Dayananda Sagar College of Engineering

Department Of Computer Science and Engineering

LET US TALK THROUGH GESTURE VOCALIZER

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Abstract

- Sign language which is used by deaf/mute people is a complex set of gestures which is not known by everyone.
- Most of the signs are made from hand movements.
- our project works as translator that convert this sign language into speech / text in native language to aid and improve the communication and learning process among the people

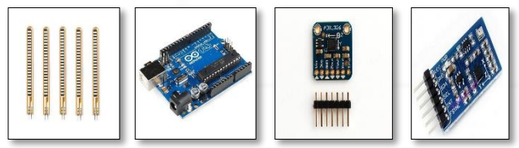
Hypothesis

A smart glove is built with necessary sensors to capture the hand gestures. The input data will be matched with the dataset present and produces the related outputs. The output will be through an android application where user can select the format and preferred language.

Problem statement

Sign language one of the way deaf /mute person communicate. But during emergencies, it becomes difficult to convey their message. So we need a interpreter that converts hand gestures into text and speech, since India is multilingual country the output would be more covenant if its in native languages.

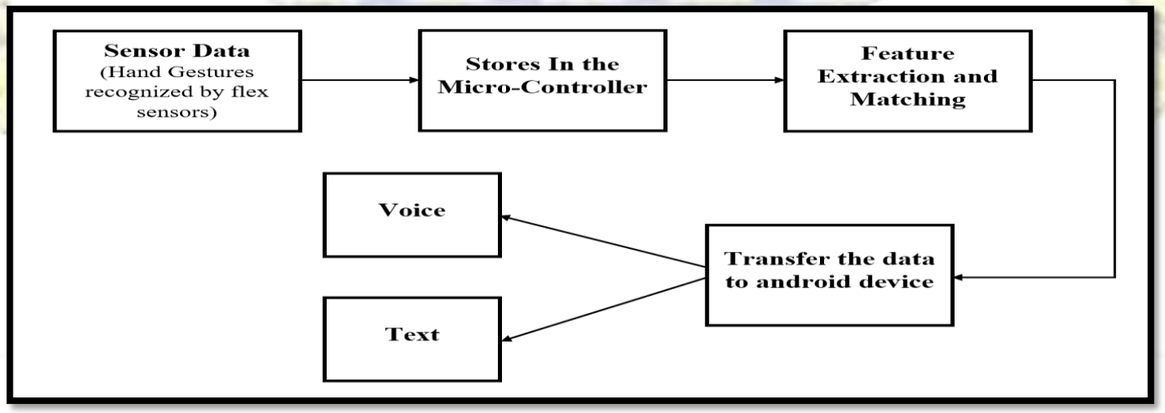
Devices



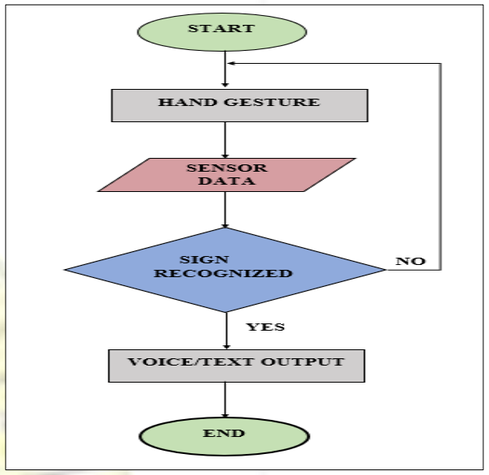
Literature Survey

Sl.No	Title	Components	Advantages	Limitation
1	**Hand Gesture Based Vocalizer for the Speech Impaired**	data gloves embedded with 5 flex sensors, microcontroller.	1.A single sign can be used either for a Gesture to Voice Synthesis Mode or to device control mode. 2.light and fans can be controlled using hand gestures.	1.This project is implemented on breadboard which makes it difficult to be portable. 2. Accuracy is less since there is no wrist sensor.
2	**A Framework for Hand Gesture Recognition based on fusion of Flex, Contact and Accelerometer Sensor**	flex sensor, contact sensors, accelerometer, micro controller, LCD and sound converter IC	1.It has accuracy 100%, Average success rate of 91.54% is achieved. 2. system can be used in real time	1.It is difficult to sort static letters from each other. 2.Sorting the dynamic letters within a fixed time frame is also difficult. 3. The ambiguity was not completely removed
3	**Development of a Sign Language Translator Using Simplified Tilt, Flex and Contact Sensor Modules**	flex, tilt, arduino UNO board, 3-Axis accelerometer and contact sensor. Also has a software to produce two-way communication	1 This is made cost effective 2.Two-way communication is established that is either from text to voice or from voice to text	1. They have used processing software which is difficult to use the GUI. 2. Systems stability is low. 3.Letter are less adaptive for sensors threshold.
4.	**A review on applications of flex sensors**	Flex sensor, sheet metal, microprocessor	It does not consider the natural ways, so in the crash out will be more accurate compare to traditional method	Need to implement flex sensor for every 6 cm of sheet to find bent.
5.	**Hand gesture vocalizer**	Flex sensor, accelerometer, LCD, Microprocessor	Single equipment – multiple Applications	Not portable, Includes only 9 gestures.
6.	**Smart glove for the disabled: a survey**	Flex sensor, accelerometer, Raspberry pie	Output is given in both text and voice form.	More processing time and expensive
7.	**A real-time portable sign language translation system**	Flex Sensors, Inertial sensors (G-sensor and gyroscope), signal sampling and recognition process.	A real-time and portable system. With the proposed approach, an accuracy performance of up to 94.56% on the sensitivity.	It is made for only Taiwanese Sign Language

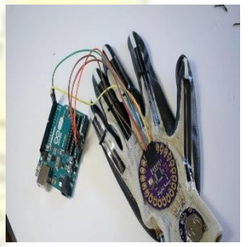
System Architecture

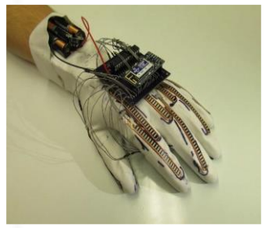


Flow Diagram



Design of the device





Conclusion

The product generated as a result can be used at public places to establish communication between different people. The device is cost-effective and portable even the output is generated through a mobile application.