

# VOICE ASSISTED SMART NOTICE BOARD

Sulochana Devi<sup>#1</sup>, Kartik Choudhary<sup>#2</sup>, Vivek Kumar Singh<sup>#3</sup>, Smit Mirani<sup>#4</sup>

<sup>#</sup>Information Technology Engineering, Mumbai University

<sup>1</sup>sulochana.d@xavierengg.com

<sup>2</sup>kartikchoudhary416@gmail.com

<sup>3</sup>vk73281@gmail.com

<sup>4</sup>smitmirani@gmail.com

**Abstract-** Notice board is a primary requirement in any institution. But the process of displaying and removing notices on daily basis becomes really hectic. Therefore, to overcome such problems we are designing a Smart notice board which would be completely digital hence removing the use of papers and making it easier to display multiple notices on daily basis. In this project we'll use Raspberry pi which is the heart of the project. A Server is used for sending notices and at receiving end Wi-Fi is connected to the raspberry pi. WI-FI stands for wireless fidelity and is used to transmit data wirelessly without and physical connection between sending and receiving end. This project will also use QR code authentication for authenticating users and once it is done the user can access personal information using voice commands.

**Keywords:** - Wireless notice board, Raspberry Pi, Voice assisted search, QR Code Scanner, Personalized notices

## I. INTRODUCTION

Notice board is one of the most important components of any premise which keep people updated about ongoing activities in the premise. But updating the notices on daily basis becomes a hectic process. Also, everyone is not interested in checking the notice all the time. Also, not all the notices can be adjusted on a single paper and a huge amount of paper is wasted in displaying notice daily. To overcome all such problems, we are implementing this project.

The idea is to develop a smart notice board using Raspberry pi. Project revolves around creating a digital notice board on which notices could be sent wirelessly. Project requires a Raspberry pi, HDMI, QR code scanner, microphone. First of all, the user would be able to view general notices, search for notices etc. If the user wants some personal data or he/she wants to view notices related to them they have to log in using QR code which will be sent personally on their email ID. Once authenticated using QR code the user can access any information using voice commands.

We are furthermore modifying the previous ideas related to this project by adding QR code authentication and voice search. The major advantage of the project would be we can display as many notices as we want, the notices could be easily added and removed, personalized data would be available, Voice search would be available, paperwork would be eliminated, Notices could be displayed with just a blink of eye therefore easing the work. As our system is cheap it will replace all the non-digital systems in the public areas with low cost. Also, this will cut of a large amount of manual labour work for maintenance of the notice boards. Initial installation will cost a little bit but that would also be covered by the long-term use of the system.

## II. FUNCTIONAL BACKGROUND

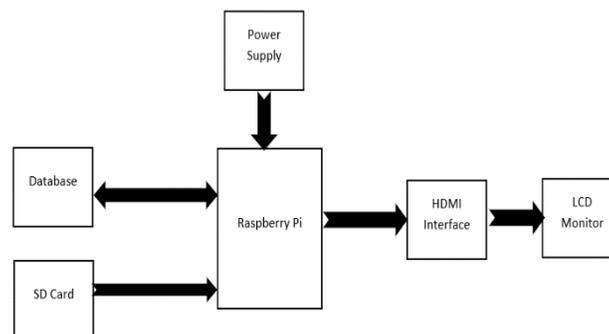


Fig 1: Basic block diagram of Smart Notice Board

All the major components of the project are shown in the figure. The block diagram consists of Raspberry Pi, HDMI interface, LCD Monitor, an inbuilt WIFI module.

