

SMS Based Wireless Digital Board with Voice Recognition Based on GSM

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Abstract—Notice board is a primary creature of every intuitions, schools and public places like hospitals, shopping malls, railway station and some other places, but sending various notices daily is a tedious process. In this paper, the main thing is to reduce the paper and manual works which in term will not affect the surrounding places. If data sharing is done through text messages it is not suitable for blind people and handicapped ones so to overcome this, by using voice recognition process through SMS method which does not require any internet connection to transfer data from transmitter to receiver, with the help of GSM modem and it can be converted (text and voice message) into message format for connected devices, (i.e) it can be send the information to GSM 300 SIM modem with a SIM card when is interfaced to the ports of the microcontroller. The message is thus send into the microcontroller. Then it is displayed on an electric notice board with the help of LCD screen. GSM based system, it offers flexibility to display important updates or any other announcements faster than any other programmable system. So it can transfer data in short span of time to respective mobile number, and it can be operated only on registered mobile number, otherwise it will not receive the message, so it is safe, energy efficient with lot of advantages and real time applications. Finally, I hope it will be next level of gathering information to next generations.

Keywords: GSM (Global system for mobile) SMS (Short message service)

1. INTRODUCTION

Now-a-days sharing information is going digital. Many of the stores, malls, hospitals and many public places it can be implemented for the purpose of announcing and sharing information to public through digital boards. Also our people are adapt this type of technology and also live in the smart world, but most of the universities, colleges and schools and some orphanage still uses a normal notice board. So this project to help such kind of places to implement this project even in a village government schools. So it helps in gathering updates and information at quick time. Currently we all like easy (short cut) method. Similarly in this way digital notice board receives updates in a smart way then the end result.

The students are eagerly waiting for next updates so they have automatically have interested to see digital notice board regularly in our schools and college Handicaps and patients can also easily send message into the digital boards through voice message. It helps to avoid any healthy issues for all kind of people. In this above feature is the most vital point of this project.

2. PROPOSED SYSTEM

In this SMS based digital notice board is proposed based on GSM modem. With voice recognition, the main feature doesn't require any internet connection for transmitting the input signal, Hence no need and spend money for internet. we using normal SMS(short message service) for sending input message signal.

This project is mainly used for students, for gathering new upcoming events, announcements at colleges and schools.

Another main creature is, it can be easily operated by blind people and handicaps, old people and village people who do know to text with the help of voice recognition method.

If, I paste the important news to the normal notice board, it does not reach for all, but it is handled in a digital way (i.e)

Digital notice board, it's very easy to reach, and increases gather attitude

Let's, see the operation inside this project and it features inside are as follows

This process is similar method of analog to digital conversion

If I sending one announcement to digital notice board, first it will reach the Microcontroller (ATMEGA32) with the help of AT COMMAND. It helps to control the modem. Then to receive the data at SIM300 GSM modem,

Then the modem is interfaced with the level shifter (ICMAX32) to microcontroller, thus the message is fetched into the microcontroller.

And, specially, this project contains voice recognition process, when a user can send one voice message into the free space the microcontroller will receive that particular user's data and converts voice signal to text message with the help of analog to digital converter, it to display into the digital notice board.

Hence, in this paper have both text converter and voice converter in a single device. So it is a high efficient, and easily handled for all kind of people, and it consumes less AC POWER SUPPLY (230v).

In this digital notice board operated by using some software

Let's, see the required components& its details

Then its processing block diagram, circuit diagrams and its advantages and real time applications used in our daily life can be listed below,

3. HARDWARE MODULE

In this project, we use some hardware modules, such as GSM modem (SIM 300), then SIM(any), LCD screen For Displaying purpose, MICROCONTROLLER ATMEGA32), LEVELS SHIFTER MAX232), VOLTAGE REGULATOR then POWER SUPPLY (AC),CONNECTING WIRES and finally mobile phone.

Let's see the following passage will contains details about above required components and its expansion.

