

Abstract

The aim of this project is to design a **real-time system** that can detect hand movements from Indian Sign Language (ISL) using a regular digital camera. The primary objective is to bridge the communication gap between the hearing and speech challenged individuals and the rest of society by **automatically converting ISL to text or voice**.

This system will enable **interaction between signers and non-signers**, as well as individuals who are unfamiliar with sign language.

Our approach involves developing an automated recognition system that can identify immobile numeric signs of ISL. Specifically, we aim to translate isolated digit signs into text. We construct a sign database comprising of 5000 photos and 500 images for each numerical sign (0-9) to detect ISL sign pictures in real-time using tools such as **OpenCV and MediaPipe**.

In terms of classification accuracy, we learned that the **k-Nearest Neighbor classifier** outperforms the **Naive Bayes classifier**.

While we understand that there may be limitations to the system, we are hopeful that it could contribute towards making communication more inclusive and accessible.