digital notice board. When the user enter correct password and

user name web address will opened and get space for the information transmission. User can access this web address either using personal computer or mobile phone. To make the proposed system more user friendly we make an android application. By using this application sender can directly enter into the web address. In addition to this android application contain voice to speech converter. So the sender can send text message through his own voice without typing messages.

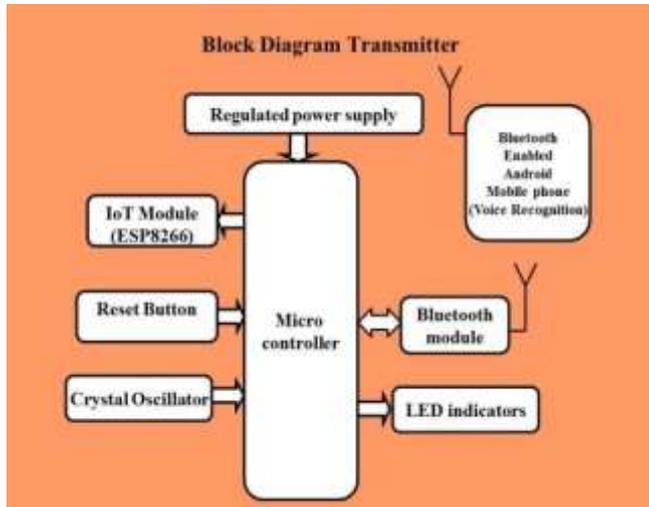


Fig. 2: Block diagram of transmitter

These messages including text file, image file and pdf file will send to the cloud. In the simplest terms, cloud means storing and accessing data and programs over the Internet instead of our computer's hard drive. The cloud is just a metaphor for the Internet.

In receiver section, Microcontroller is connected on Wi-Fi for accessing internet. The Microcontroller is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word processing. The block diagram of Receiver is as shown in fig.3.

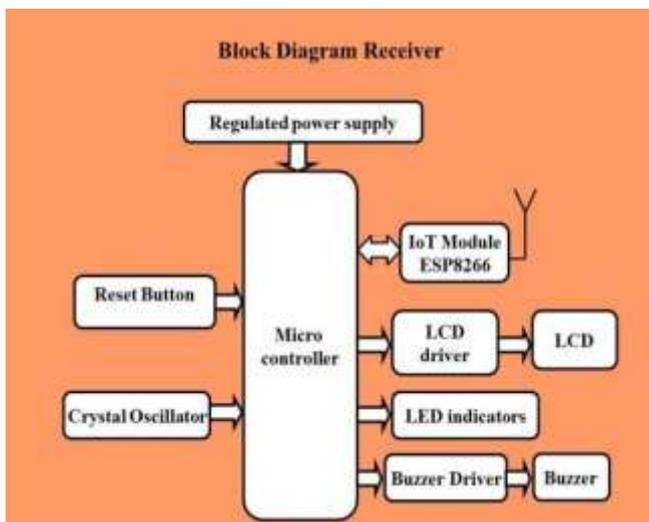


Fig. 3: Block diagram of receiver.

Microcontroller is activated by supply power around 5v. After switch on Microcontroller, it will collect data from the cloud. The web address for collecting data from the cloud is already specified through program written in the processor. Upon receiving messages it will displayed on the monitor. The received text messages are displayed on the screen like scrolling manner.

Similarly received images will display on the screen. After converting all the pdf pages in to images then it will display. We can change the scrolling text color, text size, display graphics, delay between the messages by simply made changes on the program.

Alarm is used to indicate message is received in GSM module. It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound. Initially this device was based on an electromechanical system which was identical to an electric bell without the metal gong.

This will be a moving message display, which can be used as the digital notice board, and also a Wi-Fi transceiver, which is the latest technology used for communication between the mobile and the embedded devices. System will work like when the user wants to display or update the notice board, which is very useful to display the circulars, daily events, schedules are to be displayed.

The serial WI-FI has been used it can be transmit a information from serial port communication. it means to display the information from to bit by bit to receive the notice board then stores it, messages and then displays it in the LCD module. To used in ARM cortex it can be implement in RISC process. it can be implement to less instruction seta can be manipulate the data so this is a high level transmission of data.

