

ABSTRACT

There seems to exist a virtual barrier between the people with hearing or speech impairment and the rest of the society. This immiscibility is much governed by the fact that these differently abled people use sign language to communicate their thoughts which the rest of the society doesn't seem to know. We aim to take a step towards bridging this gap by creating a setup (or device) which can translate the basic vocabulary of the sign language to text(or speech).

Theory of implementation:

The sign language basically uses the folding and spreading of the fingers in different orientations for the letters of the alphabet and also involves motion of the wrists and/or arm to communicate common expressions like yes and no. The project revolves around capturing the video of the person trying to communicate using sign language and then using image processing technique trying to figure out what the action resembles. Then the identified action is converted to text and displayed on a screen.

Implementation:

1. We will have a camera which will be recording the person and constantly sending the feed to the connected laptop/PC.
2. The received data will be fed to an image processing program which will capture relevant portions and either correlate it with the images in a database or try to make out by relevant positions of the fingers or the hand.
3. The output will be printed on the screen.

Timeline:

Week 1: Study the sign language and learn the image processing software required

Week 2: Setup the camera system and configure it / program to get the picture of the desired region. Begin the coding for letters and its translation

Week 3: Expand the library to the entire alphabet and two letters consecutively.

Week 4: More than one letter words and basic signs like yes and no.

Week 5: Separating the letter from common expressions and displaying it accordingly.

Week 6: Buffer week and if possible proper grammaticization of sentences.

Components required:

2 cameras
Connecting cables
Devices to setup the cameras

Cost Estimate:

roughly 5000/- INR

Salient Features:

Can help the people to connect better.
Can be expanded to newer words which are being added.
Using the code and improving data capture the system can be made portable.

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