

IMPLEMENTATION OF SMART GLOVES FOR SPEECHLESS PEOPLE

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ABSTRACT

Correspondence is an imperative idea in human's everyday life. Regularly, hard of hearing confused individuals utilize gesture based communication for correspondence, yet they think that it's hard to impart in a general public where they think that It's hard to change in accordance with this cutting edge innovation based world. The principle point of our undertaking is to speak with open in this way, hard of hearing and dumb founded individuals can impart. Here we are utilizing flex sensors for giving the contribution to the type of signals with the goal that we can give certain predefined things as the yield. APR9600 is utilized to give the voice yield which is gotten with the assistance of speaker. Arduino uno is utilized as the microcontroller for handling the sensor as information.

Keywords: APR9600, Arduino, Flex sensors, Embedded C.

I. INTRODUCTION:

These days assistive items are being produced for hard of hearing and confused individuals so as to make their life less demanding and more joyful. Content to gesture based communication transformation is principally centered around correspondence between conventional individuals and hard of hearing quiet individuals. Gesture based communication prepares for hard of hearing quiet individuals to convey.

Gesture based communication is just the method for correspondence for hard of hearing sign client. With the assistance of cutting edge science and innovation numerous procedures are created by the specialist to influence the hard of hearing individuals to convey in all respects smoothly. Gesture based communications are the essential methods for correspondence between hearing impeded individuals. Acknowledgment of communication through signing is imperative not for designing field but rather additionally for society.

II. THEORY:

The signal is filled in as a contribution to the framework which is estimated by both the sensors especially from the flex sensor. These qualities from the flex sensor are simple in nature and is given to the Arduino which utilizes the simple to advanced converter combined in it to change over the resistive qualities to computerized esteems. In light of these qualities the database is made. In view of the database the yield is shown on the LCD just as voice yield is given.

