INNOVATIVE TOOL FOR DEAF, DUMB AND BLIND PEOPLE

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Abstract— **Controlling the home appliances and electronics gadgets through an Infrared remote control is now in general. But the same controlling tasks can be done more easily. Primary motive of proposing the new system of hand gesture remote control is to remove the need to look in to the hand held remote and to search for a specific key for specific function. This paper presents a novel system to control home appliances through hand gesture as a remote control device . The results show that this interface is able to allow physically impaired people to make use of modern appliances by gesture. Gestures are also used for communication for blind deaf and people. It has some inbuilt voice system which is used for communication .It translates hand gestures to speech through an adaptive interface. The accelerations of a hand in motion in three perpendicular directions are detected by three accelerometers respectively and transmitted. A basic feature based on sign sequence of gesture acceleration is extracted Finally, the gesture is recognized by comparing the gesture code with the stored templates.**

I. INTRODUCTION

This project aims to lower the barrier in communication.It is based on the need of developing an electronic device tthat can translate sign language into sppech in order to make the communication take place between the mute communities with the general public possible. A wireless data glove is used which is normal cloth driving gloves fitted with flex sensors along the length of each finger. Mute people can use the gloves to perform hand gesture and it will be converted into speech so that normal people can understand their expression gesture in a sign language is a particular movement of the hands with a specific shape made out of them. Also it can be used to control appliances using hand gesture

II. OPERATION AND WORKING

This project is basically divided into two parts, first we will be designing a hand glove over which all the sensors will be placed for sensing motion and giving the required output. For this a microcontroller is placed on glove. Here we are using Atmega16L microcontroller .The microcontroller which we have used is an 40 pin device. In this 31 and11 is power supply pin. Then 10 and 30 are the ground pin .12 and 13 are oscillator pin. Microcontroller has 4 ports: port A, port B, port C,port D all are 8 pin bidirectional ports .Port A is bult in ADC and port B has first two pins Rx and Tx for serial communication.

A. Transmitter circuit
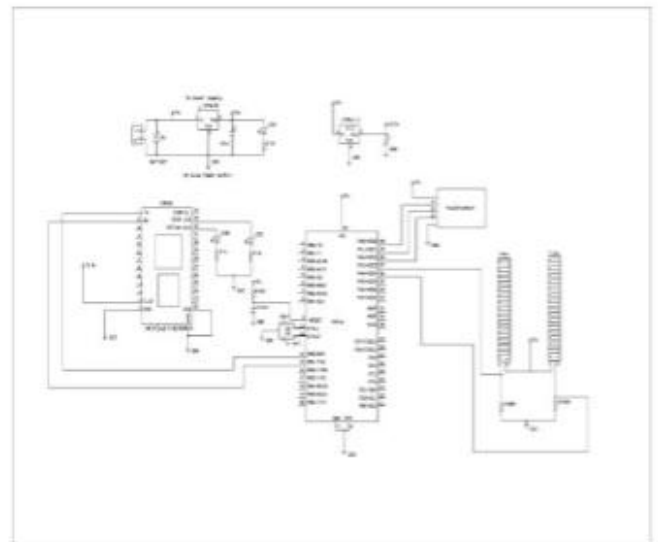
B. Receiver cicuit:-
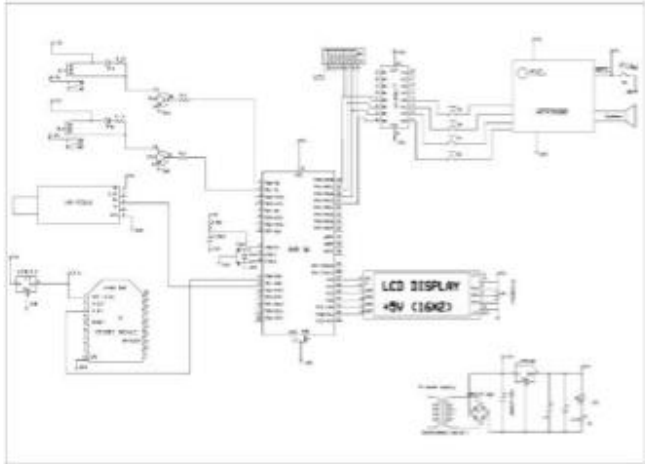
1) Control home appliances

Accelerometer sensor detects the hand motion in two axis i.e. x axis(up and down) and y axis (up and down)Accelerometer generates a signal based on hand motion .We have used a flex sensor.It is an resistance strip .which is kept on finger, so when we keep our finger straight resistance will be different and when finger is bent the resistance changes.So one accelerometer and two flex sensor through this gestures are created so now we haveto transfer it to the circuit so for this now we have used zig bee

.This all components are mounted on hand glove.

