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DEVELOPMENT OF TALK ASSISTANT FOR PERSON WITH HEARING AND SPEECH IMAPIRED

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Abstract: Communication is the solitary medium by which we can share our considerations or pass on the message yet for an individual with handicap (almost totally senseless) faces trouble in correspondence with typical individual. Along these lines, an individual who needs hearing and talking capacity can't remain in race with ordinary individual. Correspondence for an individual who can't hear is visual, not hear-able. By and large idiotic individuals utilize communication via gestures for correspondence however they discover trouble in speaking with other people who don't comprehend gesture-based communication. So, there is a hindrance in correspondence between these two networks. This work expects to bring down this hindrance in correspondence. The primary point of the proposed project is to build up a financially savvy framework which can offer voice to voiceless individual with the assistance of Smart Gloves. It implies that utilizing shrewd gloves correspondence won't be boundary between two unique networks. With the assistance of these gloves crippled individual can likewise get opportunity to fill in their particular transporter. Utilizing such gadgets by incapacitated individual likewise makes country develop.

Keywords: Flex sensor, Accelerometer (ADXL335), ATmega328, LCD, Voice module & speaker

I.INTRODUCTION

Communication is the best media utilized by individuals to speak with one another. The issue emerges when typical individuals and hard of hearing people need to speak with one another. Gesture based communication is a language which is utilized for correspondence by the not too sharp individuals. This venture is utilized to lessen the correspondence hindrance between the hard of hearing moronic individuals and the ordinary individuals. The Sign language translator created utilizes a hand glove fitted with flex sensors that can decipher the English letters, numbers and a few words. The proposed framework is communication through signing acknowledgment framework for the vocally crippled individuals who utilize gesture-based communication for correspondence. The utilization of uniquely planned sensor gloves associated with framework while a debilitated individual wearing the gloves makes the signs and signals. Framework will dissect these signals and incorporate the sound for the comparing word or letter for ordinary individuals to comprehend. Proposed framework is to use independent motions for Sign Language. This project is to develop a cost-effective system which can give voice to voiceless person with the help of Smart Glove. It means that using Smart Glove by the deaf person enables them to communicate with others person. Problems faced by the deaf person regarding employment can be overcome by this method.

BLOCK DIAGRAM

From the block diagram explains that Flex sensor and Accelerometer sensor gives an input to Microcontroller, correspondingly flex sensor readings in the form of resistance value. Microcontroller ATmega328 controls all the actions which is performed by the user. ATmega328 receives output from the flex and accelerometer. If the user passed any actions or gestures the respective output collected in data shows in LCD and it can be hear in Voice module, as we designed two outputs form.

