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## Raspberry-Pi based display board using mobile application

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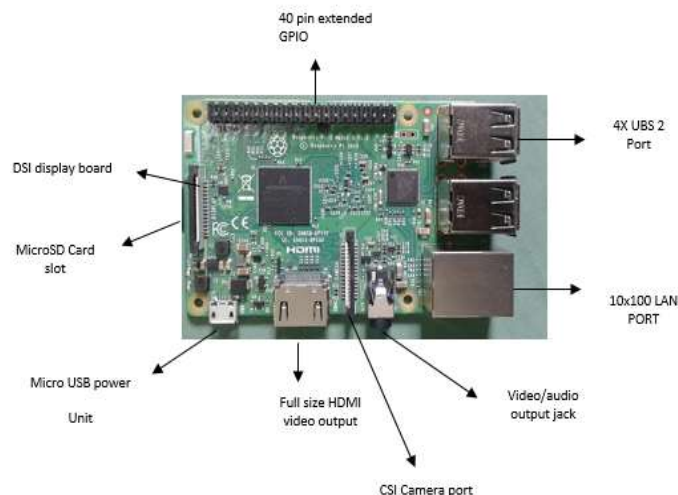
### ABSTRACT

*Display board has become an important thing in institutes, organization or public places. Sticking various notices every day with new data is a very difficult process. The system can be applicable in many areas where the information needs to be circulated visually rather than in the textual format unlike the traditional ways of displaying where the information is provided but the viewers have the least interest in viewing them. The system that is being developed brings about the communication between multiple devices which are Raspberry-pi, smart phones, and LCD display. The mobile application acts as a controller to the Raspberry-pi through wireless connectivity either Bluetooth or Wi-Fi, which is then connected to the LCD display for the information to be displayed.*

**Keywords:** LCD display, Wi-Fi, Raspberry-Pi.

### 1. INTRODUCTION

In this era, the leading-edge of the world connectivity, people demand a simple and time-saving method to access information. The display board is the very primitive method used in institutions or public business places like bus travel stations and colleges. Wireless technology handles the wireless part of the communication channel and has been used in this project to transmit data wirelessly between devices. While a phone is simply more than a phone these days, it is a Smartphone. The number of applications being built on a wide range of platforms for smart phone is growing fast and astounding. Display Boards are an important medium for displaying information and keeping people informed. The traditional notice boards involve the pinning up of printed or handwritten information on a board. But this has the disadvantages of dependency on a person for pinning up notices and wastage of paper. It will help in reducing the human effort, paper, printer ink and cost for manual changing of the notices. The mobile application acts as a controller to the Raspberry-pi through wireless connectivity either Bluetooth or Wi-Fi, which is then connected to the LCD display for the information is to be displayed. The Raspberry-pi as shown in below the Figure 1. Raspberry pi is a low cost, a credit-card size that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is able to a device that enables people of all ages to explore computing and to learn how to program in languages like Scratch and python. It is capable of doing everything's you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheet, word-processing and playing games. The operating system used by Raspberry-pi is Raspbian. This Raspberry is a free operating system, optimized for the Raspberry Pi hardware. An operating system is the set of basic programs and utilities that make your Raspberry Pi run.



**Fig.1 Raspberry pi 3**

LCD (Liquid Crystal Display) it is used for displaying a message. A 16x2 character LCD with black text on green background display is used. Being sufficiently wide it serves the purpose of a notice board display screen. It operates at 5V DC with a duty cycle of 1/16. Multiple LCD displays are used among which any one display can be chosen for displaying the notice through Mobile devices here sending a message to the raspberry pi for the display of a message to the LCD, Android includes an Android operating system, middleware, and key application. It is used by smartphones and tablets. Android phones typically come with several built-in apps and support third-party programs. Developers can create programs for Android mobile phones using Android studio and other software's. Wi-Fi is connected to the device where can connect for data viewing through raspberry pi. Wireless communication is the transformation of the information of power between two or more points that are connected by an electrical conductor such as a conductor. For few meters for Bluetooth as for kilometers radio communication. Wireless provides services such as within geographical communication that are impossible or impractical to implement with the use of wires. In this project here it has used Wi-Fi.

Wi-Fi Module Wi-Fi is a high performance and cost effective WLAN USB module. It connects the Raspberry Pi mini cost credit card-sized computer to a Wi-Fi local area network. It supports data rates up to 150 Mbps and it covers the area ranges 20 meters.

