

Real-Time Communication System Powered by AI for Specially Abled

Abstract :-

One of the most precious gifts of nature to the human race is the ability to express itself by responding to the events that occur in its environment. Every normal person sees, hears, and then reacts to the situations by expressing himself. But there are some less lucky ones who are deprived of this precious gift. Such people, especially deaf and mute, rely on some sort of gesture language to communicate their feelings to others. The deaf, dumb and the blind follow similar problems when it comes to the use of computers. In the era of advanced technologies, where computers, laptops and other processor-based devices are an integral part of everyday life, efforts must be made to make the disabilities in life more independent. Our goal is to design a human computer interface system that can accurately identify the language of the deaf and dumb. With the use of image processing and artificial intelligence, many techniques and algorithms have been developed in this area. Each character speech recognition system is trained to recognize the characters and convert them into the required pattern. The proposed system aims to give speech speechless, a real-time character language is captured as a series of images, and it is processed and then converted into speech and text

LITERATURE SURVEY:-

1) **A Signer Independent Sign Language Recognition with Coarticulation Elimination from Live Videos: an Indian Scenario**

P.K. Athira, C.J. Sruthi, A. Lijiya (2019)

Advantage: Economical can be implemented with a mobile camera which makes it very user-friendly

Disadvantage: Not efficient under cluttered backgrounds and different illumination conditions

2) **A Deep Learning based Indian Sign Language Recognition System**

Sruthi C. J and Lijiya A (2019)

Advantage: Training accuracy of 99.93% and with testing and validation accuracy of 98.64%.

Disadvantage: Facial expression and context analysis are the other part not included

3) **Hand Gesture Recognition for Sign Language Using 3DCNN**

Muneer AlHammadi, Ghulam Muhammad, Wadood Abdul, Mansour Alsulaiman, Mohamed A. Bencherif, And Mohamed Amine Mekhtiche (2020)

Advantage: The proposed approaches were compared with six other state-of-the-art methods from the literature. They outperformed four of these methods and showed comparable performance to the other two.

Disadvantage: Does not work for a live video feed.

4) **Deep Convolutional Neural Networks for Sign Language Recognition**

G. Anantha Rao, K. Syamala, P.V.V. Kishore, A.S.C.S. Sastry (2018)

Advantage: A less amount of training and validation loss is observed with the proposed CNN architecture.

Disadvantage: The database is not available publicly.

5) **American Sign Language Recognition Using RF Sensing**

Sevgi Z. Gurbuz, Ali Cafer Gurbuz, Evie A. Malaia, Darrin J. Griffin, Chris S. Crawford, Mohammad Mahbubur Rahman (2020)

Advantage: Results demonstrate the eventuality of RF sensing to give contactless ASL recognition capabilities in aid of ASL-sensitive smart surroundings while surviving effectively in the dark and guarding user privacy.

Disadvantage: A massive intermodal database of connected native signing would be required to make meaningful interpretations for technology and algorithm correlation