A REVIEW PAPER ON SMART HAND GLOVES FOR APHASIA PEOPLE

Prof. S.M. Jena*1, Pooja V. Gavhankar*2, Bhagyashri A. Chavhan*3,

Pratiksha N. Giri*4, Vaishnavi K. Padghan*5, Mukund S. Chavhan*6,

Suraj R. Dahake*7, Rohit G. Tekam*8

*1Faculty, Department Of Electrical Engineering, Jagadambha College Of Engineering And Technology, Yavatmal, India.

*2,3,4,5,6,7,8Students, Department Of Electrical Engineering, Jagadambha College Of Engineering And Technology, Yavatmal, India.

ABSTRACT

Generally, a person who have a language complaint caused by damage in a specific area of brain that control language expression and appreciation. Aphasia leaves a person unfit to communicate effectively with others. numerous people have a Aphasia as a result of stroke. So, this design aims to lower this hedge in communication. It's grounded on the need of developing an electronic device that can restate sign language into speech in order to make the communication take place between the mute communities with the general public possible. A Wireless data gloves is used which is normal cloth driving gloves fitted with flex detectors along the length of each cutlet and the thumb. The person who has a complaint like Aphasia or a palsy they can use the gloves to perform hand gesture and it'll be converted into speech so that normal people can understand their expression. subscribe language is the language used by mute people and it's a communication skill that uses gestures rather of sound to convey meaning contemporaneously combining hand shapes, exposures and movement of the hands to express fluidly a speaker's studies. Signs are used to communicate words and rulings to followership. A gesture in a sign language is a particular movement of the hands with a specific shape made out of them. In this design Flex Sensor Plays the major part, Flex detectors are detectors that change in resistance depending on the quantum of bend on the detector. We're in process of developing a prototype using this process to reduce the communication gap between differentially suitable and normal people.

Keywords: Aphasia, Flex Sensor, Gesture, Sign Language Etc.

I.   INTRODUCTION

The main ideal of this design is to reduce communication hedge between normal people and special person who aren't suitable to make a normal discussion be it a impaired one or mute bones . As mortal Beings communicate and know each other through studies and ideas. The stylish way to present your idea is through speech. But some people do n't have the power of speech; the only way to communicate with others is through hand gesture. We can say that it's limited to the same set of persons that can not speak. So, there's a need of technology which reduces this gap through systems that converts hand gesture into speech. This design isn't on the request as a bribable product, but is a good illustration of machine literacy for gesture recognition. The problem with hand gesture is that it's confined to the people who are also deprived of the power of speech. It's especially targeted for scholars those with special requirements who cannot speak, but can clearly be generalized to gesture recognition, not just subscribing. The Aim of the design is to develop a hand glove equipped with detectors similar as Flex detector, Accelerometer, Touch detector which smell different hand gesture gestures. Flex detectors are placed on fritters which measure the bending of fritters according to a gesture made. An accelerometer is placed on the win which measures the position of the hand in X, Y, Z axes. Touch detectors are placed in between the fritters and measures if there's any contact between the fritters. originally, detectors were dissembled to prize the tasted data. Secondly the tasted data from detectors is transferred to Arduino UNO board for farther processing and transfer data to an android phone via Bluetooth module. The data will be converted into audio mode.

II.   LITERATURE REVIEW

Glove grounded system is composed of an array of detector, electronics for data accession of processing, power force and a support for detectors that can be worn on stoner's hand. Glove Talk II is a system which translates hand gestures to speech, which is grounded on the gesture format model developed by Sidney Fels and Geoffrey

