

A new approach speaking aid for deaf and dumb people

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Abstract— In day to day life communication is major issue for deaf, dumb people and it is difficult to take notes for particular things.so, for removing the barrier of communication a glove is designed for mute people with preloaded message. The main objective of this paper is to design a portable sized device that is easy to use. The design for this device was made keeping in mind with all different kind of disabilities. This paper is valuable to a disable person who is having difficulty in communication with other. This will make use of the portable technology and Arduino circuit board to provide a means of communication to differently abled person.

keywords— flex sensor ,arduino board,bluetooth tranceiver,sensor glove.

I. INTRODUCTION

There are about 12.3 million people in India with moderate to complete hearing loss. There are 478 school receiving government funding approximately 372 private schools for the deaf scattered through India. Science and technology have made human life addictive to comfort but still there existing an underprivileged group of people who are fighting for finding an innovative way that can make the process of communication easier for them. Conversation between person who lacks the ability to talk and hear with a

normal person have always been a challenging task.

There is a device which aims to solve the problem of person with hearing and speech impairment called a deaf-mute communication interpreter system. The glove is equipped with five flex sensors, tactile sensor and accelerometer attached internally. For each specific gesture, the flex sensor creates a proportional variation in resistance and accelerometer measures the orientation of hand. The processing of the hand gesture is executed in Arduino . The glove includes two operational model –training mode and operation mode. The chain of letters to form words is also done in Arduino. In addition, the device also include text to speech conversion (TTS) block which translate the matched gesture.

However these device are not able to eliminate the complet disability of a person as this may help the normal person to understand them if the normal person wishes to communicate back he must know any of the above language . Hence this device will provide only one way of communication. In this paper a glove is designed using flex sensor to communicate between Dumb people and normal people and assigning particular message for each gesture. The gesture created by the glove will be send to normal person's phone and it will be displayed on LCD.

II. EXISTING SYSTEM

Digital data entry glove had finger flex sensor, tactile sensor at the fingertips, orientation sensing and wrist positioning sensors.

The position of the sensors are changeable due to the gestures. It is intended for creating “alphanumeric” character by examining hand positions. It was primarily designed as an alternatives of key board, but it also proved to be effective as a tool for allowing users with speech impairment to “finger spell” words. Data gloves are one of the several types of electromechanical devices used in this haptic application.

III. PROPOSED SYSTEM

This will make the communication easy between the disabled people based on the extend of their abilities. This device takes the input message from the differently abled whether it be text , hand gesture, Braille input as per his/her disabilities and facility and that message will be transferred to long or short distances as per the requirements. Once the message is transmitted to the receiver then it again converted into text, voice as per the components used.

- PIC16f886
- APR33A3
- Bluetooth Transceiver HC-05
- Flex sensor
- Vibration motor

The proposed system consists of primarily two sections:

- 1.Transmitter section
- 2.Receiver section

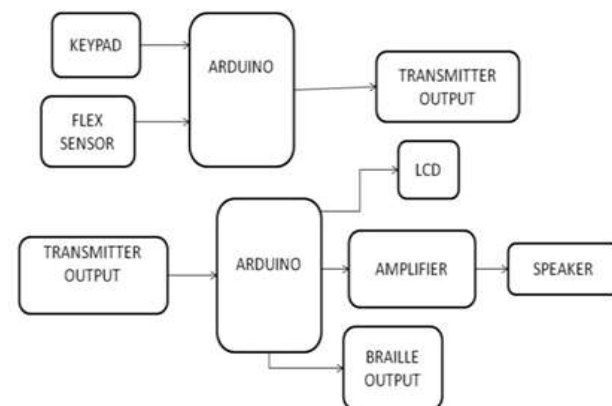
The block contained in the Transmitter section are:

- 1.flex sensor
- 2.keypad
- 3.Arduino
- 4.Bluetooth Transmitter

The block contained in the Receiver section are:

- 1.Bluetooth Receiver
- 2.Arduino
- 3.voice module
- 4.LCD

IV. BLOCK DIAGRAM OF PROPOSED SYSTEM



METHODOLOGY

This system we are using a type of wearable technology. The output and input of the system is set to the desired form of the user. The message to be send by the user is taken as an input to the gadget. The input can be text, gesture. the gadget has a sensor glove for texting the and braille language input and converting into text. If the message to be

delivered by the sender is in and the communication is a direct type communication then the message is directly to the receiver.

MODULES

- Recording section
- Audio playback
- Display section
- Motor section
- Transceiver section
- Sensing

Sensor glove:

The sensor glove is used to convert the American sign language(ASL) into audio using voice board which can further be converted into text to be displayed on the LCD screen as per the requirements.

Arduino Uno:

The Arduino Uno is a micro controller board based on the ATmega328. It has 14 digital input/output pins. In this project we are using 2 Arduino boards one as a master other as a slave. The inputs are connected to master device and the signal are received by the slave device.

Flex sensor:

A flex or bend sensor is a sensor that detects the amount of deflection by the change in resistance. Here we using 5 flex sensor each for each finger. Usually they follow American sign language (ASL) for gesture recognition. Finger spelling is a method of spelling words using hand moments.

Voice playback and recorder kit & braille output:

Voice playback and recorder kit gives high quality recording and playback with 11minutes audio at 8khz sampling with 16 bit resolution. Here we use motors for creating a sense of vibration which can be felt by blind

people. These motors are arranged in such a way that it resembles and when the input is given the motor run according to the input.

Bluetooth transceiver HC-05

- HC-05 is a more capable module that can be set to be either master or slave.
- HC-06 is a slave only device.
- These modules run on 3.3V power with 3.3V signal levels, they have no pins and usually solder to a larger board.
- The module has two modes of operation, command. mode where we can send AT commands to it and Data Mode where it transmits and receives data to another Bluetooth module.

CONCLUSION

In this project we have proposed the basic approach of the system can be very useful tool in forgoing the barrier of disabilities in communication of the people suffering from any of the possible combination of deafness and dumbness among themselves as well as with normal people.

The person can communicate and transmit the message as per his ability and desire. The deaf and dumb can use American sign language to transmit the message while those who are unable to understand the sign language can make use of the device to get the output in the audio or normal text display in the LCD . this makes then interactive with the outside world people can use Bluetooth device for the communication whose range is 30meter.

Hence this device can work wirelessly used for around 30 meters.

LIMITATIONS

In this project we are using the wearable technology along with several Arduino boards and circuitry which makes the device little bulky and massive. The disabled person must

be aware of American sign language in order to transmit and receive the message.

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