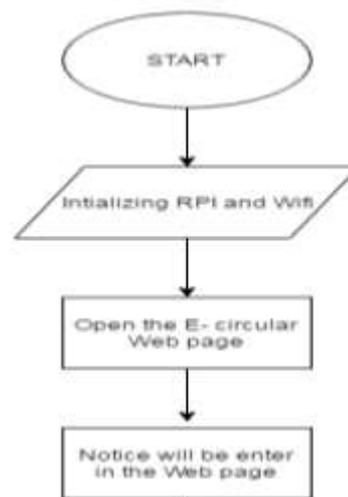
III. Algorithm & Flowchart

Algorithm:

- Step – 1:** Initialize Raspberry Pi, WIFI.
- Step – 2:** open the E-circular webpage and Enter the Notice and click the submit option.
- Step – 3:** notice can be display class room monitor on a webpage using a WIFI and also display on LCD also.
- Step – 4:** System operates until it goes power off.

Flowchart:

The flowchart of this paper is shown in below Fig.4.



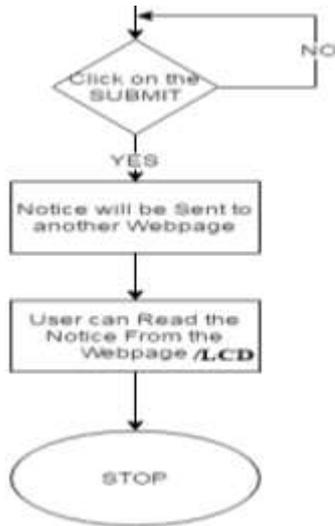


Fig. 4: Flow Chart.

IV. Results

A. Results:

Smart circular system makes use of IOT and Bluetooth technology to communicate from android phone to LCD display board with voice recognition using the Wi-Fi module. The hardware kit of this system is as shown in Fig 5.

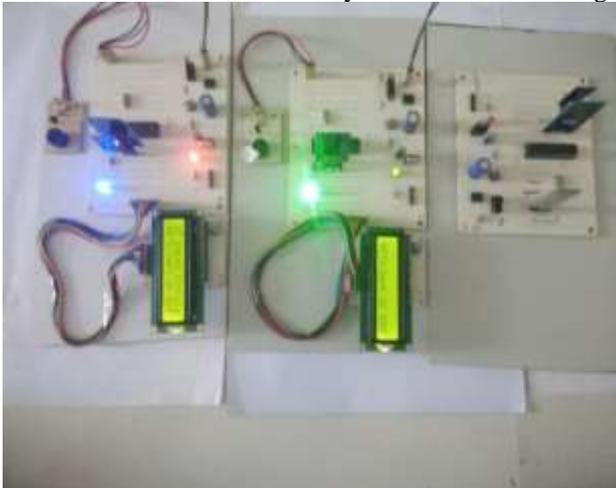


Fig. 5: Hardware kit results overview

B. Smart Circular System Using Text Message:

The messages can be displayed on the LCD with the help of WIFI module and connected through Bluetooth with some secure pattern. The below figure shows the message on LCD using text.

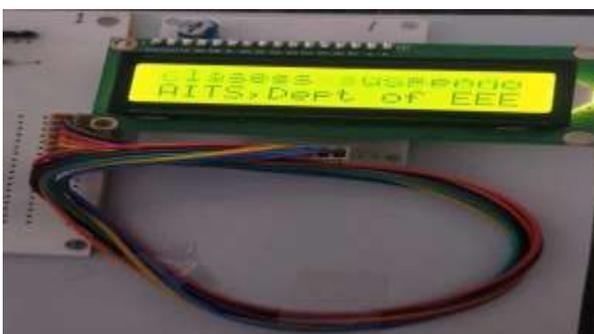


Fig. 6: Message displayed using text.

C. Smart Circular System Using Voice Recognition:

The messages can be displayed on the LCD with the help of voice and connected through Bluetooth with some secure pattern. The below figure shows the message on LCD with the help of AMR voice control.