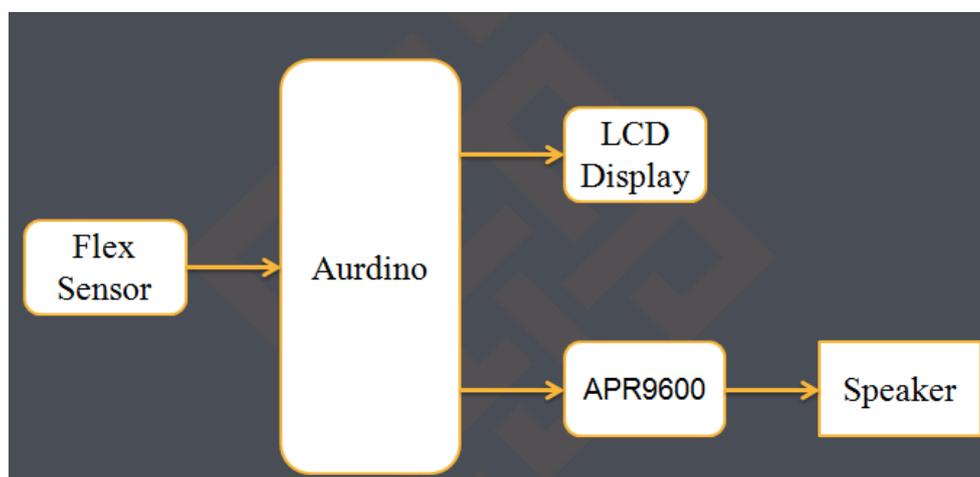


Fig1: System Block Diagram

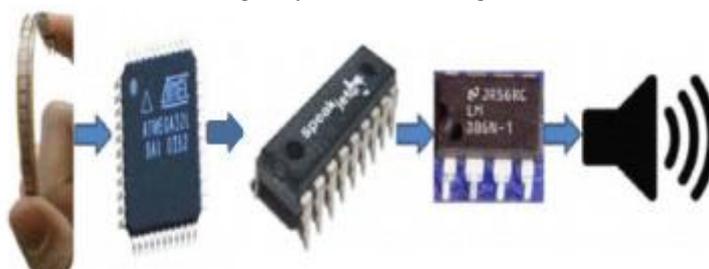


Fig2: Block Diagram in terms of components

2.1. FLEX SENSORS:

The flex sensor is an aloop gadget. This sensor are additionally called as factor resistor. The opposition of flex sensor quickly increments when segment twists forward way. This sensors are simple in nature. Generally flex sensors have 1"- 5" long strip. At the point when the sensor is in ordinary state then the obstruction is around 10k Ohm.



Fig3: Flex Sensors

The flex sensors are utilized as information and are set inside the glove. The sensor are flexible to the point that it twists effectively even with the little twist change in opposition will happen. As it is dainty and light weight so it is additionally truly agreeable. It's qualities are depicted beneath in the table.

Size	approx 0.28" wide and 1"/3"/5" long
Resistance Range	1.5-40K ohms depending on sensor. Flex point claims a 0-250K resistance range.
Lifetime	Lifetime Greater than 1 million life cycles
Temperature Range	-35 to +80 degrees Celsius
Hysteresis	7%
Voltage	5 to 12 V

Fig4: Electrical Characteristics of Flex Sensors

Flex Sensors convert the curve into electrical opposition, more twist more obstruction esteem. Connection among Bend and opposition is appeared underneath figure.

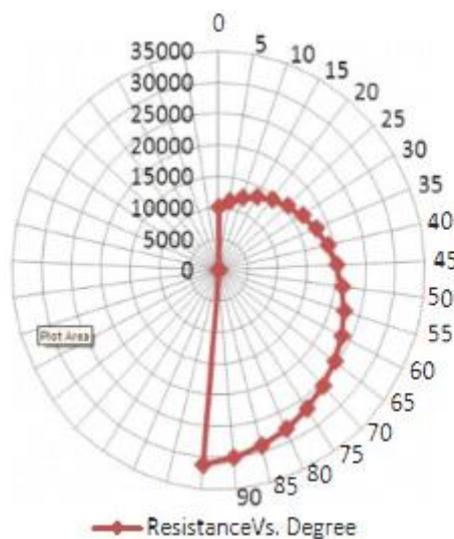


Fig5: Relation between Bend and Resistance

It consists of two wires one to ground and one to vcc then it's looks like voltage divider circuit.

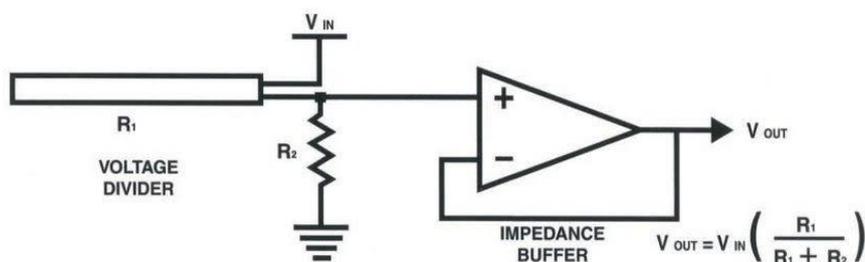


Fig6: Connection between Flex sensors and resistor for Stability

Formula for voltage divider circuit as follows:

$$V_0 = V_{CC} \left(\frac{R_2}{R_1 + R_2} \right)$$

2.2. ARDUINO UNO: Arduino Uno is a microcontroller board dependent on the ATmega328P. It has 14 computerized information/yield pins 6 simple data sources a 16MHz quartz precious stone, a USB association, a power jack, an ICSP header and a reset catch. It contain everything expected to help the microcontroller basically associate it to a PC with a USB link or power it with an AC-to-DC connector.

The sensor which gives the simple contribution to the Arduino UNO changes over into computerized structure .Depending on the obstruction esteem the relating sound discourse and instant message are shown on speaker and LCD.

