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DESIGN & IMPLEMENTATION OF SMART MITTEN FOR DEAF AND DUMB PEOPLE

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Abstract:
Communication is the only way by which we are able to express our thoughts among the peoples. Normal people can convey their thoughts effectively by establishing the conversation between them. But in our society there are lot of people who are physically disable that means (deaf and dumb) are not able to communicate effectively. Because of this their disability they are not able to stand in race with the normal people. Some of the people have problem regarding hearing and some are not able to talk so they lag behind the normal people. Generally this people uses the sign language for the communication but they find some problem in communication with those are not able to understand sign language. So their is problem between normal people and physically disable people. This system has main purpose to reduce the communication gap between two communities. The main aim of our proposed project is to developed the cost effective system where disable people can communicate with normal people by using hand glove. This means that communication is not barrier between two communities by using smart glove. So disable can also able to grow in their respective field. Using such system by disable people can make nation grow.

I. Introduction:

One of the important problems that our society faces is that people with disabilities are finding it hard to come up with the fast-growing technology. The access to communication technologies has become essential for the handicapped people. Deaf and dumb people use sign language for communication but they find difficulty in communicating with others who don't understand sign language. Sign language is an expressive and natural way for communication between normal and dumb people. In this project Force Sensor Plays the major role, which are placed on fingers and it changes resistance depending on the amount of force on the sensor. The proposed algorithm states that four force sensors for four fingers that each sensor has range of voltage and each range indicates one message, the respective message will be displayed on LCD board and vocalized by speaker. Force sensor are load cells, transducers that convert force into measurable electrical outputs. Sensors convert the known applied load into voltage and Arduino microcontroller will receive this sensed data and show output message on the LCD board and vocalized by speaker. The message that have been used are Hungry, Need Water.

II. POWER SUPPLY

Figure: Power Supply

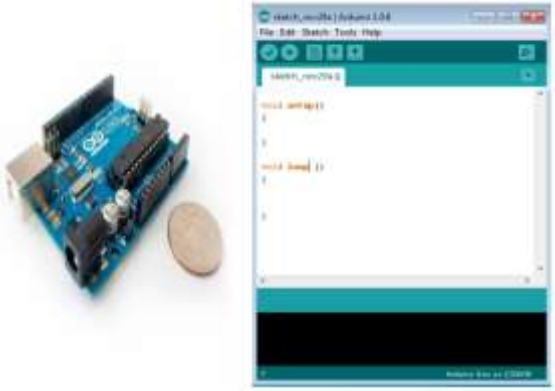
III. HARDWARE

3.1 Arduino

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

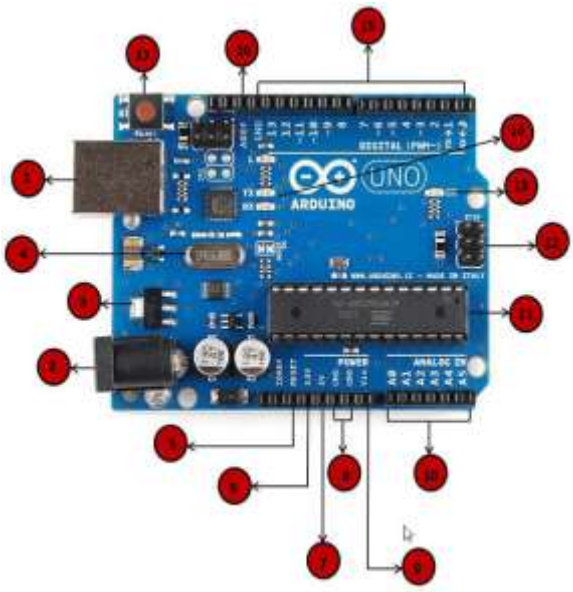
The key features are −

- Arduino boards are able to read analog or digital input signals from different sensors and turn it into an output such as activating a motor, turning LED on/off, connect to the cloud and many other actions.
- You can control your board functions by sending a set of instructions to the microcontroller on the board via Arduino IDE (referred to as uploading software).
- Unlike most previous programmable circuit boards, Arduino does not need an extra piece of hardware (called a programmer) in order to load a new code onto the board. You can simply use a USB cable.
- Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.
- Finally, Arduino provides a standard form factor that breaks the functions of the micro-controller into a more accessible package.



Board Description:

In this chapter, we will learn about the different components on the Arduino board. We will study the Arduino UNO board because it is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding. Some boards look a bit different from the one given below, but most Arduinos have majority of these components in common.

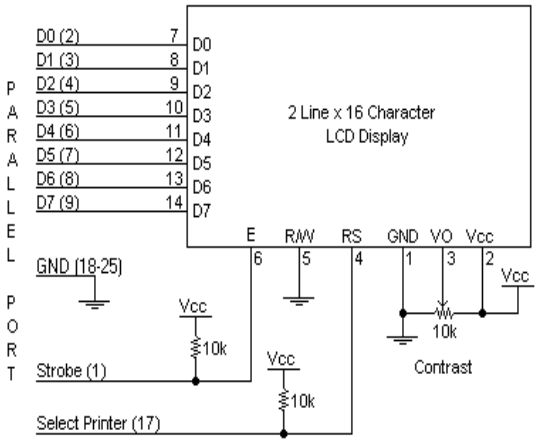


3.2 Liquid Cristal Display

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.

