

ABSTRACT

Sign language plays a crucial role in enabling effective communication for the Deaf and Hard of-Hearing (DHH) community. However, many existing sign language interpretation systems rely heavily on static images or pre-recorded animations, which often fail to replicate the fluid and natural motions characteristic of real-life signing. This lack of realism can hinder effective communication and reduce user engagement, particularly in dynamic or conversational settings.

The objective of this project is to create a real-time system that translates multimodal inputs including spoken, and text inputs into synchronized and dynamic sign language animations. It converts speech into English text, and produces realistic sign language by using technologies like Deep Learning, speech recognition technology, natural language processing (NLP), and computer vision technology.

A key feature is its ability to maintain synchronization between the original input and the generated signing, preserving the natural flow of communication. This software helps reduce communication gaps and promotes accessibility for the DHH community online.

By enabling more natural, real-time, and accurate sign language translations, this project aims to bridge communication barriers and foster greater inclusivity and accessibility for the DHH community, especially in digital and educational environments