#### A. Raspberry Pi

The Raspberry Pi is a small chip sized device. The B's main improvement over the 2015 Raspberry Pi 3 Model B is a Improve to processor speed Raspberry Pi 3 Model B+ has an inbuilt Broadcom 1.4GHz quad-core 64-bit processor with a Wi-Fi enabled Bluetooth and USB Port, Raspberry Pi 3 Model B+ is super-fast and more reliable than its predecessors. It also improved management of power to support more powerful external USB peripherals and now comes with inbuilt wireless and Bluetooth connectivity. Full advantage of the more improved power management on the Raspberry Pi 3 is to and provide support for even more devices on the USB ports, a 2.5a adapter is required. Broadcom BCM2837 Full size HDMI. CSI camera port that is used for connecting the Raspberry Pi camera. DSI display port for the connection of the Raspberry Pi touch screen display. Micro SD port for loading your OS and storing data. Upgraded switch Micro USB power source.

#### B. Wi-Fi Module

Wi-Fi stands for wireless networking technology that makes use of radio waves to provide wireless high-speed Internet and network connections with wide range. A common misconception is that term Wi-Fi is short for "*wireless fidelity*," however this is not true. Wi-Fi means simply a trademarked phrase that means *IEEE 802.11x*. Wi-Fi networks have no physical wired connection between sender and receiver and data is transmitted using radio frequency (RF) technology -- a frequency within the electromagnetic spectrum associated with radio wave propagation. When a Radio frequency current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space.

#### C. LCD Monitor

An LCD stands for liquid crystal display. LCD is a display technology that is used in laptops, cell phones, calculators, digital cameras, and flat screen displays. The LCD is made up of using two sheets of a flexible polarizing material and a layer of liquid crystal solution between them. An LCD is available as an active-matrix, dual-scan, or passive-matrix display and are most common with laptop computers. An LCD works differently and does not refresh like a CRT monitor, instead, a picture is created from electricity and it is sent to a liquid crystal that untwists at the rate of electricity applied, to create up to 64 shades.

#### D. HDMI Port

HDMI port will act as interface between raspberry pi and the digital notice board. HDMI (High-Definition Multimedia Interface) is a device used for having audio/video interface for transferring uncompressed video data and compressed or uncompressed digital audio data from an HDMI-compliant source device, such as a display controller, to a compatible computer monitor, video projector, digital television, or digital audio device. HDMI is a digital replacement for analog video standards. HDMI (High-Definition Multimedia Interface) is a proprietary audio/video interface for transferring uncompressed video data and compressed or uncompressed digital audio data from an HDMI-compliant source device, such as a display controller, to a compatible computer.

### III. LITERATURE SURVEY

#### Wireless Notice Board using Raspberry Pi (IJSRD2017)

This project is built on ARM controller raspberry-pi which is the heart of the system. A display is obtained on the monitor. A Wi-Fi is used for Data transmission. The good part of our project is we can display various data and files on the screen as well as we can set the timer for individual notice or video's which can be enabled or disabled according to requirements of the authorized user.[4]

#### SMART NOTICE BOARD

A GSM based smart notice board is developed in this paper. It contains two major units. The first unit is a mobile phone. Another unit is the control unit. The control unit contains a display, Arduino board, and the GSM module. The control unit will be placed in different places. Whenever any information or message has to be displayed the user can send the message as an SMS to the control unit. For sending messages to the display user has to use the mobile handset.[3]

#### Implementation of voice recognition system (ASCII)

The purpose of this research paper was to illustrate the implementation of a Voice Command System. This system works on the primary input of the users' voice. After fetching voice commands as an input, they were able to convert it to text using a speech to text engine. The text produced was used for query processing and fetching relevant information. When the information was fetched, it was then converted to speech using speech to text conversion and the relevant output to the user was given [6].

#### Exploring Concept of QR Code and Its Benefits in Digital Education System (ICACCI-2016):

This research paper is based on the concept of Digital Authentication using QR Code in Digital Education System. This paper aimed to provide a better solution to Digital Security. This research presents a prototype for digital document security especially. It is the system which stores the record of any entity and generates the QR Code for the same. The generated QR code then used for verification either 1:1 or 1: N matching. The main aim of this paper was to develop a system which authenticates users.[5]

