ABSTRACT

This project focuses on the development of a real-time system for the conversion of sign language into text and speech, and vice-versa, to facilitate seamless communication between individuals with hearing impairments and those without. The proposed system integrates advanced technologies such as Convolutional Neural Networks (CNN), LSTM, image processing is to achieve accurate and efficient translation between sign language and spoken language. The use of LSTM plays a pivotal role in the recognition of sign language gestures from video input.

The model is trained on a diverse dataset of sign language gestures, allowing it to learn and generalize the intricate hand movements and expressions inherent in sign language communication. This deep learning approach enhances the system's ability to recognize a wide range of gestures with high accuracy.

Image processing techniques are employed to preprocess the video input, extracting relevant features and reducing noise to enhance the overall performance of the system. The integration of image processing not only contributes to the accuracy of gesture recognition but also ensures robustness in varying lighting conditions and background environments.

The real-time nature of the system ensures minimal latency in the translation process, enabling instantaneous communication between individuals using sign language and those relying on spoken language. The proposed solution holds promise in breaking down communication barriers and fostering inclusivity in various social and professional settings.

Sign language is a vital form of communication used by millions of people worldwide, particularly within the deaf and hard-of-hearing communities. Despite its importance, there remains a significant communication barrier between sign language users and non-signers in everyday situations, such as social interactions, public services, and workplaces.