



Smart Notice Board System

Dr. J. R. Panchal¹, Mr. Sunil Pawar²

Associate Professor, Electronics & Telecommunication Engineering Department, Dr. Daulatrao Aher College of Engineering, Karad , Maharashtra, India ¹

Student, Bachelor of Engineering , Electronics & Telecommunication Engineering Department, Dr. Daulatrao Aher College of Engineering, Karad , Maharashtra, India²

Abstract: The Educational institutes in huge campuses and Buildings, to conveying some Notice to the students or staff becomes very difficult sometimes. It is not possible for the administrators to update the notice board manually every time as it takes lots of time. Hence a system that will update the notice board automatically by taking only the voice input from the administrator will be helpful for the institutes. This project consists of digital notice board that can display the messages, a voice input device and speech recognition system. The administrator commands or notices are acquired in speech through the mice. These notices are converted into corresponding text notices by and display on the notice board with the help of microcontroller device and LCD.

Keywords: LCD, messages, voice, resignation system, notices.

I. INTRODUCTION

In this world everyone needs a comfort living life. Man has researched different technology for his sake of life. In today's world of connectedness, people are becoming accustomed to easy access to information. Whether it's through the internet or television, people want to be informed and up-to-date with the latest events happening around the world. The inclination of making the manually controlled things automatic has become a common practice these days. The process of making the things automatic is being exploited in almost all the major fields of life. Making things automatic reduces burden on the humans. The time utilized and the effort used in manually controlled processes is much higher than the automated systems. [2] Considering the commonly used notice board system in our schools, colleges and universities. The advancement in technology, there occurs a gap between the two. In these institutes, we still use manual way of putting the important notices, class and examination schedules, results, etc. in the notice boards. This manual system needs more effort and time to get the written announcements from the faculty and then put it on the notice board. In this paper, we have developed a smart notice board system which is automatic in nature and provides us information & we can update the notices, changed schedules, display results quickly on the display system without the interference of other person. The advancements in technology has been put together to make an effort to automate the process of manually publishing notices. [3] Notice Board is primary thing in any institution or public utility places like bus stations, railway stations, colleges, malls, etc. But sticking various notices day to day is a difficult process. A separate person is required to take care of this notices display. This project is about advanced wireless notice board.

The project is built by using ARM controller.

II. PROPOSED SYSTEM

The intention of this project thus is to deliver the messages within a short time span. The system is based on the android application and display messages on LCD. A person is able to deliver his/her message in very easy manner. There are no certain connections to perform this particular activity in short period. It is wireless system using Bluetooth of mobile phone. This project deals about an advanced high technology wireless notice board.

Block Diagram:

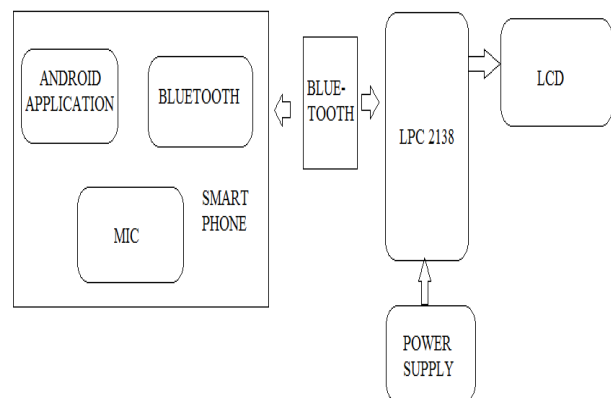


Fig. 2.1 Block Diagram of Smart Notice Board System

A. WORKING:

The system uses Bluetooth protocol for transmission of data from transmitter to receiver via Bluetooth. Received data is recognized by using Google database which is



present in smart phones. The voice input is given through mic. The mic then gives this data to Google database present in Smartphone. Then using this data the voice to text conversion takes place. The text form is shown on display of smart phone. Now in order to display it on notice board the Smartphone and notice board are connected with each other using Bluetooth protocol. Then the textual data is send to notice board via Bluetooth and it is displayed on LCD display at notice board.

