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Electronic Speaking System for Speech Impaired People: Speak Up

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***Abstract*— Sign Language is the only way of communication for speech impaired people. But general people can't understand the sign language so it becomes difficult for a speech impaired person to communicate with them. In this project an electronic speaking system was developed to ease the communication process of speech impaired people. A glove was developed which consists of five flex sensors. When a gesture is made with the glove, the change in resistance of flex sensors fed into the Arduino Nano and specific prerecorded audio command for that gesture is played from SD card through speaker and the text command for that gesture is displayed on the LCD. There are four gestures that are designed for user input so that user can play his/her chosen audio commands using those gestures. This device not only helps a speech impaired person to communicate with a normal person via audio commands but also helps him/her to communicate with a hearing impaired person by displaying the text commands on the LCD.**

Keywords— Speech Impaired People, Glove, Arduino Nano, Flex sensor, SD Card.

I. INTRODUCTION

Speaking is the main way of communi[illegible]n for every normal human being. But think about a s[illegible] impaired person who can't able to communicate f[illegible]ently wi[illegible]al person. Because speech impaire[illegible]eople use si[illegible]ua[illegible]or their communication. And mo[illegible]of the pe[illegible]don sign language. So it puts t[illegible] spe[illegible] p[illegible] difficult situation. In recen[illegible]yea[illegible]ear[illegible] h[illegible]been focusing on hand gestures de[illegible]ection a[illegible] b[illegible] popular for developing applications in the fi[illegible] of r[illegible]d extende[illegible] the area of artificial or prosthetic hand[illegible]at can m[illegible] the behavior of a natural human hand. This pro[illegible] although utilizes a similar approach for the dete[illegible]f[illegible] movement of fingers, however we have tried to extrapolate the idea in a slightly different perspective and have come up with a small yet significant application in the field of bioengineering. The main objective of this project is to design an electronic speaking system in the form of a glove to lessen this communication problem. This device benefits a speech impaired person to communicate with a normal person as well as with a hearing impaired person. The main component of this project is a glove with five flex sensors that are connected to Arduino Nano which is the main control unit of this project. This device has a feature of user input. So speech impaired person can easily use his/her own chosen commands for specific gestures.

II. RELATED WORK

Many researchers have found out a number of possible solutions. Ahmed et al [1] developed a hand glove which can convert specific hand gesture into audio command using AVR ATMEGA32L. Satpute et al [2] developed a data glove that can play recorded audio command for specific hand gesture using PIC18F4620. Wald [3] developed software for editing automatic speech recognition in real time for deaf and hard-hearing people. Itkarkar et al [4] developed a method to convert hand gesture into speech using MATLAB. Zhao et al [5] developed a five-fingered prosthetic hand system. Praveenkumar et el [illegible]eloped a wireless glove that can translate sign la[illegible]ge into s[illegible]ech.

III. A[illegible]TU[illegible] OF SYSTEM

[illegible]is elect[illegible]aking [illegible]tem has two way of [illegible]ommuni[illegible]rst [illegible]is audi[illegible]hrough the speaker and anoth[illegible]e t[illegible]t comm[illegible]play[illegible]n the LCD. Gesture is being [illegible] glove[illegible]sists o[illegible]lex sensors. Prerecorded [illegible]io co[illegible]ds are saved in th[illegible] card. For specific gesture [illegible]is p[illegible] audio a[illegible]ext command. To increase the [illegible]an ampli[illegible]was also connected. In Fig.1 the [illegible]od[illegible]this elec[illegible]c speaking is given.

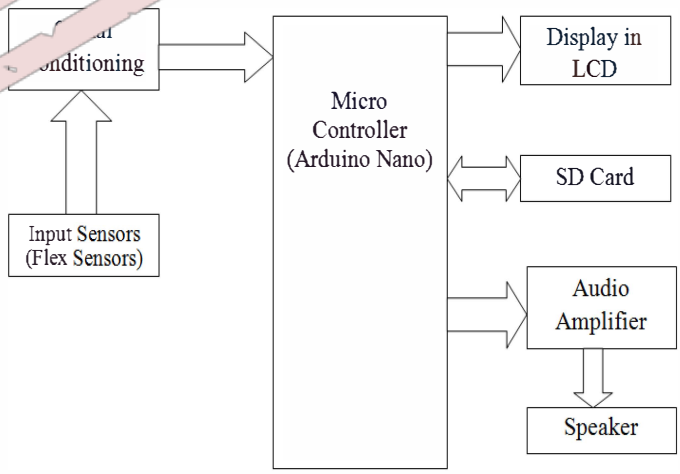

Fig. 1. Model of Electronic Speaking System.

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