Real-Time Communication System Powered By AI For Specially Abled

Team Members:

    1.S.Premkumar S   (92172019108043)
    2.Babusankar S   (92172019108005)
    3.Balaganesh V   (92172019108006)
    4.Niyazkhan Z   (92172019108037)

Github Link: https://github.com/IBM-EPBL/IBM-Project-35768-1660288591.git

I. INTRODUCTION:

In our society, we have people with disabilities. The technology is developing day by day but no significant developments are undertaken for the betterment of these people. Communication between deaf-mute and a normal person has always been a challenging task. It is very difficult for mute people to convey their message to normal people since normal people are not trained on hand sign language. In emergency times conveying their message is very difficult. The human hand has remained a popular choice to convey information in situations where other forms like speech cannot be used. Voice Conversion System with Hand Gesture Recognition and translation will be very useful to have a proper conversation between a normal person and an impaired person in any language.

We aim to develop a system that converts the sign language into a human hearing voice in the desired language to convey a message to normal people. We are making use of a convolution neural network to create a model that is trained on different hand gestures. An app is built which uses this model. This app enables deaf and dumb people to convey their information using signs which get converted to human-understandable language and speech is given as output.

II. LITERATURE SURVEY:

1. AAWAAZ: A Communication System for Deaf & Dumb by Anchal Sood, Anju Mishra (2016) [1]

Abstract:

The paper proposes a framework for recognizing hand gesture which would serve not only as a way of communication between deaf and dumb and mute people, but also, as an instructor. Deaf and dumb individuals lack in proper communication with normal people and find it difficult to properly express themselves. Thus, they are subjected to many issues in this regard. Sign language is very popular among them and they use it to express themselves. Thus, there is a need for a proper translator. The deaf and dumb are not idle as past, they are working outside and doing great at it. So, an efficient system must be set up, to interact with them, to know their views and ideas. The framework here, act as a communication system for deaf and dumb individuals. It would take the sign language as an input which would display the result not only in the form of text but also in the form of audio. Similarly, if there is any input in the form of text, it would display the corresponding image.

Methodology:

From the input RGB image, the hand is separated and morphological operations are performed to identify the region of interest. The features of the gesture are then extracted and compared to a database of features of standard gestures. Finally, based on the comparison the output is generated.

Limitations:

The proposed framework is good for recognizing hand gestures. But it is not feasible in every environment.

3. Sign Language Recognition System by Er. Aditi Kalsh, Dr N.S. Garewal (2013) [3]

Abstract:

Communication is the process of exchanging information, views and expressions between two or more persons, in both verbal and non-verbal manner. Hand gestures are the non-verbal method of communication used along with verbal communication. A more organised form of hand gesture communication is known as sign language. In this language each alphabet of the English vocabulary is assigned a sign. The physically disabled person like the deaf and the dumb uses this language to communicate with each other. The idea of this project is to design a system that can understand sign language accurately so that the less fortunate people may communicate with the outside world without the need of an interpreter. By keeping in mind the fact that in

normal cases every human being has the same hand shape with four fingers and one thumb, this project aims at designing a real time system for the recognition of some meaningful shapes made using hands.

Methodology:

The image is converted into grayscale and the edges of the fingers are detected using Canny edge detection. Then using the detected finger tips the gesture is recognized.

Limitations:

The background of an image must be free from external objects. Also, the distance between the image and the camera is kept fixed.

III. CONCLUSION:

From the above literature survey, we can conclude that every one of the papers observe a more or less similar technique. We additionally like to follow that methodology with a few enhancements to triumph over some of the limitations noted above. The input picture is processed to isolate the hand. Then it's passed to a trained convolutional neural network to identify the gesture with more accuracy.

IV. REFERENCES:

[1] Sood Anchal, and Anju Mishra, "AAWAAZ: A communication system for deaf and dumb," 2016 5th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO). IEEE, 2016.

[3] Er. Aditi Kalsh, Dr N.S. Garewal, "Sign Language Recognition System," International Journal of Computational Engineering Research (IJCER), Volume 03, Issue 6, June 2013.