III.HARDWARE REQUIREMENTS

1. Power supply of +5V
2. ARM 7 Microcontroller LPC2138
3. Liquid Crystal Display
4. RS 232
5. Bluetooth
6. Buzzers.

• Power supply:-

For our project we require a +5v power supply. This power supply can be designed using voltage regulator IC 7805.

• Microcontroller LPC2138ARM 7:-

The **LPC2138** is the brain of the project. It control all peripheral which connected to that IC externally. It is having features like 16/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package, 8/16/32 kB of on-chip static RAM and 32/64/128/256/512 kB of on-chip Flash program [4] These receivers have a typical threshold of 1.3 V, a typical hysteresis of 0.5 V, and can accept ± 30 -V inputs. Each driver converts TTL/CMOS input levels into TIA/EIA-232-F levels.

• LCD:-

LCD is used in a project to visualize the output of the application. We have used 16x2 LCD which indicates 16 columns and 2 rows. So, we can write 16 characters in each line. So, total 32 characters we can display on 16x2 LCD.

LCD can also use in a project to check the output of different modules interfaced with the microcontroller. Thus LCD plays a vital role in a project to see the output and to debug the system module wise in case of system failure in order to rectify the problem.

• RS232:-

RS232 interface is used to facilitate communication between ARM7 microcontroller and third Party devices like PC serial ports, mobile communications systems etc. RS232 standard is an asynchronous serial communication method. That means the information is sent one bit at a time. This serial communication standard is used for many tasks like for sending the commands to PC, sending debug information from microcontroller to a terminal, for downloading new firmware to the microcontroller and many other things.

• Bluetooth:-

Bluetooth is a wireless technology for exchanging data over short distances. If you are sending sensitive information over any wireless network you need to take precautions. Bluetooth is telecommunication industry specification that describes how mobile phones, computers and personal digital assistance (PDAs) can be easily interconnected using short range wireless connection. Using this technology, users of cellular phones, pagers and personal digital assistants can buy a three-in-one phone that can double as portable phone at home or in the office get quickly synchronized with information in a desktop or notebook computer, initiate the sending or receiving of a fax, initiate a print-out and in general, have all mobile and fixed computer devices be totally coordinated.

Bluetooth requires that a low cost transceiver chip be included in each device. The transceiver transmits and receives in a previously unused frequency band of 2.45 GHz that is available globally (with some variations of bandwidth in different countries). In addition to data, up to three voice channels are available. Each device has a unique 48-bit address from the IEEE 802 standard. Connections can be point to point or multipoint.

The maximum range is 10 meters. Data can be exchanged at a rate of 1Megabit/sec (up to 2Mbps in the second generation of the technology).[5] A frequency hop scheme allows devices to communicate even in areas with a great deal of electromagnetic interference. Build-in encryption and verification is provided. The technology got its unusual name in honor of Herald Bluetooth, king of Denmark in the mid-tenth century.

Buzzer:-

In this project we are using buzzer as an indicator which will indicate transmission of data is in process.

IV.SOFTWARE REQUIREMENTS

ARM program Algorithm:

1. Initialize the Bluetooth module
2. Initialize UART module
3. Initialize LCD
4. Initialize Receive interrupt
5. When Data received from Bluetooth through UART, Store Data to ARM Memory
6. Convert character by character data to strings
7. Send data to LCD to show
7. Repeat steps from step 5

Android Application Algorithm:

1. Import Bluetooth permission
2. Initialize database
3. Record speech input
4. Using Google word database, recognize word inputs
5. Send word input to ARM using Bluetooth Stack
6. Repeat from step 3



A. FLOW CHART:

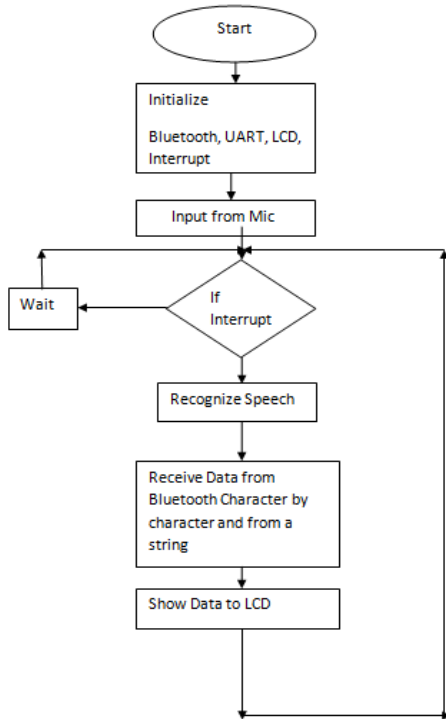


Fig. 4.1 Flow chart [1]