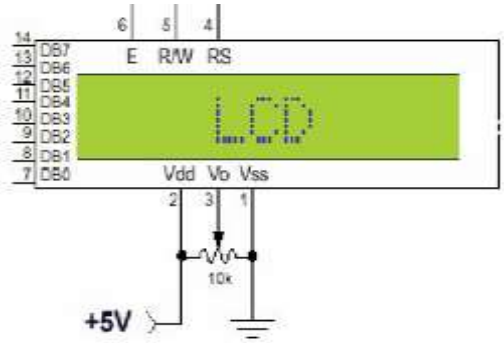
A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display. Some of the most common LCDs connected to the contollers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

3.3 Schematic Diagram



3.4 PIN DESCRIPTION:

Most LCDs with 1 controller has 14 Pins and LCDs with 2 controller has 16 Pins (two pins are extra in both for back-light LED connections).



3.5 CONTROL LINES:

EN: Line is called "Enable." This control line is used to tell the LCD that you are sending it data. To send data to the LCD, your program should make sure this line is low (0) and then set the other two control lines and/or put data on the data bus. When the other lines are completely ready, bring EN high (1) and wait for the minimum amount of time required by the LCD datasheet (this varies from LCD to LCD), and end by bringing it low (0) again.

RS: Line is the "Register Select" line. When RS is low (0), the data is to be treated as a command or special instruction (such as clear screen, position cursor, etc.). When RS is high (1), the data being sent is text data which should be displayed on the screen. For example, to display the letter "T" on the screen you would set RS high.

RW: Line is the "Read/Write" control line. When RW is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively querying (or reading) the LCD. Only one instruction ("Get LCD status") is a read command. All others are write commands, so RW will almost always be low. Finally, the data bus consists of 4 or 8 lines (depending on the mode of operation selected by the user). In the case of an 8-bit data bus, the lines are referred to as DB0, DB1, DB2, DB3, DB4, DB5, DB6, and DB7.

Logic status on control lines:

• E - 0 Access to LCD disabled
- 1 Access to LCD enabled
• R/W - 0 Writing data to LCD
- 1 Reading data from LCD
• RS - 0 Instructions
- 1 Character

Writing data to the LCD:

1) Set R/W bit to low
2) Set RS bit to logic 0 or 1 (instruction or character)
3) Set data to data lines (if it is writing)
4) Set E line to high
5) Set E line to low

Read data from data lines (if it is reading) on LCD:

1) Set R/W bit to high
2) Set RS bit to logic 0 or 1 (instruction or character)
3) Set data to data lines (if it is writing)
4) Set E line to high
5) Set E line to low

Entering Text:

First, a little tip: it is manually a lot easier to enter characters and commands in hexadecimal rather than binary (although, of course, you will need to translate commands from binary couple of sub-miniature hexadecimal rotary switches is a simple matter, although a little bit into hex so that you know which bits you are setting). Replacing the d.i.l. switch pack with a of re-wiring is necessary.

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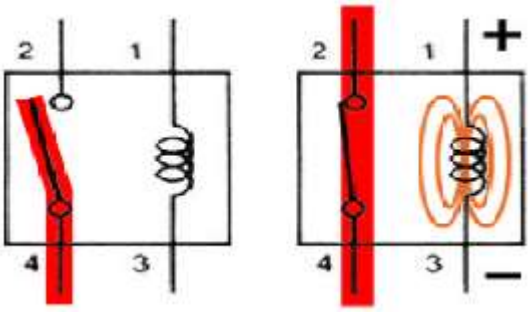
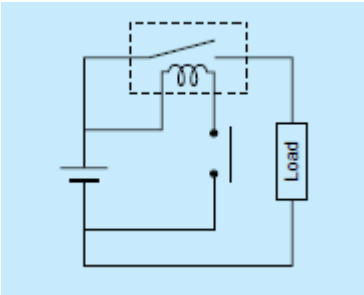
LCD Commands:

There are some present commands instructions in LCD, which we need to send to LCD through some microcontroller. Some important command instructions are given below:

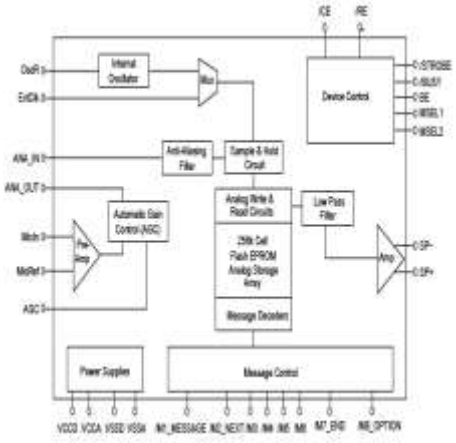
3.6 Relays

A relay is an electrically operated switch. These are remote control electrical switches that are controlled by another switch, such as a horn switch or a computer as in a power train control module, devices in industries, home based applications. Relays allow a small current pin, 4-pin, 5-pin, and 6-pin, single switch or dual switches. Relays are used throughout the automobile. Relays which come in assorted sizes, ratings, and applications, are used as remote control switches. A typical vehicle can have 20 relays or more.