Hinton, Department of Computer Science of University of Toronto. Neural networks were used to apply an adaptive interface, called Glove Talk II, which contains hand gestures to control the parameters of a resemblant formant speech synthesizer to allow a stoner to speak with his hands. It's used to apply an artificial oral tract. Glove Talk II is a system which translates hand gestures to speech through an adaptive interface. Hand gestures are counterplotted continuously to 10 control parameters of a resemblant formant speech synthesizer. The mapping allows the hand to act as an artificial oral tract that produces speech in real time. This gives an unlimited vocabulary, multiple languages in addition to direct control of abecedarian frequency and volume. presently, the stylish interpretation of Glove Talk II uses several input bias (including a Cyber glove, a contact glove, a phloem's detector and a bottom- pedal), resemblant formant speech synthesizer and three neural networks [3]. The gesture to speech task is divided into vowel and a consonant neural network. The gating network and the consonant network are trained with exemplifications from the stoner. The vowel network implements a fixed, stoner defined relationship between hand position and vowel sound and doesn't bear any training exemplifications from the stoner. Volume, abecedarian frequency and stop consonants are produced with a fixed mapping from the input bias. Harmeet Kaur, et al. in their paper, presented a brief description about the once attempts that were made to convert sign language to accessible form. In their paper, they've completely scanned the former attempts over this technology and also suggested colorful possible ways to apply the design of a simple smart glove [4]. Speak spurt is a sound synthesizer which is used to convert textbook data into voice.

III.   PROPOSED SYSTEM

The Aim of the project is to help the section of population who are speech impaired and have a communication barrier with the help of this project. This Smart glove can help them to interact and communicate with other people. The components used in the projects are:

Flex Sensor

A flex detector is a kind of detector which is used to measure the quantum of dereliction else bending. The designing of this detector can be done by using accoutrements like plastic and carbon. The carbon face is arranged on a plastic strip as this strip is turned away also the detector's resistance will be changed. therefore, it's also named a bend detector. As its varying resistance can be directly commensurable to the volume of turn therefore it can also be employed like a goniometer.

Working Principle

This detector works on the bending strip principle which means whenever the strip is twisted also its resistance will be changed. This can be measured with the help of any regulator. This detector works analogous to a variable resistance because when it twists also the resistance will be changed. The resistance change can depend on the linearity of the face because the resistance will be different when it's position. When the detector is twisted 450 also the resistance would be different. also, when this senor is twisted to 900 also the resistance would be different. These three are the flex detector's bending conditions. According to these three cases, the resistance will be normal in the first case, the resistance will be double as varied with the first case, and the resistance will be four- time when compared with the first case. So, the resistance will be increased when the angle is increased.

Arduino Uno

Arduino is an open- source computer attack and software company, design and user community that designs and manufactures microcontroller- predicated paraphernalia for erecting digital bias and interactive objects that can smell and control the physical world. The design is predicated on a family of microcontroller board designs manufactured primarily by Smart systems in Italy, and also by several other merchandisers, using various 8- bit Atmel AVR microcontrollers or 32- bit Atmel ARM processors. These systems give sets of digital and analog I/ O legs that can be connived to various expansion boards ("securities") and other circuits. The boards feature journal dispatches interfaces, including Universal journal machine (USB) on some models, for loading programs from particular computers. For programming the microcontrollers, the Arduino platform provides an integrated development terrain (IDE) predicated on the Processing design, which includes support for C, C and Java programming languages. Arduino Uno is a microcontroller board predicated on the atmega328p. It has 14 digital input/ affair legs (of which 6 can be used as pulsation range Modulation(PWM)

labors), 6 analog inputs, a 16 MHz quartz China, a USB connection, a power jack, an in- Circuit journal Programming (ICSP) title and a reset button. It contains everything demanded to support the microcontroller; simply connect it to a computer with a USB string or power it with a AC- to- DC accessory or battery to get started.

SD Card Module

The SD card module is especially useful for systems that bear data logging. The Arduino can produce a train in an SD card to write and save data using the SD library. There are different models from different suppliers, but they all work in a analogous way, using the SPI communication protocol. The module shown below.

Node MCU

Node MCU is an open-source LUA based firmware developed for the ESP8266 Wi-Fi chip. By exploring functionality with the ESP8266 chip, Node MCU firmware comes with the ESP8266 Development board/kit i.e., Node MCU Development board.

IV. CONCLUSION

The main aim of the project is to reduce the communication gap between mute community and normal people. This system is proposed to improve lifestyle of people who is suffering from Aphasia. Smart glove is very cost-effective system which can gives voice to the mute people. This smart glove is useful for a person who is temporarily lost their speaking ability due to the stroke on the brain. Smart glove is an independent glove designed for the help of Aphasia person and to serve humanity.

V. REFERENCES

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