## **2. LITERATURE SURVEY**

[1]. **Prof.Sudhir Kadam, Abhishek Saxena, Tushar Gaurav Vol.3, issue 12 December 2015, Android Based Wireless Notice Board and Printer:** In this paper it is focus on a wireless notice board that displays notices when a message is sent from the user's android application device. Smartphones and Tablet are achieved by remote operation. With Android Operating system, upon a GUI (Graphical User Interface) based touch screen operation in this system which consists of display unit, printer and audio device using wireless technology. The display unit consists of any type of display that can be interfaced with microcontroller. Wireless printer is used for printing application. Audio device is speaker which is controlled by microcontroller through Text-To-Speech (TTS) convertor. GSM technology is specially used for SMS applications. The Bluetooth printing has been implemented successfully with android phone and outputs have been verified. Future work focuses on implementation of Wi-Fi printing.

[2]. **Sanjeev Singh, Sharad Yadav Rajat Agarwal, Shubham Bansal.Vol.6, Issue 4 April 2017, Android Phone Speech Recognition Sensed Voice Operated Notice Board Display:** The main objective of this paper is to develop the Voice operated Electronic notice board using display is to show messages and to control them by using our own voice. And it is a gsm based Electronic Notice board. The GSM modem receives the SMS. The commands are serially transferred to the modem through receiver and transmitter connection, then the modem transmits the stored message through the COM-port. Send this text over to microcontroller via Bluetooth for displaying on notice board in the past we.

[3]. **Prof. R. G. Gupta, Nawale Shubhangi, Tupe Usha, Waghmare Priyanka (IJARIIE), Vol-2 Issue-2 2016, Android Based E-Notice Board:** The main concept of this paper is to design an electronic notice board for colleges, schools where the message to be displayed. The notice can be sent to required departments wireless within a second. This creative technique used by the faculty in order to display the latest information. The contents of notice can be change whenever required. The GSM modem is the special type of modem which accepts the Subscriber Identity Module (SIM) card. And it is connecting to the microcontroller through the serial port.

[4]. **Megha. B. Ghale, Ashwini Asokan, Mrs. Sumitha D (NCCIP-2017), Voice Recognition E- Notice Board:** The primary goal of this work is to create a smart notice board which can operate in a well-organized manner enable the people wirelessly in transmitting notices on notice board using Bluetooth. It works on a low-cost embedded device such as Audrino Board, and for a voice-recognition excellent solution used here is the developed Android App. They have used Bluetooth Module for communication. The host can speak out the message at any time within the Bluetooth Range.

[5]. **Supriya K. Bodkhe, Prof. J.G.Rana (RISTE) 16<sup>th</sup> December 2017, large screen wireless notice display system based on android app and raspberry pi:** In this paper, the main proposed is an advanced wireless notice board in which at any time they can add or remove or alter the message according to requirement. The GSM digital notice board a SIM card was recommended to transmit the data (Notice), hence that each notice was chargeable to send. The voice calling feature can be added to the proposed system as a further enhancement for using the system in railways, airport or bus stations etc.

[6]. **Foram Kamdar, Anubhav Malhotra and Pritish Mahadik(ISSN 2231-1297, Volume 3, Number 7 (2013)), Display Message on Notice Board using GSM:** This paper deals with an advanced notice board. It presents an SMS based notice board. And it widely used GSM to facilitate the communication of displaying a message on notice board through user's mobile phones. When the user sends an SMS through a registered number from his/her phones, it is received by GSM modem at the receiver's end. GSM Modem can be accepted by any GSM network operator SIM card and just act like a mobile phone with its own unique phone number. The local languages can be added as a variation in this project.

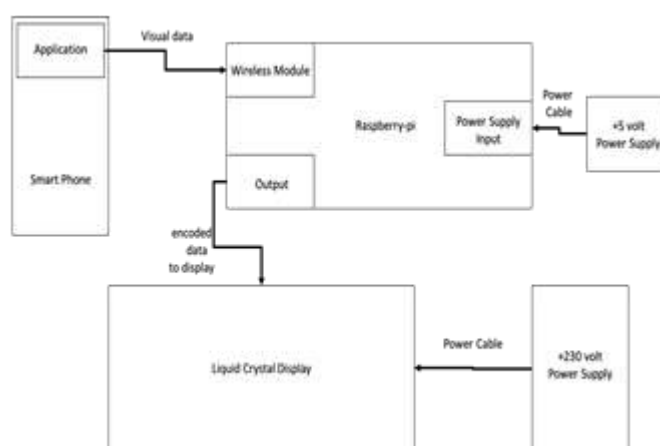
[7]. **B. Raghavendhar Reddy, E. Mahender, ISSN: 2248-9622, Vol. 3, Issue 1, January -February 2013, Speech to Text Conversion using Android Platform:** In this paper, the main concept is to develop an on-line speech-to-text engine. The system acquires speech at run time with the help of a microphone and processes it to sampled speech to recognize .and they used HMM (Hidden markup model) are defined, the decoding (or recognition) can be performed. Decoding represents a finding of a most likely sequence of hidden states using the Viterbi algorithm, according to the observed output sequence. It is defined by recursive relation. Development of models and databases for multiple languages which could create a foundation for the everyday use of this technology worldwide.

