

Jaypee Institute of Information Technology, Noida

Minor Project-1

Odd Semester, 2020

Progress Report-3

1. Group No.: 63

2. Group Members Name and Enrollment Number:

1. Eshan Dhawan (9918103066)
2. Kavya Vishnoi (9918103188)
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3. Supervisor: Dr Raju Pal

4. Title: Indian Sign Language conversion to text and speech.

5. Objectives in Points:

Conversion of Indian Sign Language to Text and Speech and vice versa :

- Take input of hand gestures from the camera
- From the input received from the camera, extract the frames and then process the image from BGR channels to a single channel GRAY channel then we will extract the features of the image.
- Then we will process the extracted data.
- We will try and test various Machine Learning techniques and models over the extracted data to return simple English text.
- Then convert the extracted text to speech.
- We also planned to implement speech to sign language conversion in our project
- We take input speech from the user and convert it into English text using google's speech recognition API.
- Then we change the generated text to sign language by displaying the images of each alphabet.

6. Work done till 25.10.2020:

GitHub repo(Private) link: https://github.com/eshandhawan51/isl_convertor

- Read various research papers and view various already developed projects.
- Implemented Text to symbol module
- Converted Image data to CSV file for training and Testing of various models.
- Capturing the video using a webcam as an input and processing the image.
 - > A pretrained ML Model is applied on the input image to detect hands in Real Time.
 - > Then the area around the hands is selected in a block and converted into a Numpy Array.
 - > Then LDA is applied on the image.
- The processed image will be sent to the model module for prediction.

References :

https://sebastianraschka.com/Articles/2014_python_lda.html

https://www.ripublication.com/ijaer18/ijaerv13n9_90.pdf

<https://medium.com/analytics-vidhya/feature-extraction-techniques-pca-lda-and-t-sne-df0459c723aa>

<https://github.com/imRishabhGupta/Indian-Sign-Language-Recognition>

<https://research.ijcaonline.org/volume70/number19/pxc3887306.pdf>

<https://towardsdatascience.com/american-sign-language-hand-gesture-recognition-f1c4468fb177>