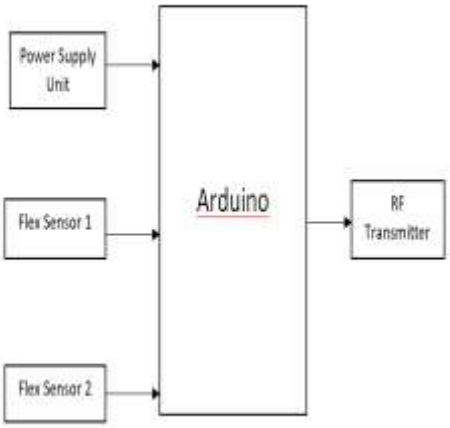
3.7 APR9600 Block Diagram:



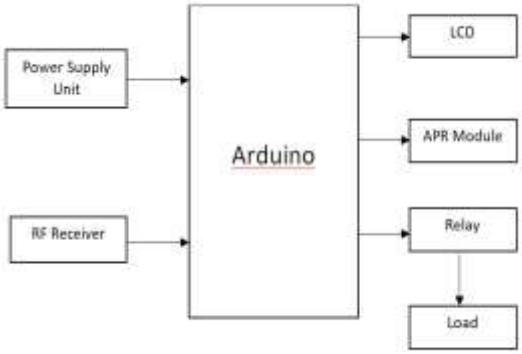
IV. Result:

4.1Block Diagram

Transmitter:

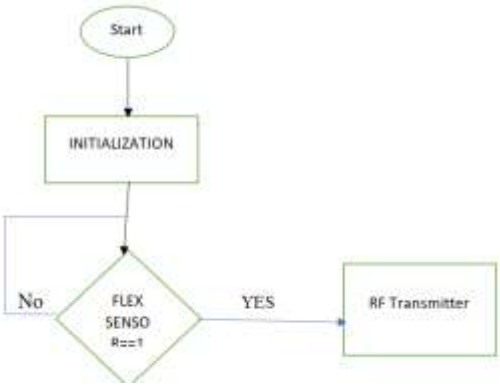


4.2 Receiver:

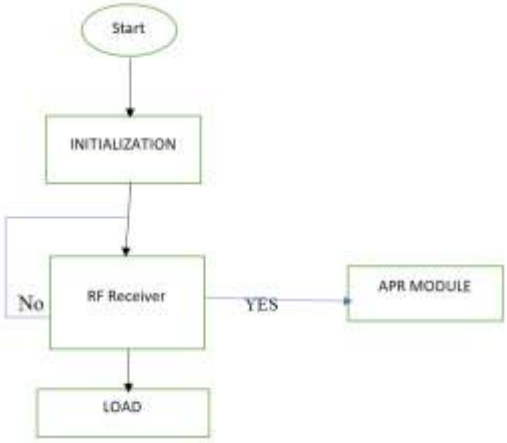


4.3 Flow Chart:

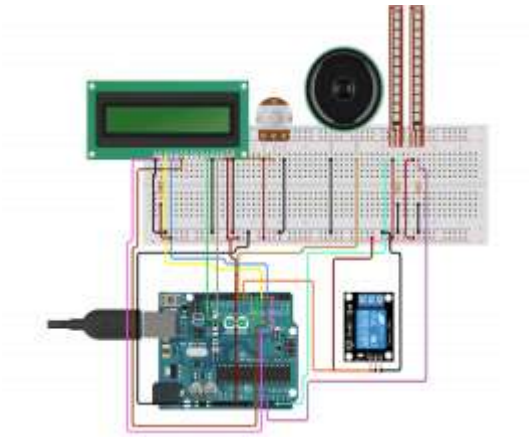
Transmitter:



4.4 Receiver



4.5 Circuit Design:



Working:

In this project Force Sensor Plays the major role, which are placed on fingers and it changes resistance depending on the amount of force on the sensor. The proposed algorithm states that four force sensors for four fingers that each sensor has range of voltage and each range indicates one message, the respective message will be displayed on LCD board and vocalized by speaker. Force sensor are load cells, transducers that convert force into measurable electrical outputs. Sensors convert the known applied load into voltage and Arduino microcontroller will receive this sensed data and show output message on the LCD board and vocalized by speaker. The message that have been used are Hungry, Need Water.

V. CONCLUSION

This project introduced the smart hand gloves for disabled people. It will provide more reliable efficient easy to use and light weight solution to user as compare to other proposed papers. This will responsible to create meaning to lives of disable people.

VI REFERENCES

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