3.1.1 GSM MODEM:

GSM stands for (GLOBAL SYSTEM FOR MOBILE) is a standard developed by the European Telecommunications Standards institute (ETSI) to describe the protocols for second – generation digital cellular networks used by mobile devices.

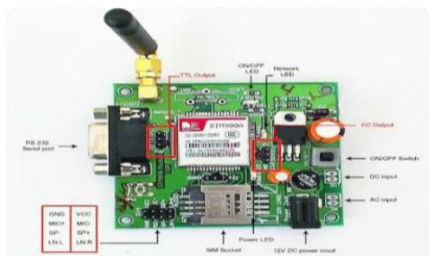


Fig-1: GSM module

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through a fixed telephone line while a wireless modem sends and receive data through radio waves.(fig:1) Likewise a GSM modem requires a SIM card from a wireless carrier in order to operate.

A GSM modem can be an external unit or a PCMCIA card also called PC card. An external GSM modem is connected to a PC through a serial cable, a USB cable, BLUTOOTH, or Infrared. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

PC's use AT commands to control a GSM modems. You can use a GSM modem just like a Hayes compatible modems. GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards.

3.1.2 SIM:

It stands for (Subscriber Identity Module),(fig:2) It is a chip-on small card consisting of user's information as well as phone book.



Fig-2 Subscriber Identity Module

User can change the operator on the same device as per convenience. At present dual SIM device are also available in the market where we can use two operators on the same device. The SIM is inserted in a slot available on the GSM Modem.

3.1.3 LCD SCREEN:

LCD stands for (LIQUID CRYSTAL DISPLAY) is an electronic device for displaying text or characters.



Fig-3 LCD screen

We are using different types of LCD. It is an economical and easily programmable and can easily display special and custom characteristics. (fig3) In this project we use 360mm display so we can easily view information at the digital board which and type of output device.

3.1.4 MICROCONTROLLER:

It is a small computer on a single integrated circuit, it containing a processor core, memory and programmable I/O peripherals.



Fig-4 Microcontroller chip

We have to use microcontroller (ATMEGA32) (fig:4). It is a high Atmel pico power 8-bit AVR RISC- based microcontroller which combines 32KB ISP Flash memory with read- while-Write capabilities, 1024B EEPROM, 2KB SRAM,23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial

interface, SPI serial port, a 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software power saving modes. The device operates between 1.8-5.5 volts.

3.1.5 LEVEL SHIFTER:

The MAX232 (fig:5) it is an IC that changed signals from an RS-232 serial port to signals suitable for use TTL compatible (DLC) digital logic circuits. The MAX232 is a dual driver and typically changed the RX, TX CTS and RTS signals. The drivers provide RS-232 voltage Level outputs (approx. + or - 7.5v) from a single +5v supply via on-chip charge pumps.

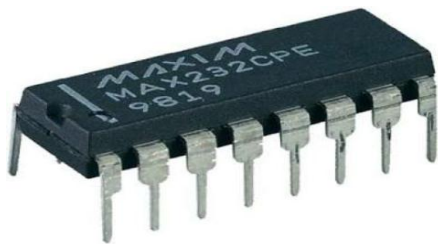


Fig-5: Level shifter

This make it useful for implementing RS=232 in devices that otherwise do not need any voltages outside the 0V to +5V range, as power supply into the device.

3.1.6 VOLTAGE REGULATOR:

A voltage regulator is a device that automatically maintains a constant voltage level (fig:6). A voltage regulator can generate the fixed output voltage of a preset magnitude that remains constant regardless of changes to its input voltage or load conditions.

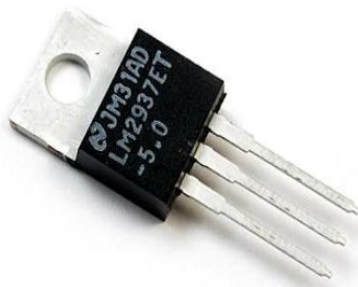


Fig- 6: voltage regulator

In this, Electronic voltages regulators are found in devices such as computer power supplies and where they stabilize the DC Voltages used by the processor and other elements.

