Project Number: 29

Project Title: English to Indian Sign Language Translator

Project Clients: Client: Suvrat Chaturvedi, Supervisor: Sonit Singh, Co-Supervisor: Sanjay Jha

Project specializations: Software Development;Computer Vision;Artificial Intelligence (Machine/Deep Learning, NLP);

Number of groups: 2 group

Main contact: Client: Suvrat Chaturvedi, Supervisor: Sonit Singh, Co-Supervisor: Sanjay Jha

Background:

Researchers working in the domain of British Sign Language, American Sign Language etc have achieved great success. The same is lacking for the Indian Sign Language. The goal of this project is to assess whether the sign detection research done for BSL or ASL can be readily applied for ISL or if not then where are the current boundaries and how these can be further pushed out.

Requirements and Scope:

The scope of this project is limited to translation of English text into equivalent ISL gesture video using a skeleton avatar. In order to achieve this goal, it would use the ISL-600 dataset created by Longtail AI Foundation. The scope is further limited by subsetting the English words that the model would process and not be a general purpose translator from English to ISL.

We'll identify a few English sentence subset and then the target ISL videos that play out the corresponding Signs. This would serve as the gold standard for the project. In our project, we'd implement our model limited to the test cases defined above and then outcome would be verified against the gold standard ISL video.

Required Knowledge and skills:

In this project, we'd be required to use NLP for English language processing, followed by mapping of English word structure into ISL signs. Once done, the sign keypoints will be applied on the Avatar skeleton to play out the signs. This implementation will require development in Python, will require Compute for ML tasks.

Expected outcomes/deliverables:

We would deliver the following:

1. Source code.

2. Output videos

3. Comparison matrix of our outcome with the gold videos to demonstrate accuracy.

4. Direction for the future work.