

## **Literature Survey**

1.

### **Title:**

Portable Communication Aid for Specially Challenged : Conversion of Hand Gestures into Voice and Vice Versa

### **Author:**

T Meera Devi, K M Shravan Raju

### **Methodology:**

The work is to develop a portable device for the disabled people who are not able to communicate with the normal persons properly. There are various steps involved in recognising the feature distinguishing hand gesticulation. The collected gesticulation is trained using Neural Network. The hand movement pattern is separated from a continuous recording of gestures. Low-Level understanding for the feature pattern comprises the gestural segment.

### **Advantage:**

This will be useful for the normal people to communicate with differently abled people and vice versa.

### **Limitation:**

Separation of the hand movements from continuous hand gestures may result in accuracy issues.

2.

### **Title:**

Real-Time Two-Way Communication Approach for Hearing Impaired and Dumb Person Based on Image Processing.

### **Author:**

Shweta. S. Shinde, Rajesh M. Autee, Vitthal K. Bhosale

### **Methodology:**

Proposed system is based on vision-based hand recognition approach. The hand gestures are identified under varying illumination conditions. The proposed method performs background segmentation of the hand from the acquired data and then is assigned a particular gesture for different alphabets. It involves feature extraction methods to calculate peak calculation and angle calculation of hand gestures. Finally, the gestures are recognized by converting these gestures into speech and vice versa. For extracting the features of speech signal, Mel-frequency cepstrum coefficients and dynamic time warping are used. The proposed system is based on MATLAB.

**Advantage:**

Two-way communication is possible enabling effective communication between normal people and physically impaired

**Limitations:**

Detected only limited hand gestures (From alphabets A to I)

Memory consumption is high as image processing is done using the built-in model of MATLAB.

3.

**Title:**

Hand Gesture Detection based Real-time American Sign Language Letters Recognition using Support Vector Machine

**Authors:**

Xinyun Jiang, Wasim Ahmad

**Methodology:**

Features extraction by Principal Component Analysis(PCA) SVM is used for mapping hand gestures.

**Advantage:**

Principal Component Analysis used to select 8 features, reduces computational complexity and processing time.

**Limitation:**

Reorientation stage- rotation angle of alphabets difficult to determine. Only static images are used.

4.

**Title:**

Sign Language Recognition Using Deep Learning on Custom Processed Static Gesture Images.

**Authors:**

Aditya Das, Shantanu Gawde, Khyati Suratwala, Dhananjay Kalbande

**Methodology:**

CNN to recognize sign language gestures, Transfer learning using Inception v3.

**Advantage:**

Average around 90% is obtained.

**Limitation:**

Dynamic hand gestures are not used. Only static finger spellings are used.

5.

**Title:**

Machine Learning Model for Sign Language Interpretation using Webcam Images.

**Author:**

Kanchan Dabre, Surekha Dholay

**Advantage:**

Prediction using Haar Cascade Classifier integrated with SVM, Classification based on supervised feed forward backpropagation algorithm.

Convergence rate is faster. Average recognition rate: 91.11 %

**Limitation:**

Haar Cascade Classifier compromises on precision.

6.

**Title:**

MUDRAKSHARA - A Voice for Deaf/Dumb People

**Author**

Dr.Yeresime Suresh, J Vaishnavi, M Vindhya, Mohammed Sadiq Afreed Meeran, Supritha Vemala

**Methodology**

A system that recognizes hand gestures and performs the task same as translators is developed - MUDRAKSHARA. It identifies hand gestures in the images obtained from video that is captured by a web 'cam recorder and gives the meaning of signs made by hearing/speech disabled people thus making communication complete.

**Advantages**

Provides the opportunity for common people to understand sign language thus bridging the communication gap between the deaf/dumb and the common people.

High accuracy because of the highly trained CNN model.

**Limitation**

The system does not respond to dynamic hand gestures. Compared to other latest algorithms, CNN is a bit slow.