4. SOFTWARE

4.1 SOFTWARE USED:

1. AT COMMAND (To control the GSM module)
2. Hyper terminal
3. Bascom AVR.

Many software have been used for programming and interfacing microcontroller to GSM modem SIM300 as well as LCD display. They are listed below,

1. AT COMMAND
2. HYPER TERMINAL
3. BASCOM AVR

Now, see details about software used in this project and along with uses.

4.1.1 AT COMMAND:

In this AT command are instructions used to control a modem.

AT is the abbreviation of Attention. Every command line starts with "AT" or "at". That's why modem commands are called AT commands. Many of the commands that are used to control wired dial-up modems, such as ATD(dial), ATA(Answer), ATH(Hook control) and ATO(return to online data state), are also supported by GSM/GPRS modems and mobile phones. Besides this common AT command set, GSM/GPRS modems and mobile phones support an AT command set that is specific to the GSM technology, which includes SMS- related commands like AT+CMGS(Send SMS message), AT+CMSS(send SMS message from storage), AT+CMGL (List SMS messages) and AT+CMGR(Read SMS messages).

4.1.2 HYPER TERMINAL:

Hyper terminal can be useful in diagnosing whether a connection problem is due to modem/line issues or dial-up networking issue, partly because it bypass dial-up networking. When dialing a pop. It is also capable of directing commands to the modem (ATI), thereby providing a means of collecting valuable information about the modem properties such as the chipset, BIOS and more. Hyper Terminal can therefore can therefore be used instead of "More Info" or "Query Modem" on the Diagnostics tab of the Modem Properties in Windows. In this software can also use this project.

5 4.1.3 BASCOM AVR:

In this the software, is hastier and also efficient program so, we went this Bascom AVR which is especially for AVR's like ATMEGA32. It has built in functions for UARTs, LCD etc. so and by stimulation we can also check the output on virtual LCD screen. Also by direct connection of AVR, we can burn the program from Bascom AVR only. Here we provide a basic starting code to configure LCD and UART.

```
$regfile = "m48def.dat" 'we use the M48
$crystal = 8000000'crystal frequency
$baud = 19200 'baud rate
$hstack = 32 'hardware stack
$framesize = 24
```

Dim A As Byte,C As Integer, S As String *4
A=1

So as given, the code is very easy to write and it has many other advantages other than conventional Keil software.

6 4.1.4 BLOCK DIAGRAM:

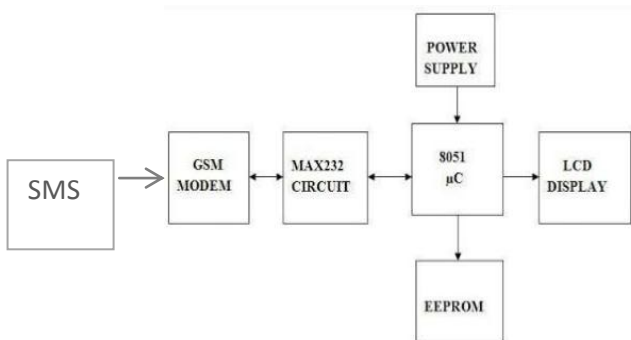


Fig-7 Block diagram of digital notice board

In this above block diagram (fig:7) can explain the processing steps for this digital notice board

Now, we discuss about the basic processing method of a GSM technology.