#### Digital Notice Board Using Raspberry PI (IRJET-2016)

This project proposed that a user sends notice to Digital Monitor from an Android application based on Raspberry Pi. Notice Board has been recalled in the firstly. In the second stage, an application has been developed based on the Android framework. A Wi-Fi module is used for Data transmission. The administrator can add or remove or alter the text according to their requirement. At transmitter authorized PC is used for sending notices. At receiving end Wi-Fi is. The data is received from the authenticated user.[1]

### IV. PROPOSED SYSTEM

The proposed system puts up the idea of creating an interactive notice board through which the user can search notices using voice commands. Previous notice boards used to display just simple notices but this notice board will not just show general notices but it will also show personal notices once the user authenticates himself using QR code. We will use the mic as a primary input. To take input through the microphone, we will use speech to text conversion. In case there is too much noise and machine are not able to get input properly through the mic, there will be a secondary input device i.e. synaptic. For communication between Raspberry Pi and the main machine we will use the client- server model. QR code will be sent on personal email ID's through which the user can authenticate himself for viewing notices and data related to him/her.

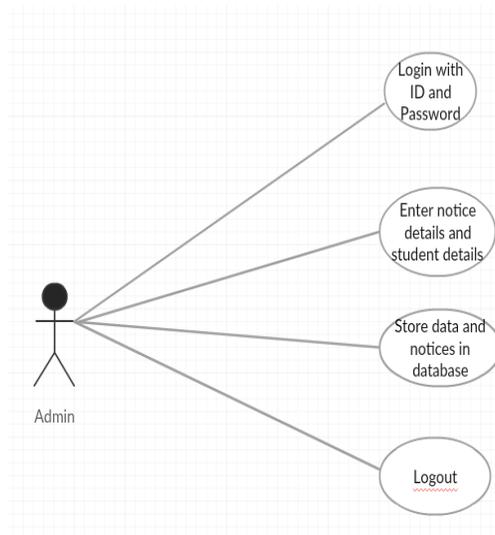


Fig 2: Use case diagram for Admin side

Admin will be the main controller of the flow of the notices. Admin will login using ID and password. Admin can enter/update/delete notices. He can access all the notices and data and store notices in database which will be retrieved by the notice board.

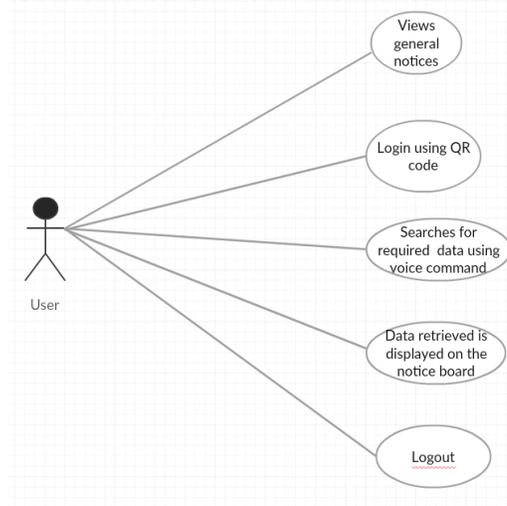


Fig 3: Use case diagram for user side

Once the user opens the notice board, he will see general notices and he can search for required notices. If the user wants more notices related to him/her or data related to him he will login using QR code once he gets authenticated, he can access all his personal data and also search anything using voice commands.