[8].**Mr. Ansari M.Tanveer, Mr. Mesh, Mr.Raju E.Waghmare Prof. S.V.Sardar (IJARCE) Vol. 2, No. 1, April 2017:** In this paper they had applied the "Encryption" and system while transferring information from one device to the other and hence this System will be immensely significant for the general mankind and also increases the efficiency of the system. Bluetooth is wireless technology used for sharing data for short distances from fixed mobile devices.

[9] **Suma M N, Amogh H Kashyap, Kajal D, Sunain A Palekar, and Volume 4 Issue 6 – June 2017, Voice over Wi-Fi-based smart wireless notice board:** In this paper, the Wireless communication technique used in this project is Wi-Fi technology. The microcontroller receives these commands and it passes these commands to the display. For message display using the GSM technology, the message received from a mobile phone is displayed on LCD. Here the data can be lost in case of power failure. The range is around 880-915 MHz (uplink) and 925-960 MHz (downlink), whereas, for wireless networks, it has a better average range of around 2.4 GHz. In GSM the data speed is comparatively lower and more expensive .further along with the message notification, date and time of ongoing events can be flashed timely.

### 3. PROPOSED WORK

The figure below it will be apparent that there exists a need for LCD (Light Emitting Diode) board that enables an efficient way to the user for displaying notices. By considering Increasing compactness of display systems, there is a need for embedding two or more systems together. This project is an implementation of the idea of wireless communication between a mobile phone and Raspberry Pi. In this project work, we are supposed to design an embedded system which Consists of the display unit, Android device using wireless technology. The display unit consists of any type of display that can be interfaced with Raspberry Pi.



**Fig.1.1 Block Diagram**

### 4. CONCLUSION

By introducing the concept of wireless technology in the Field of the communication we can make our communication more efficient and faster, with greater efficiency. We can display the messages with fewer errors and maintenance. This system can be used in college, school, offices, railway station and commercial as well as personal used. When we read all the papers we came to know that how we can develop as well as modify our voice control Android-based wireless notice board. The project can be

further a commercial model can be able to display audio, video. The same principle can be applied to control the electrical appliances at a distant location. The project can be further enhanced to control different electrical appliances.

## **5. REFERENCE**

- [1] Anjali Deshmukh, Pooja Sinha, K.Nirja Final, Sitaram Kaushal, Sayyed Arshad Ali Hashmi, Swati Chandrakar, Android Phone Speech Recognition Sensed Notice Board Display.JESC volume 7 issue no.3 2017.
- [2] Megha. B. Ghale, AshwiniAsokan, Mrs. Sumitha D.Voice Recognition E- Notice Board.International Journal of Science, Engineering, and Technology. National Conference on Communication and Image Processing (NCCIP- 2017).
- [3] Mr.Tushar S.Bahekar, Mr. Ansari M.Tanveer, Mr.Umesh S.Palaskar, Mr.Raju E.Waghmare. Android Based Voice Controlled E-Notice Board. International Journal of Advent Research in Computer and Electronics (IJARCE) Vol. 2, No. 1, April 2017.
- [4] Prof.SudhirKadam, 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
- [5] Raghavendhar Reddy, E. Mahender. Speech to Text Conversion using Android Platform. International Journal of Engineering Research and Applications (IJERA). Vol. 3, Issue 1, January -February 2013.
- [6] Foram Kamdar, Anubhav Malhotra and Pritish Mahadik. Display Message on Notice Board using GSM. Volume 3, Number 7 (2013).
- [7] Rajat Agarwal, Sanjeev Singh, Sharad Yadav, Shubham Bansal. Android Phone Speech Recognition Sensed Voice Operated Notice Board Display. International Journal of Advanced Research in Computer and Engineering.Vol. 6, Issue 4, April 2017.
- [8] Suma M N, Amogh H Kashyap, Kajal D, Sunain A Palekar. Voice over Wi-Fi-based smart wireless notice board. International Journal of Electronics and Communication Engineering (SSRG-IJECE) – Volume 4 Issue 6 – June 2017.
- [9] Supriya K. Bodkhe1, Prof. J.G.Rana. Large Screen Wireless Notice Display System Based on Android App and Raspberry Pi. Recent innovations in Science, Technology and Engineering.16 December 2017.
- [10] Vivek Kumar, Shilpi Pandey, RichaBaranwal, Pooja, and LipikaGoel.Voice Based Notice Board Using Android Application. International Research Journal of Engineering and Technology (IRJET).Volume: 04 Issue: 05 | May -2017.