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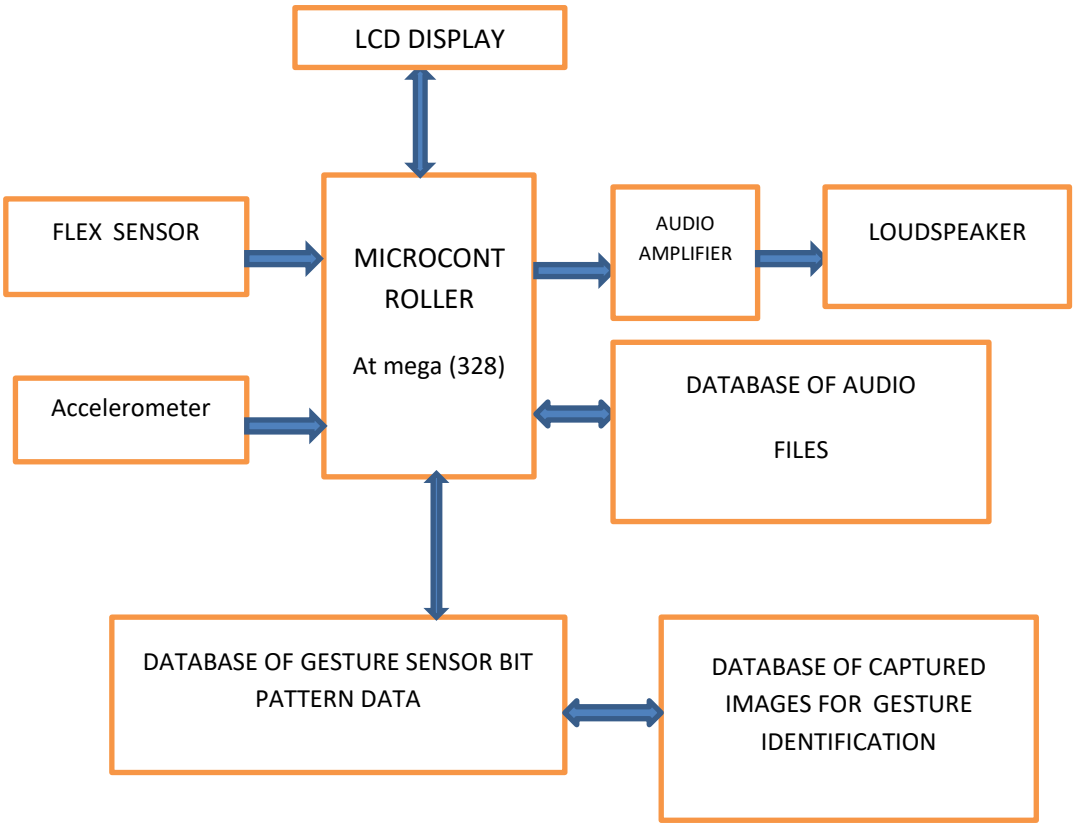
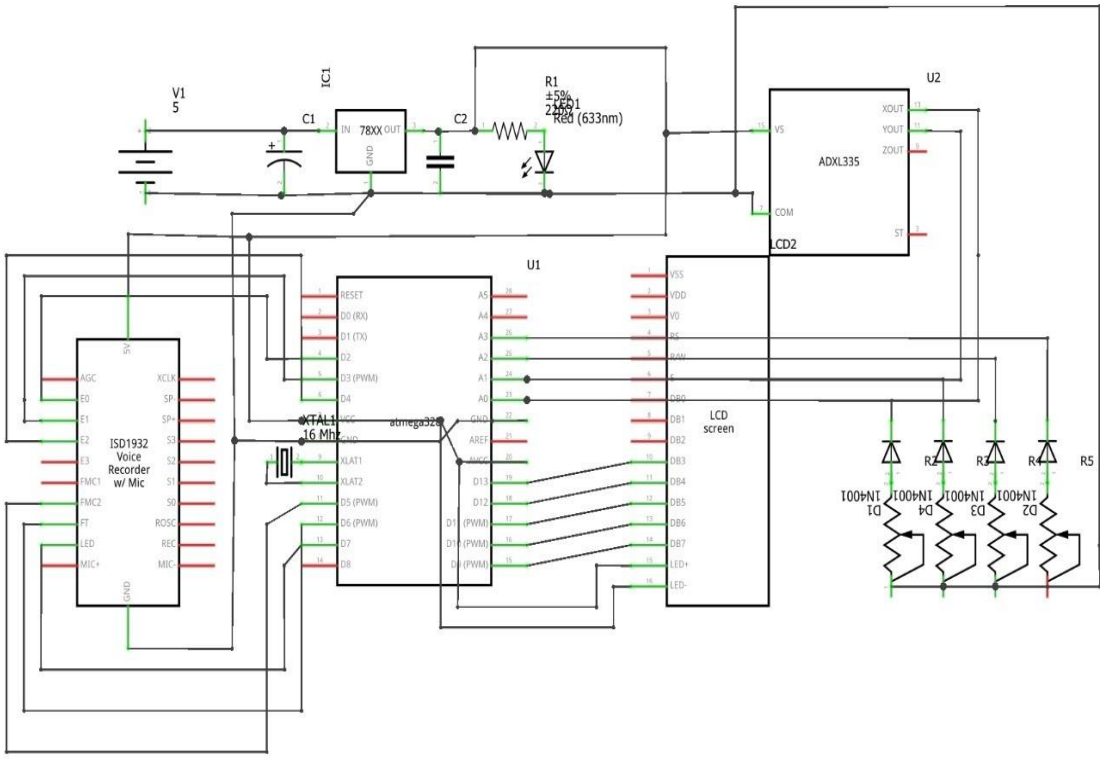


From fig.1. Block diagram

CIRCUIT DIAGRAM



From fig 2. Circuit diagram

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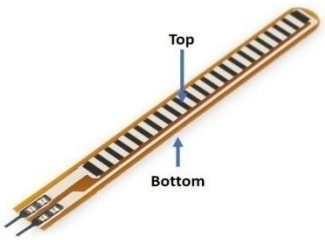
HARDWARE & SOFTWARE IMPLEMENTS

- Flex sensor
- Accelerometer
- ATmega328
- Voice module & Speaker
- LCD 16*28
- Arduino IDE

FLEX SENSOR



From fig .3Flex Sensor

The flex sensors are mounted on each finger and thumb by using threads and needle. Flex sensor is based on resistive carbon elements, which have greater form factor on a thin flexible substrate, more carbon means less resistance. When the substrate is touches the sensor produces a variation output correlated to the conductivity range. Flex sensors offers variable resistance reading. When the surface of FLEX SENSOR is completely linear it will be having its nominal resistance. When it is bent 45deg angle the FLEX SENSOR resistance increases to twice as before and when the bent is 90deg the resistance could go as high as four times the nominal resistance. So, the obstruction across the terminals rises straightly with bowed point. So, in a sense the FLEX SENSOR converts flex angle to resistance parameter.