In this below picture can explain the actual meaning of the GSM technology and its processing steps,

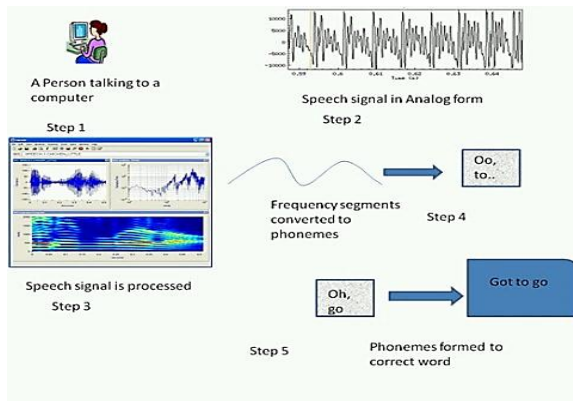


Fig-8: Processing method of GSM

In this above (fig:8) image explains the basic processing method of GSM. Now, we will the analog to digital converter block diagram,

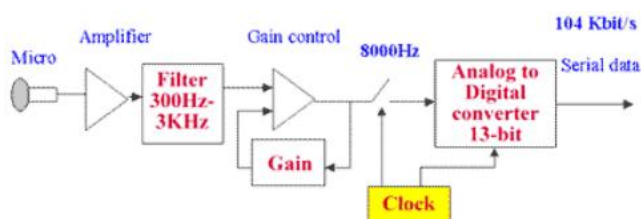


Fig-9: Analog-digital converter

5. POWER SUPPLY:

BLOCK DIAGRAM

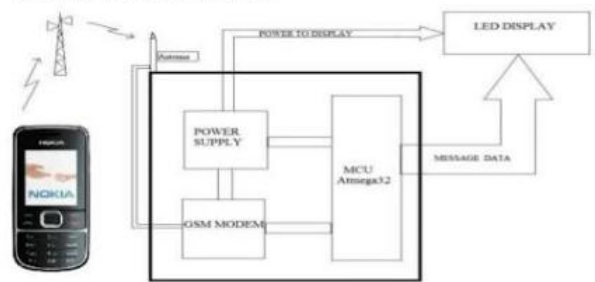


Fig-10 Block diagram of message transfer system

In this block diagram (fig:10) can explain its processing method of sending message from mobile to GSM module and that module send it message to microcontroller, then MC to transfer the file to screen.

If the message will a voice message it will automatically send to the analog to digital converter then to convert that signal into text format, then it will send to the screen to display. Now, we will discuss about the advantage and its applications of this projects and also its circuit model can also follows

6. ADVANTAGE:

1. It is easy to operate and it is easily operating device for handicaps, blind people, and also aged peoples.
2. It is easy to able to transfer the data it doesn't require any internet connections.
3. It doesn't require high cost to develop this project.
4. It saves our paper cost, printing cost and also our time it reduce man work.
5. It consume less power so, it is energy efficient.
6. And, it is easily handled by normal people.

7. APPLICATIONS:

1. It can be used in industries, office, shopping malls
2. And mainly, it can be used in colleges, universities and also schools.
3. Then it can also applied in orphanages to help for that kind of peoples to deliver some message to main head or common to all

Finally, in this SMS based digital notice board based on GSM, can be applied in several places. Then it will help for all kind of public places.

Now, I would like to conclude this paper with its future scopes.

RESULT:

In this project we use AT command and keil u vision software and then we stimulating using proteus stimulator.



Fig-11 Outcome

This project to implement its processing method and to check its working level (fig:11)

Finally it is processed successfully by using these above information can be applied.

8. CONCLUSION:

Finally, in this paper the display boards are one of the major communications medium for mass media. Local language can also add this device, then this projects can save time, effort, and money and printing paper, it is also reducing share the news with short time with smart way, at any time anywhere. Thus I can conclude this project Is just a starting point of stimulating our technology, to idea to make use of this GSM in communications to a next level for young generation

9. FUTURE SCOPE:

In future , temperature display during periods were in no message buffers are empty in one such theoretical development that is well possible in our future, another improvement would be to accommodate multiple receiver MODEMS at different angles in different areas carrying duplicate SIM cards, and most important thing is we use SD CARD for storing the messages at this technology.

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