

Ideation Phase

Literature Survey

Date	19 September 2022
Team ID	PNT2022TMID50654
Project Name	Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	2 Marks

[1] Machine Learning Methods for Sign Language Recognition: A Critical Review and Analysis:

A. Adeyanjua, O.O. Bello b, M.A. Adegboyea
2021

After a comprehensive literature review, the commonly intelligent predictors utilized for recognition of sign language are k-nearest neighbour (KNN), artificial neural network (ANN), Support Vector Machine (SVM), Hidden Markov Model (HMM), Convolutional Neural Network (CNN), Fuzzy Logic and Ensemble Learning.

This section briefs about Machine Learning techniques used to recognize Sign Languages.

Accuracy of the paper: 89.5%

[2] Real-Time Assistive Interpreter for Deaf Community over Machine Learning:

Ms. Priyanka Pandurang Patil, Dr. Y. B. Gurav
2020

The purpose of this system is to represent a real-time two way communication interpreter based on Indian Sign Language (ISL) with higher accuracy. Our motive behind this implementation is to create a complete language that involves movement of hands, facial expressions and gestures of the body. This system captures hand gesture images of ISL with a system camera for feature extraction. The analyzing phase, the pre-processing unit is used for the noise removal, greyscale conversion by using Gaussian filter, binary conversion of images done by using OTSU's method followed by feature extraction.

[3] Sign Language Recognition System using Convolutional Neural Network and Computer Vision

Mehreen Hurroo, Mohammad Elham Walizad
2020

Computer vision-based gesture recognition system is widely researched for detection of sign gestures. This method involves capturing of hand movements by a camera and therefore the captured images are processed using computer vision software frameworks for alphabet detection. Image pre-processing methods like image enhancement, ROI selection, image segmentation are followed to get the processed images for detection of alphabets. This takes up tons of computation task and sometimes requires manual intervention for ROI selection within the input images. . This paper proposes a custom DNN model for recognition of English alphabets using Convolution Neural Network (CNN). The proposed DNN extracts features automatically from the input hand gesture images and classifies it. A test sample of 10 sign gestures are trained DNN model and therefore the prediction accuracy is calculated. The weights that are obtained within the last trial with the simplest training and validation accuracy is stored during the training process. A more comprehensive image collection and data augmentation can cause better prediction probabilities.