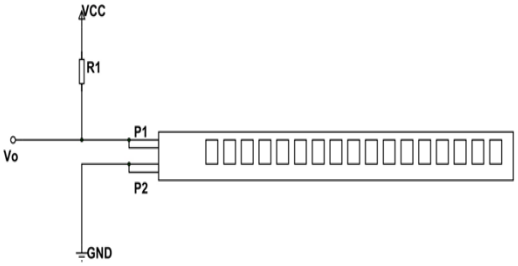


Fig 4. Basic Flex Circuit

R1 here is a constant resistance and FLEX SENSOR which acts as a variable resistance. Vo being output voltage and also the voltage across the FLEX SENSOR.

Here, Vo=Vcc (Rx/(R1+Rx)).

Rx- FLEX SENSOR resistance.

ACCELEROMETER

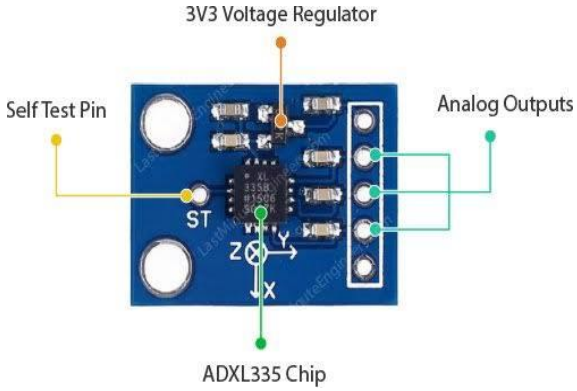


Fig 5. Accelerometer

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The ADXL335 is a little, low force, total 3-hub accelerometer with signal adapted voltage yields. It can gauge the static speed increase of gravity in slant detecting applications, just as unique speed increase coming about because of movement, stun or vibration.
Vcc = The Vcc pin powers the module, typically with +5V
GND = Power Supply Ground
X = X-axis Analog Output Pin
Y = Y- axis Analog Output Pin
Z = Z- axis Analog Output Pin
ST = Self-Test Pin. This pin controls the Self-Test feature

ATMEGA328

Fig.6. atmega328

ATMEGA328P is elite, low force regulator from Microchip. ATMEGA328P is an 8-cycle microcontroller dependent on AVR RISC engineering. Atmega328 has 28 pins altogether. It has 3 Ports in all out which are named as Port B, Port C and Port D. Port C is a simple Port and it has six pins altogether. Along these lines, in basic words, ATmega328 has 6 simple pins.
Port B and Port Dare computerized ports and have 7 pins each. Along these lines, altogether ATmega328 has 14 advanced pins. It likewise upholds Serial Communications; we can perform sequential correspondence. Microcontroller receives input from flex sensor and accelerometer and sends output to voice module & LCD.

LCD 16*2

Fig .7 LCD

At the point when any activity is passed by the tragically challenged, at that point the comparing word for correspondence is put away in microcontroller will be shown in LCD so the imbecilic individuals can get their message to other people. Here we utilized for 16*2 LCD type for this associate talking.

VOICE MODULE & SPEAKER:

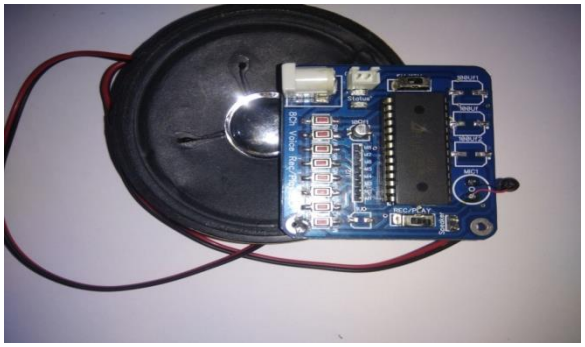

Fig. 8 voice module

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Here we use multi-channel voice module, it can store voice up to few moments utilizing the Mic as the information gadget. This voice chip has a playback choice, so we can playback the put away voice and tune in through the speaker. This module helps for correspondence among moronic and hard of hearing individuals. Hard of hearing individuals can pass on their message through hand signal, so the relating word put away in the voice chip for the motion produces yield then second through speaker.