Fig. 7: Message displayed using voice control

V. Advantages

Because of the usage of internet for the transmission of messages have lot of advantages. It includes high data transmission rate, better message quality, less waiting time etc. Username and password authentication system make the system more secure. Here raspberry pi can act as a central processing unit. So we can send not only texted messages but also can send image files in the form of Jpg, jpeg, png and pdf files with better quality. By providing deleting option it makes the newly proposed system become user friendly. This facilitates deleting any previously send data at any time. This system provide first step to achieve paperless community. Due to the reduced usage of paper in a community which make the community environmental friendly. By utilizing the advantages of Raspberry pi we can add graphics on displays. When add graphics it will get more attention from peoples. Main aims of all type of notice boards are to pass information on peoples as much as possible. So this system can pass information's on more peoples than conventional wooden type

notice boards. Due to the inbuilt memory in Raspberry pi data from the cloud is stored. This will make the system non volatile. Any failure in the power supply does not effect on the stored data. Due to these advantages the proposed system can be extended to live telecasting of information's around the world.

VI. Conclusion

The smart circular system for displaying information remotely is developed on an embedded platform. The information need to be displayed is changed on a web server page at sending end principal's room and the same information is modified remotely on a digital notice board kept at various locations for access. This technology helps in reducing the manpower, paper cost, ink and printer etc. Hence the smart circular system can be very useful for organizations to pass the information to their employees and students etc.

References

- i. Pawan Kumar, Vikas Bhardwaj, Narayan Sing Rathor, Amit Mishra, *GSM Based e-Notice Board:Wireless Communication*. ISSN: 2231-2307, Volume-2, Issue-3, July 2012.
- ii. Prachee U. Ketkar, Kunal P. Tayade, Akash P. Kulkarni, Rajkishor M. Tugnayat: "GSM Mobile Phone Based LED Scrolling Message Display System", *International Journal of Scientific Engineering and Technology* Volume 2 Issue 3; PP : 149-155.
- iii. Mr. Ramchandra K. Gurav, Mr. Rohit Jagtap, "Wireless Digital Notice Board Using GSM Technology", *International Research Journal of Engineering and Technology (IRJET)*, Volume: 02 Issue: 09 ,Dec-2015, e-ISSN: 2395 -0056.
- iv. Prof. Sudhir Kadam , Abhishek Saxena , Tushar Gaurav, "Android Based Wireless Notice Board and Printer", *International Journal of Innovative Research in Computer and Communication Engineering*, Vol. 3, Issue 12, December 2015, ISSN(Online): 2320-9801 ISSN (Print): 2320-9798.
- v. C.N.Bhoyar , ShwetaKhobragade , Samiksha Neware, "Zigbee Based Electronic Notice Board", *International Journal of Engineering Science and Computing*, March 2017.
- vi. V.P.Pati, Onkar Hajare, Shekhar Palkhe,Burhanuddin Rangwala, "Wi-Fi Based Notification System", *The International Journal Of Engineering And Science (IJES)*, Volume 3 ,Issue 5 ,2014.
- vii. S.ArulmuruganP P,S.AnithaP P,A.PriyangaP P,S.Sangeethapriya," Smart Electronic Notice Board Using WI-FI", - *International Journal of Innovative Science, Engineering & Technology*, Vol. 3 Issue 3, March 2016, ISSN 2348 –7968.
- viii. Liladhar P. Bhamre , Abhinay P.Bhavsar , Dushyant V. Bhole , Dhanshree S. Gade, "Zigbee Based Notice Board", *IJARIIIE*, Vol-3 Issue-1 2017,ISSN(O)-2395-4396.
- ix. Jaiswal Rohit , Kalawade Sanket , Kore Amod , Lagad Sanket, "Digital - Notice Board", *International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)* Volume 4 Issue 11, November 2015.
- x. Bhumi Merai, Rohit Jain , Ruby Mishra, "Smart Notice Board", *International Journal of Advanced Research in Computer and Communication Engineering* Vol. 4, Issue 4, April 2015, ISSN (Online) 2278-1021.
- xi. Modi Tejal Prakash, Kureshi Noshin Ayaz, Ostwal Pratiksha Sumtilal "Digital Notice Board", *International Journal of Engineering Development and Research*, Volume 5, Issue 2,2017, ISSN: 2321-9939.
- xii. Suma M N, Amogh H Kashyap, Kajal D, Sunain A Paleka, "Voice over WiFi based smart wireless notice board", *SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE)* – Volume4 Issue 6 – June 2017.