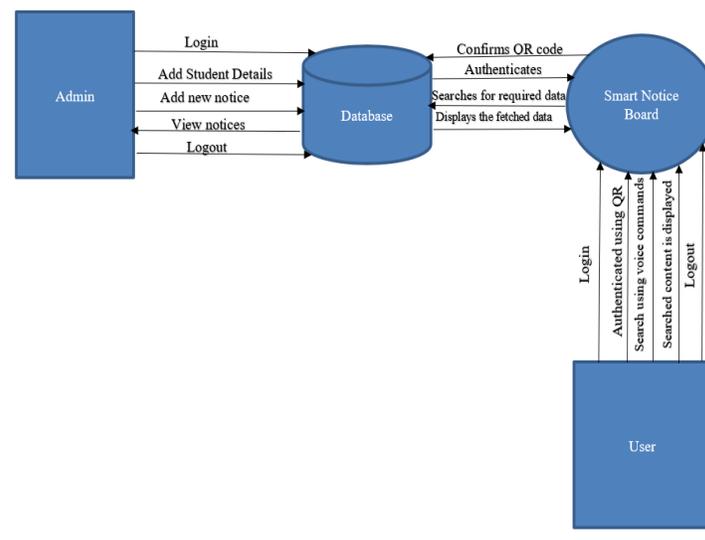


Fig 4: DFD for Smart Notice Board

The project is based on creating a digitized smart notice board for remotely sending notices over internet. The core component of this project is Raspberry pi. And the most important task of entering new notices, deleting notices, updating notices and storing notices is done by the admin. In this system, we will be using Raspberry Pi for making our Display interactive. We will use the mic as a primary input. To take input through the microphone, we will use speech to text conversion. For student authentication, we will be using QR & scanner authentication. For Faculty there will be a Different layout of the notice board. Earlier the digital notice board had limited options due to the GSM module but in our system, we will use a Wi-Fi module which will give us more freedom and flexibility. Firstly, the admin will login using ID and password to insert new notice or update existing one or delete. Once the admin is authenticated, he can do his tasks and store notices in the database he can also view any notice at any point of time. For user general notices will be always available on the main notice board. User can view any notice and search any notice using voice commands. Furthermore, if user wants any notice or data related to him/her user can login using QR code. Once the user is authenticated a new notice board will open up with user profile and other data related to him. User can access the data and search for any query using voice assistant that will search and display the notice on the notice board. This feature is included as an advancement to the previous version of the smart notice board also the QR code authentication and personalized notices and data add up more advancement to the project.

## V. IMPLEMENTATION

## A. Admin login GUI



**SMART NOTICE BOARD ADMIN LOGIN**

Enter Login ID:

Enter Password:

OK Cancel

Fig. 5 Admin Login GUI for Accessing Notice Board

Admin will login using this GUI to access the database of smart notice board.



**SMART NOTICE BOARD CONTROL PANEL**

REGISTRATION FORM

STUDENT DETAILS ADDING PORTAL SEND NOTICE TO SPECIFIC STUDENT

SEND IMAGE NOTICE SEND TEXT NOTICE

SEND XIE SAMACHAR SEND UPCOMING EVENTS DETAILS

LIVE NOTICE WINDOW

Fig. 6 Admin Control Panel GUI

Admin can insert a new notice using the following GUI. He can insert various information about student. Similarly, he can send different notices to the database.

## B. Main Notice Board



**SMART NOTICE BOARD**

HOME XIE SAMACHAR PREVIOUS NOTICES SEARCH NOTICE

NAME OF NOTICE: Academic Calendar  
DATE AND TIME OF DISPLAY: 15/03/19 02:3:2019

**Xavier Institute of Engineering**  
Mahim Casseway S. L. Raheja Hospital Road, Mumbai 400015  
TEL NO. 2443 3961-4258, 2458 9073/9159 FAX NO. 2458 2267

**ACADEMIC CALENDAR**  
Activity plan for the academic year 2018-19 (Even Semester: 18VVVV18)

Sl#	Date	Activity	Responsibility
1.	2 <sup>nd</sup> January, 2019 (Wednesday)	Meeting of Teaching Staff	Principal / HODs / Faculty
2.	2 <sup>nd</sup> January	Commencement of Even Semester	Principal / HODs
3.	03/01/2019 to 05/01/2019	Workshop on "Machine Learning and its applications with Hands-on using Python"	Department of Computer Engineering
4.	04 <sup>th</sup> and 05 <sup>th</sup> January	Two days hands on training on "Wireless Sensor Networks"	Department of Information Technology Engineering
5.	12 <sup>th</sup> and 13 <sup>th</sup> January	Cultural and Technical Festival "Spandan"	Principal / HODs
6.	19 <sup>th</sup> January (Saturday)	Departmental Meeting of Teaching and Non-Teaching Staff	HODs
7.	26/01/2018 (Saturday)	Republic Day	Principal / HODs
8.	16 February (Saturday)	Display of Defaulters List - I	HODs
9.	First and Second Week of February	Sports Festival "Spars"	Principal / HODs
10.	Second and Third Week of February	Parent-Student meet for Less Attendance	Principal / HODs / Subject Teachers
11.	19 <sup>th</sup> February (Tuesday)	Holiday - Shri Jagi Jayanti	