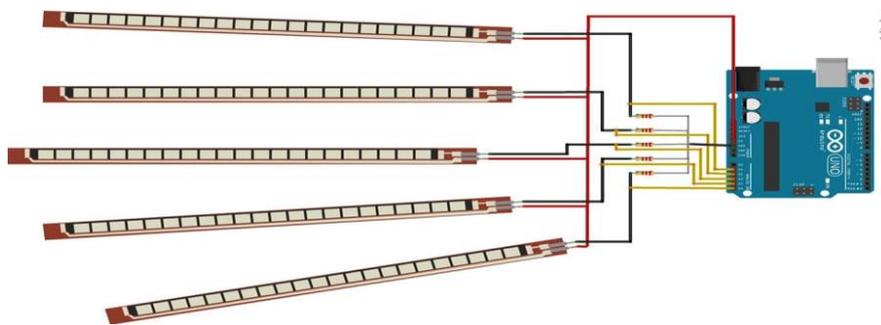


Fig7: Connection between Arduino UNO and Flex Sensors

2.3. APR9600: APR9600 is elite sound play generally utilized IC by implanted field, understudies and low cost. This module can be record and furthermore fixed sound playback, recording content transferred and an assortment of control modes can be picked , the recorded sound is held even after power supply is expelled from the module the replayed sound chronicle time frame is 1.2kHz that gives a sound record data transmission of 20Hz to 2.1kHz .

The APR9600 has 28 pins DIP bundle. Supply voltage is between 4.5v to 6.5v. Amid chronicle and replaying, current utilization is 25mA.

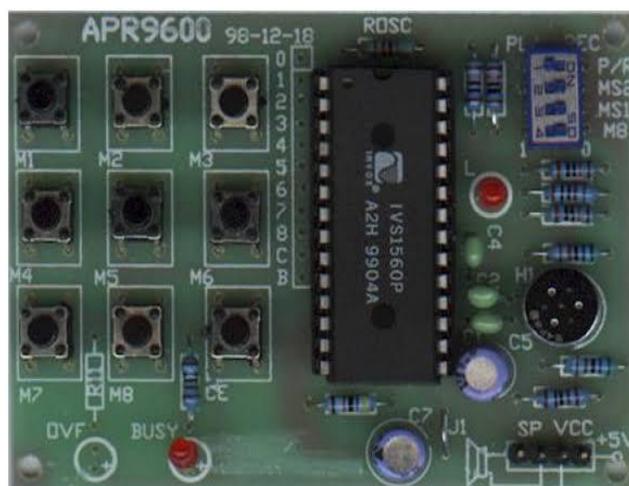


Fig8: APR9600 Module

III. RESULTS AND DISCUSSION:

In this model framework, the client shapes a motion and holds it roughly to guarantee legitimate acknowledgment. Each motion includes twisting of all fingers in specific edges in like manner. Each curve of the sensor (finger) produces novel ADC esteem with the goal that when diverse hand signal is made, distinctive ADC values are created. Taking such ADC values, the comparing words and motions are voiced out. The hand signs taken in the model can be effectively adjusted utilizing the idea of ADC tally as indicated by the client accommodation. In the meantime the voice yield can be changed effectively to gives an adaptability in change of language as indicated by various locales.

Sr. No.	Binary Code	Hex Code	Gestures	Messages
1	00000	00		No Message
2	01101	0D		I am Hungry
3	01110	0E		Call Doctor

Fig: Gestures and Messages Accordingly

IV. CONCLUSION:

Gesture based communication is one of the helpful devices to facilitate the correspondence between the hard of hearing and quiet networks and ordinary society. In spite of the fact that gesture based communication can be actualized to convey, the objective individual must have a thought of the communication through signing which is unimaginable dependably. Therefore, our undertaking defeats every one of these downsides and it is financially savvy as well. The yield is shown on the LCD just as sound yield.

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