Minor Project

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Problem Statement

There are many people have disabilities in speaking and hearing, so they are mostly dependent on sign language and text to convey their message.

Indian Sign language to text and Speech convertor

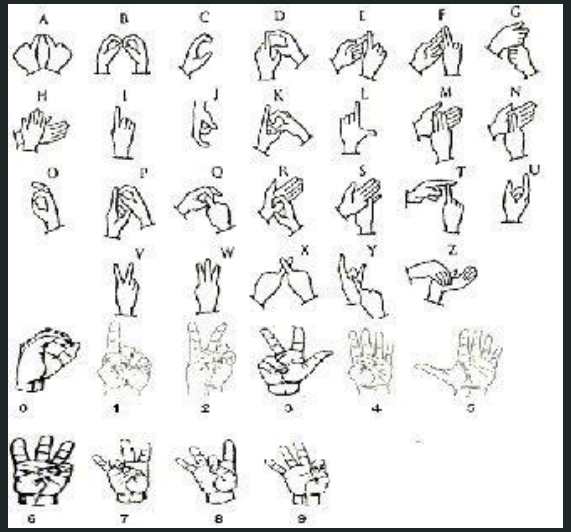
In this project we aim to create a Indian Sign language (not ASL) to text and speech convertor. As well as text and speech to Indian Sign language, To help Specially abled people communicate.

(ASL Stands for American Sign Language)

ISL vs ASL

The Basic difference between Indian Sign language and American sign language is that American Sign Language has symbols that require only one Hand, whereas in Indian sign language symbols may require one or two hands.

ASL Alphabets



ISL Alphabets

State-of-the-Art

- A Translator for Indian Sign Language to Text and Speech
  (Intel DevMesh) (Link : https://devmesh.intel.com/projects/a-translator-for-indian-sign-language-to-text-and-speech)
- Recognition of Indian Sign Language in a Live Video
  (Link : https://research.ijcaonline.org/volume70/number19/pxc3887306.pdf)
- Conversion of Sign Language to Text
  (Link : https://www.ripublication.com/ijaer18/ijaerv13n9_90.pdf)

Limitations

- The major Limitations that we faced is that most of the State of Arts we went through were based on ASL so there were no much datasets available around Indian Sign Language
- Almost all of the implementations and State of art analysed by us so assume that only the hand gesture is there in front of the camera and so other skin is present so they applied HSV (Hue Saturation Value) method to remove the background. But in cases when there are other parts of the body present then there is a lot of Noise present in the input.

Objective

Our main objective is to create an efficient Indian sign language to Text and Speech converter and vice versa. Also cover the issues in the existing programs.

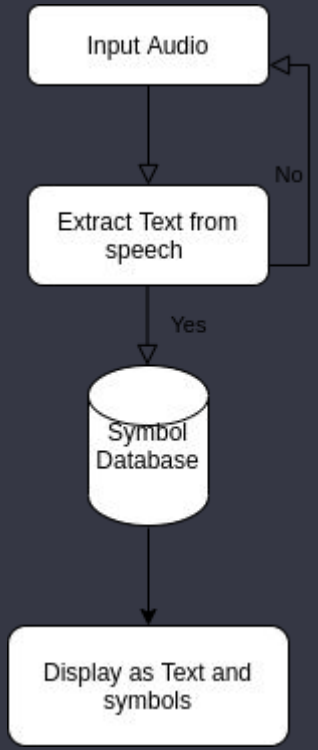
Our Solution to the limitations

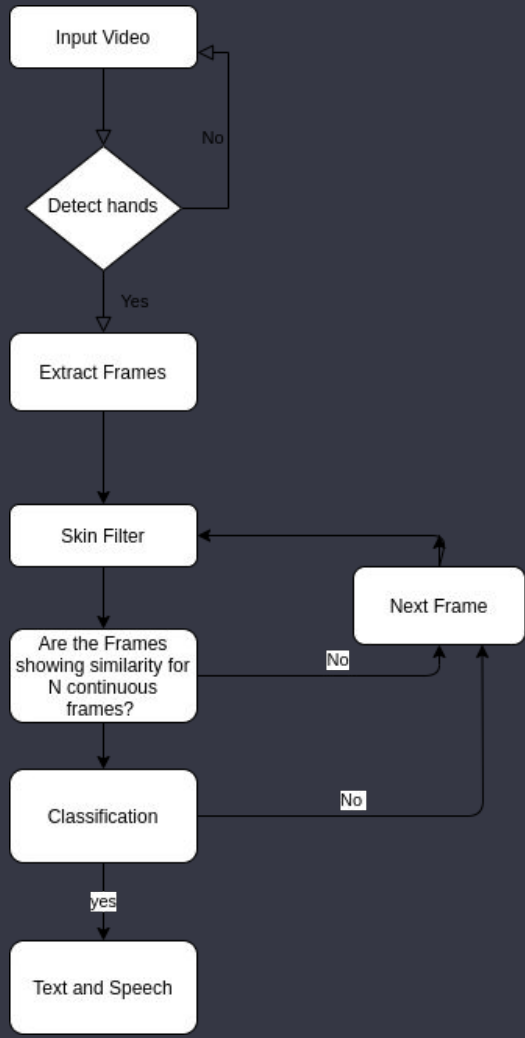
- To obtain datasets for ISL we went through the existing Open-source Repositories where similar Projects are implemented and collected training data from there.
- For other parts of the body we have decided to apply Object Classification Algorithms to detect hands in the input video.

Proposed Design

Speech to Text and Sign ->

Sign to text and speech ->





Conclusion

- Decreases Noise in the Input Live video.
- Increase efficiency in from the existing implementations
- Avoid Repetition of symbols when converted to text.