Now the next part is receiver section,

As shown in the figure receiver section also contains same microcontroller ATmega16, zigbee module The connections of zigbee module is same as the transmitter section.The serial data that is transmitted from transmitter section is received by the receiver section. The pins of LCD display are connected to port c of microcontroller and the value that is transmitted by the sensor will be displayed on LCD screen. All the control pins of LCD display are connected to port c.To control the device , the device can be of 230 v or 12v.So, we give the output from port b to transistor as shown in circuit diagram.The relay pins are connected as shown in the figure. By default the contact pin of relay is open so the device is off initially . When we do the gesture and if it satisfies the value which is stored in microcontroller then the output at port b will be 1 then the specific transistor will be ON which will ON the corresponding device.Now if we again repeat the same gesture then the value at port b will be 0 and the device will become OFF.

2) VOICE MESSAGES FOR COMMUNICTION

As shown in the circuit we use a voice IC APR9600. It contains mode connection switch. If we give it to vcc then the IC will record the voice of and if we give it to ground then it will play the recorded voice. The recording is done with the help of mic as shown in circuit diagram. It also contains speaker which will play the recorded voice.It contains m1 to m8 memory location switch. So the recorded messages will be stored in this memory location and played accordingly.Each memory location can save voice of 6 to 7 sec. so we can store up to 8 voice messages stored in m1 to m8 memory location.If we want to store more voice messages then one more IC is connected. So now there will be 16 memory locations and so we can play 16 voice messages, but here we are playing voice manually which is not our requirement. Our requirement is that voice messages should be played based on the given gesture. so to play the voice automatically based on the given gesture we use an another IC ULN2803 it contains total 8 transistor . so we connect port A of microcontroller fully to the 8 transistors before giving it to voice IC.the connections of transistor and voice IC are shown in the circuit diagram. The emitter of transistor is internally grounded and the collector is connected to pins of IC. when the gesture is given and if input to port A is 1 transistor will become ON and it will close the switch and corresponding voice will be played.

III. ADVANTAGES AND LIMITATIONS:

Advantages

• No need of external input devices.

• No need of human interpretator for blind people.

• Boon for physically handicapped people.

• Life becomes much easier with the help of this system

Limitations

- Require to wear the glove 24/7 which can be very frustrating for any person.

- As the name suggest the glove cannot be used for people having no hand.

IV. CONCLUSION:

Sign language is a useful tool to ease the communication between the deaf or mute community and the normal people. yet there is a communication barrier between these communities with the normal people. This project aims to lower the communication gap between the deaf or mute community and the normal world. This project was meant to be a prototype to check the feasibility of recognizing sign language using sensor gloves. With this project the deaf or

mute people can use the gloves to perform sign language and it will be converted into speech so that normal people can easily understand. The main feature of this project is that the gesture recognizer is a standalone system, which is applicable n daily life.

REFERENCES

[1]Bien, Z.; Park, K.-H.; Jung, J.-W.; and Do, J.-H. 2005. Intention reading is essential in human-friendly interfaces forthe elderly and the handicapped. IEEE Transactions on Industrial Electronics 52(6):1500–1505.

[2]Butcher, C., and Goldin-Meadow, S. 2000. Gesture and the transition from one- to two-word speech: When hand and mouth come together. In McNeill, D., ed., Language and Gesture.Cambridge, England: CambridgeUniversity Press. 235– 257.

[3]Charness, N.; Bosman, E.; and Elliot, G. 1995. Senior friendly input devices: Is the pen mightier than the mouse? In 103rd Meeting of the American Psychological Association, 361–370.

[4] Kendon, A. 2004. Gesture: Visible Action as Utterance. Cambridge, England: Cambridge University Press. Magerkurth, C.; Etter, R.; Janse, M.; Kela, J.; Kocsis, O.; and Ramparany, F. 2006. An intelligent user service architecture for networked home environments. In Proc. 2nd IET International Conference on Intelligent Environments, 361–370.

[5]Miller, G. 1956. The magical number seven, plus or minus two: Some limits on our capacity for processing information. Psychological Review 63:81–97.

[6]Mori, Y., and Igarashi, T. 2007. Plushie: An interactive design system for plush toys. ACM Transactions on Graphics 26(3):Article 45.