B. SPEECH RECOGNITION:

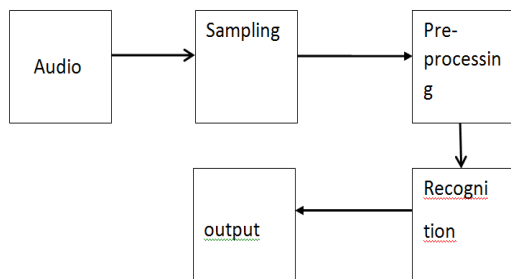


Fig. 4.2 block diagram of speech recognition. [7]

Audio:-

The audio signal is the first step of the speech recognition system. The audio signal is mainly human voice which is given through mobile speaker.

Sampling:-

The given audio signal is then sampled at particular sampling frequencies i.e. 8000Hz, 1200Hz, 44.4 KHz. The sampling rate may be 8 bit or 16 bit depending on ADC used.

Pre-processing:-

The sample signal is given to the pre-processing block. The pre-processing is actually a low pass filter whose cut

off frequency is 3.5 KHz, 5 KHz etc. Up to this range of sampled signal is passed and eliminates the other frequencies.

While using Band pass filter we get the pure audio signal because it allows signals having frequency range i.e. 20Hz to 20 KHz which is actually the audio range.

Recognition:-

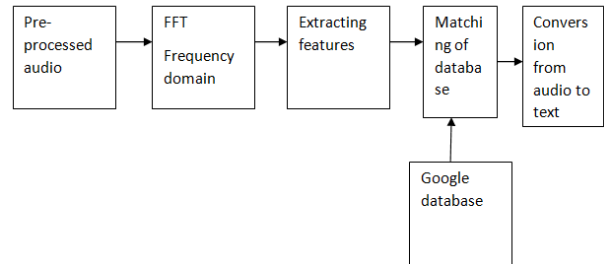


Fig. 4.3 Block diagram of recognition [6].

The obtained preprocessed audio is in time domain but the further process is carried out in frequency domain, so the preprocessed audio is passed through following operations: Fast Fourier Transform: The time domain audio is converted into frequency domain. Extracting Features: it is use to determine the harmonic frequency, average time difference of particular audio. Matching of database: The features of the audio are compared with the Google Database. Matching is done on the basis of Euclidean distance. The minimum Euclidean distance is selected by the Googledatabase. Conversion of audio to text: Hence the audio is converted into text.

Output:-

The text is ready to display. It is displayed on the LCD via Bluetooth.

V. APPLICATIONS

- 1) In Educational institutes and organizations for displaying the notices.
- 2) Information on criminals on the run.
- 3) Advertisement: in shopping malls.
- 4) Railway stations: instead of only announcing the delay in arrival of trains we can display the information.
- 5) In industrial application: displaying the notices.
- 6) Hotels: to display availability of rooms and the room rents, and type of rooms and also it can be used to display special menu of the day.
- 7) Aero plane is used for conveying the alert message.

VI. CONCLUSION

This research studies the smart work to display the message on the LCD screen. This experiment helps us to perform particular activity without any external connections. This application is perform by a simple android application, so it becomes cheaper. This app is



perform on a mobile phone. This project deals with the latest technology and easily adapted by the society.

VII. FUTURE SCOPE

A commercial model can be able to display more than one message at a time. In our system we are sending messages via GSM network and displaying on a LED by utilizing AT commands. The same principle can be applied to control electrical appliances at a distant location. Robots can be controlled in a similar fashion by sending the commands to the robots. This can be used for spy robots at distant locations, utilized by the military to monitor movement of enemy troops.

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