LIST OF NOTICES:

Website  
The Institute has a huge workshop for students on the ground floor. It is well lit, ventilated and has all the...

Notice Board  
Admins  
Departmental

Examinations  
1. Downloading J.P for math...  
2. Downloading J.P for math...  
3. Downloading J.P for math...  
4. Downloading J.P for math...  
5. Downloading J.P for math...  
6. Downloading J.P for math...  
7. Downloading J.P for math...  
8. Downloading J.P for math...  
9. Downloading J.P for math...  
10. Downloading J.P for math...  
11. Downloading J.P for math...

Publications  
1. Downloading J.P for math...  
2. Downloading J.P for math...  
3. Downloading J.P for math...  
4. Downloading J.P for math...  
5. Downloading J.P for math...  
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8. Downloading J.P for math...  
9. Downloading J.P for math...  
10. Downloading J.P for math...  
11. Downloading J.P for math...

Log In

Fig. 6 Main Notice Board GUI

User will be welcomed with the following GUI while he first accesses the notice board. User can see various notices on the main window and other general notices on the scroll area part. Furthermore, user can access XIE samachar, previous notices and can also search different notices using voice commands

### C. User Login and Voice Search GUI

User need to aauthenticate himself using QR code. The QR code will be sent on personal email ID. When user will place it before user login GUI he will be authenticated and get access to perssonal notices.



Fig. 6 User Voice Search GUI

User can access his personal notices using this GUI. He can search for any personal data using voice commands. Results like semester details, term test details, attendance, profile would be shown using the voice assistant

## VI. CONCLUSION

The world is moving towards the automation of things therefore we are totally redefining the idea of previous notice board with our voice assisted Smart notice board. With this project we are overcoming the shortcomings of earlier made projects and introducing two unique features QR code authentication and voice assisted search. The wireless operation provides a fast transmission with the huge range for communication. It saves resources and time. Data can be sent from a remote location. User authentication is provided. In earlier versions of digital notice board, it was using GSM, in that there was the limit of messages but in our system Multimedia data can be stored on a chip or on SD card. The project also overcomes the use of large labor for displaying notices on day to day basis and automating things.

## REFERENCES

- [1] Vinod B. Jadhav, Tejas S. Nagwanshi, Yogesh P. Patil, Deepak R. Patil proposed a Digital Notice Board Using Raspberry PI ' International Research Journal of Engineering and Technology (IRJET), Volume: 03 Issue: 05 — May-2016.
- [2] <https://www.raspberrypi.org/help/>
- [3] Noopur Thanvi Meet Jain Pooja Trivedi Sheldon Pereira 1,2,3,4 Student 1,2,3,4Department of Computer Engineering 1,2,3,4Thakur Polytechnic, Kandivali, Mumbai, India Proposed Wireless Notice Board using Raspberry Pi IJSRD – International Journal for Scientific Research Development— Vol. 4, Issue 11,2017 — ISSN (online): 2321-0613.
- [4] Saroj Goyal, Dr. Surendra Yadav, Manish Mathuria proposed Exploring Concept of QR Code and Its Benefits in Digital Education System 2016 Intl, Conference on Advances in Computing, Communications and Informatics (ICACCI), Sept. 21-24, 2016, Jaipur India.
- [5] Surinder Kaur1, Sanchit Sharma, Utkarsh Jain and Arpit Raj Bharati Vidyapeeth's College of Engineering,