iJRASET
International Journal For Research in
Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 3 **Issue:** IV **Month of publication:** April 2015

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)

A Preview Paper on Hand Talk Glove

Prof. Raviprakash Shriwas[1], Mr. Nitesh Vihirkar[2], Ms. Kshama Morey[3], Ms. Nikhita Gulhane[4]

1 Department of EXTC J.D.I.E.T Yavatmal, Maharashtra, India

2'3'4Final year EXTC J.D.I.E.T Yavatmal, Maharashtra, India

Abstract: In general, people who can't talk properly with others, who do not understand sign language. Even though those who do speak aloud properly have a "deaf voice" of which they are self-conscious and that can make them reticent. The Hand Talk glove is a nominal circuit cloth driving glove which is fixed with flex sensors. The sensors output is a stream of data that changes with degree of bend from fingers. Flex sensors are sensors that change in resistance value depending on the amount of bend of the sensor. They convert change in bend to electrical resistance the more will be the bend, the more will be the resistance value. The output value from the sensor is converted to digital and processed by using microcontroller and then it responds in the voice using speaker. In this project we have used flex sensors, microcontroller, a speech IC and also speaker to produce the output. Hardware Components used are Microcontroller (At mega 16), LCD display (16x2), flex sensors, Power supply and Voice IC (APR33A3). Software tools used is AVR Studio, PCB Artist and PROGISP. It has the utilization in medical applications, wheel chair direction controlling and robotics.

Keywords- Glove, flex sensor, at mega16, Voice IC.

I. INTRODUCTION

The first Hand Talk glove was designed in the year 2001 by Ryan Patterson. He started his mission with his sign language. The Sign language translator consists of two separate components a leather glove that has ten flexible sensors sewn into in which monitor the position of the fingers from which we can measure the electrical resistance created by the fingers as they bend. The microcontroller on the back of the hand converts the change in the electrical current into digital signals with the help of ADC and transmits them wireless. The microcontroller then reads the numerical values and converts them into the letters which appear on the display.

II. METHODOLOGY

A group of engineering students at Carnegie Mellon University, Hemant Sikaria, Bhargav Bhat, Wesley Jin and Jorge L. Meza demonstrated Hand Talk a glove equipped sensor that translates finger and hand gestures into spoken words. The first demonstrator model to show the functionality based on a 32 vocabulary words. Sensors in the glove pick up gestures and transmit the data wirelessly .The sensor data is converted first into text display on LCD and then to voice output. A person is not knowledgeable in Sign language can listen via the speaker what the other person is saying in Sign language form. The main advantage of this design was its simplicity and the cheap components these students used to create this amazing and truly interactive glove that could help to improve greatly the communication problem between deaf persons and people.

III. FINDINGS AND DISCUSSIONS

The latest sensor used for the Hand Talk glove is the accelerometer. Instead of working sensor in two planes and like in the flex sensors. It is more comfortable than the flex sensors and only one accelerometer is required for one glove more number of programs can be fed into it so it can encapsulate more number of sounds in it. Our hardware system requires 5V DC and so a voltage regulator of 78xx series (7805) is used. 330Ω resistor is used to drop the voltage and make it 2-2.5V as required. The deflection of the flex with a minimum angle of 0°, a resistance is obtained with increased with bending and voltage is obtained. Five flex sensors along with their connection ports are placed. AT mega 16 a peripheral interface controller is used with flash memory 8kb and an inbuilt Analog to digital converter with 10 bits resolutions. The microcontroller converts the analog input into digital output. A crystal oscillator with 12 mega heartz is used which gives input to the microcontroller with frequency clock pulse. Capacitors are used along with the oscillator. The message is now send to voice recorder which posses the mike and speaker connected to it. The voice can be recorded via mike and according to the flex deflected the output is obtained from loudspeaker.

©IJRASET 2015: All Rights are Reserved

Volume 3 Issue IV, April 2015
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

IV. CIRCUIT DIAGRAM

This circuit diagram shows the capability to measure or translate 7 potentials sign language "Word A, B, C, F, K, V, and W". Each word that is translated by the translator will be displayed on the LCD screen and the displayed symbol will make it easier for those who are not disabled to understand what the deaf or mute wanted to deliver during the communication session.