PROTOTYPE OF THIS PROJECT

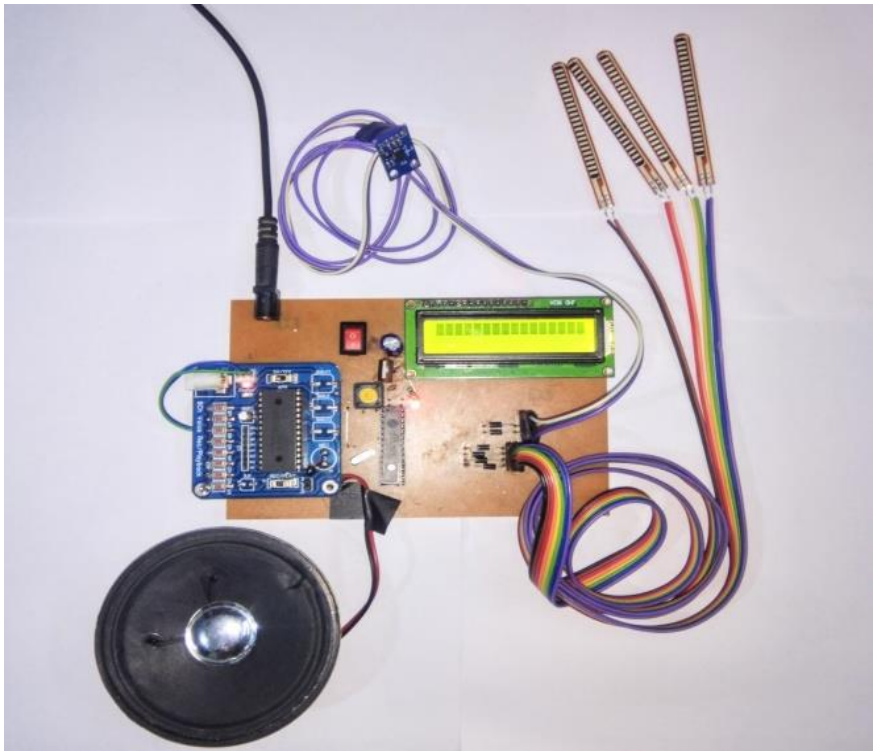

Fig. 9 Hardware setup

RESULT AND DISCUSSION

SIGN LANGUAGE FOR WORD

I

OUTPUT IS SHOWN FOR THE RESPECTIVE SIGN

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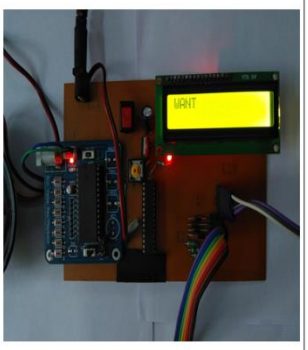
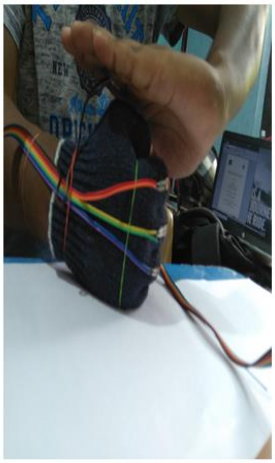
SIGN LANGUAGE FOR WORD **WANT**



OUTPUT IS SHOWN FOR THE RESPECTIVE SIGN



SIGN LANGUAGE FOR WORD **COFFEE**

OUTPUT IS SHOWN FOR THE RESPECTIVE SIGN

SIGN LANGUAGE FOR WORD **OK**

OUTPUT IS SHOWN FOR THE RESPECTIVE SIGN

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SIGN LANGUAGE FOR WORD **THANK YOU**

OUTPUT IS SHOWN FOR THE RESPECTIVE SIGN

From above diagrams shows the output for respective sign language. We are converting sign language into text and speech so that communication is not limited between them only, utilizing data gloves communication barrier between two different communities will decrease and making their future better. In future this idea can be further enhanced by including more conversation statements and more compact.

CONCLUSION

This presented keen communication utilizing hand gloves for hard of hearing and unable to speak will give proficient, simple to utilize and light weight to client when contrasted with other communicational guides accessible. We are changing over communication through signing into text and discourse with the goal that correspondence isn't restricted between them just, using information gloves correspondence boundary between two unique networks will diminish and improving their future**.**

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