Ideation Phase
Literature Survey

Date	29 August 2022
Team ID	PNT2022TMID44309
Project Name	Real-Time Communication System Powered by AI for Specially-Abled

Introduction:

Deaf and dumb people are humans at the deepest psychological level. About 5% population in world are suffering from hearing loss. Deaf and dumb people use sign language as their primary means to express their thoughts and ideas to the people around them with different hand and body gestures. There are only about 250 certified sign language interpreters in India for a deaf population of around 7 million.

1. Assistive Sign Language Converter for Deaf and Dumb:

Published on: 21 October 2019.
DOI: 10.1109/iThings/GreenCom/CPSCom/SmartData.2019.00071.

In this work, the design of prototype of an assistive device for Deaf-mute people is presented so as to reduce this communication gap with the normal people.

Pros:

- The designed system is portable.

Cons:

- Doesn't make use of the universal sign language for training the model and uses only Indian sign language.

2. A Novel Approach as an aid for Blind, Deaf and Dumb People:

Published on: 19 October 2017.
DOI: 10.1109/SSPS.2017.8071628.

As per this work, the person can communicate and transfer the message as per his ability and desire. The deaf and dumb/dumb can use the American Sign Language to transmit the message while those who are unable to understand the Sign Language can make use of the device to get the output in the audio or Braille Language or normal text displayed in LCD. This makes them interactive with the outside world.

Pros:

- Makes use of Braille code.

Cons:

- Makes use of extraneous components such as hand gloves.
- The system uses Arduino master-slave to make connectivity which cannot be used for long distance communication.

3. Intelligent Gloves for Deaf and Dumb People:

Published on: 30 November 2021.
DOI: 10.1109/IEMENTech53263.2021.9614717.

The main objective of this project is to help deaf and dumb people so that they can convey their feelings and emotions whenever they want. Also, it would be helpful in educational and health issues related to deaf and dumb people. The gloves contain sensors which when touched displays a message in the phone, thus helping the person to communicate with others.

Cons:

- The complexity and the electronic parts used in the development of the project makes it a burden to the specially-abled to carry it remotely.

4. Glove Based Deaf-Dumb Sign Language Interpreter:

Published on: 29 October 2021.
DOI: 10.1109/RTEICT52294.2021.9573990.

A Raspberry Pi based microprocessor is used as a compact microcomputer designed to govern the operation of six axis MPU6050., used for the detection of sign language. A triaxial accelerometer is used to detect the tilt of the hand. The flex sensor module is interfaced with the microprocessor through MCP3008 which is an external analog to digital converter. The decision making for sending message based on the data received from the MPU6050 and MPU3008. The proposed system is able to convert the different signs into the text and voice message. It is trained for the different symbols and works effectively.

Cons:

- The use of glove to sense the hand movement and gesture, makes the special-abled to look eccentric in the crowd.