A. Hardware

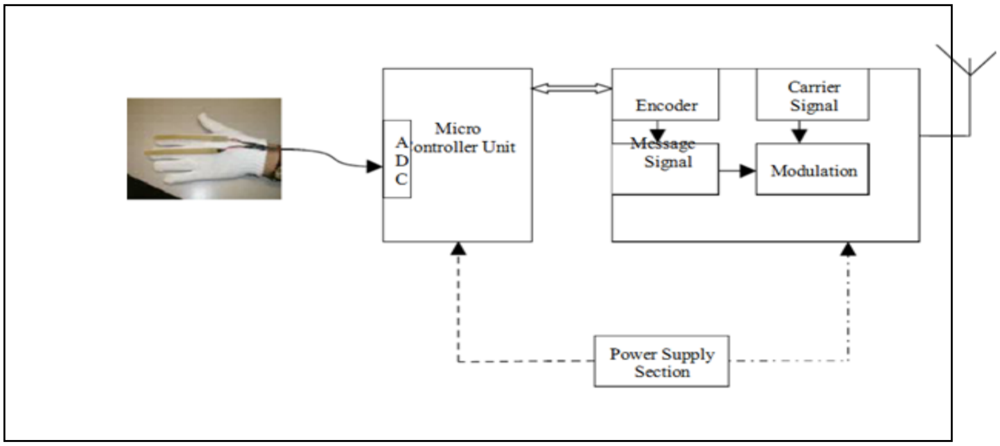


Fig.1 Typical transmitter unit

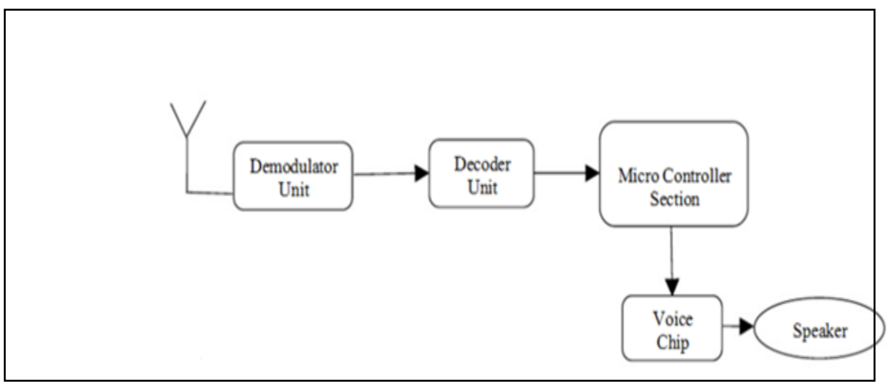


Fig.2 Typical receiver unit

V. APPLICATIONS

It can be used for computer games. It is operated with touch sensors on the thumb the fingers and palm. It allows the wearer to forego using the keyboard. Another utilization of this can be in the field of fire extinguishing by fire extinguishers in a situation where members of a team can't even see each other these gloves capable to transmit signals through simple hand gestures. According to the receive signal the gloves have symbols on them that light up. Fig4 shows the unfiltered data from Glove bending activities at a range of 0º, 45º and 90º.

VI. CONCLUSION

Despite of using a computer or a cell phone as used in the earlier inventions, we are using the microcontroller. It makes this easily movable and easier to use. Even we use the less advanced flex sensors are used still a large number of sounds can be prerecorded in the recorder and can be used through the programming. The flex sensors working in the two planes supplies a lot of options for

©IJRASET 2015: All Rights are Reserved

movement of the fingers and the thumb which is later transmitted into voice signal.

Fig. 3 Sensor attachment to the glove

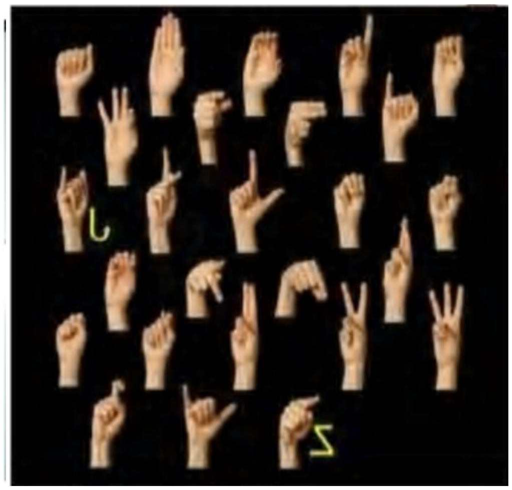


Fig.4 Performance of degree of bend

REFERENCES

[1] I. N. Sneddo and G. Eason, B. Noble, "On certain integrals of Lipschitz-Hankel type involving products of Bessel functions" volume A247, pp. 529 to 551 April 1955.

[2] M. Hirano, Y. Yorozu, K. Oka, and Y. Tagawa, "Electron spectroscopy studies on magneto-optical media and plastic substrate interfac" IEEE Transl. J. Magn. Japan volume 2, pp. 740–741, August 1987 [Digests 9th Annual Conference Magnetics Japan 1982].

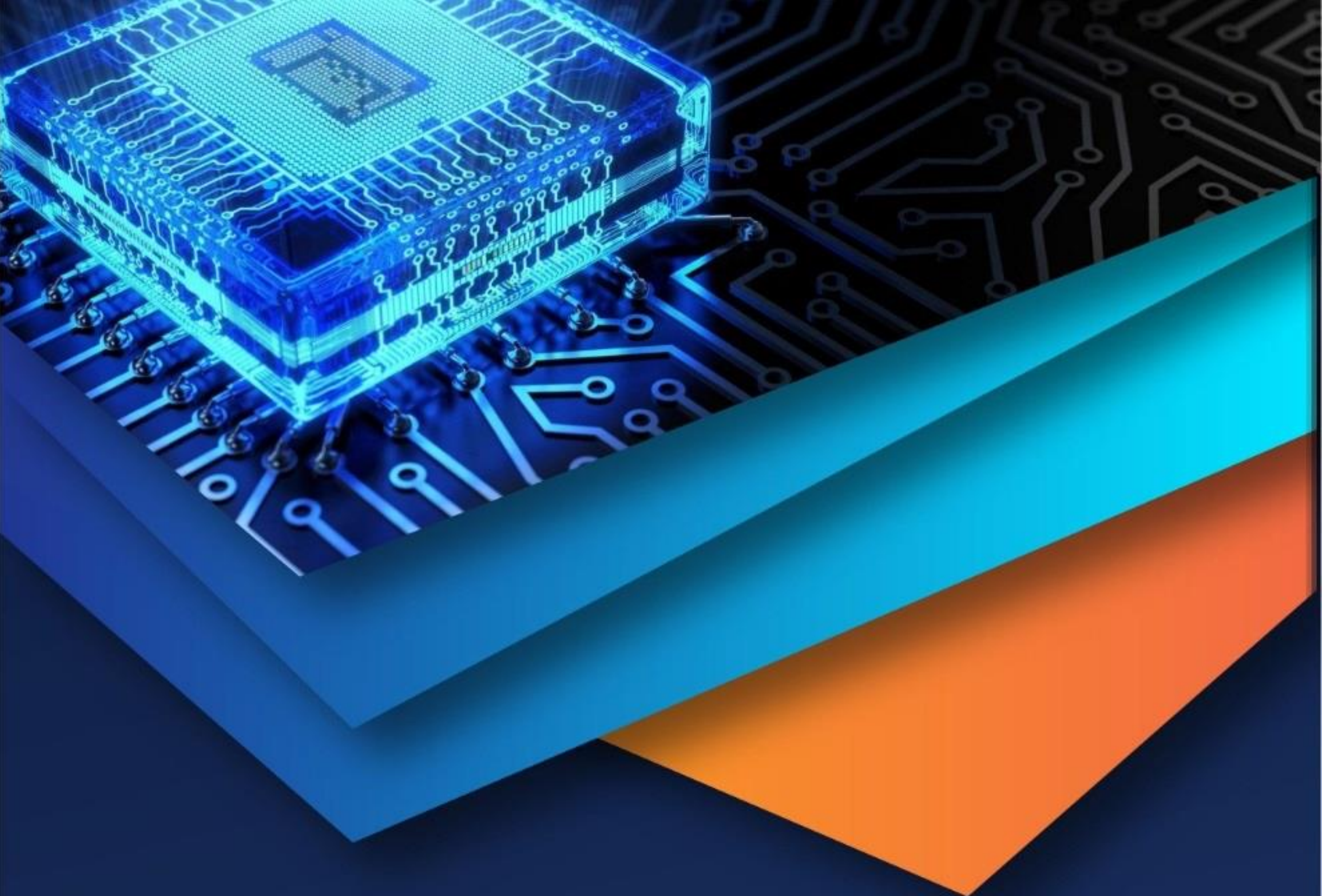
[3] M. Young, The Technical writer's handbook Mill Valley, CA University of Science 1989.

[4] J.Clerk Maxwell, A Treatise on Electricity and Magnetism third edition vololume 2. Oxford Clarendon 1892, pp.68–73.

[5] C. P. Bean and I. S. Jacobs "Fine particle thin films and exchange anisotropy" in Magnetism, volume III, H. Suhl and V Eds. New York: Academic, 1963, pp. 271–350.

[6] R. Nicol "Title of paper with only first word capitalized"

©IJRASET 2015: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)