PARSHVANATH CHARITABLE TRUST'S
A.P. SHAH INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering
Data Science

SignConnect:
A seamless connection, from voice to sign

Vedant Parulekar 21107034
Umesh Pawar 21107014
Dalbirsingh Matharu 21107005
Tanaya Patil 21107017

Project Guide
Prof. Vaibhav Yavalkar

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1. Introduction

- Problem Identified :
  - The "Speech to Sign" project aims to address the communication gap between the deaf or hard of hearing and those unfamiliar with sign language. Reducing isolation and enhancing access to information and services for individuals with hearing disabilities.
- Solution Proposed :
  - The proposed solution for the "Speech to Sign" project is creating a real-time speech-to-sign language translator, helping deaf individuals communicate by converting spoken language into sign language.

2. Objectives

1. To create an ASR system with an accuracy rate of at least 90% for the target spoken language(s).
2. To create a system that can accurately generate sign language animations or text-based representations for Indian sign language.
3. To make a user-friendly interface that's simple for both speakers and people with hearing disabilities to understand and use.

3. Scope

1. Can create a platform that's simple for both speakers and individuals with hearing disabilities to understand and use easily.
2. Can be implemented in the medical industry, allowing medical professionals to use the system for effective communication with deaf or hard-of-hearing patients, ensuring accurate information exchange during appointments.
3. Can be useful in the business industry, as businesses can implement this technology to serve deaf or hard-of-hearing customers through customer service hotlines or chat services.

4. Features

- Feature 1:

  Instantaneous conversion of spoken language into sign language gestures, ensuring seamless and responsive communication.

- Feature 2:

  Personalization features allow users to adapt the visual representation of sign language to their preferences.

- Feature 3:

  The sign to text feature enabling a two way communication between individuals.

5. Outcome of Project

- User can input spoken language by speaking into a microphone or typing text.
- They can receive sign language translations in real-time as a visual representation of signs or animations.
- They can use the system for daily communication with hearing individuals who do not know sign language, whether in personal or professional settings.
- User can also use the sign-to-text feature to easily understand what the person is trying to communicate via sign language.

6. Technology Stack

- Speech recognition:

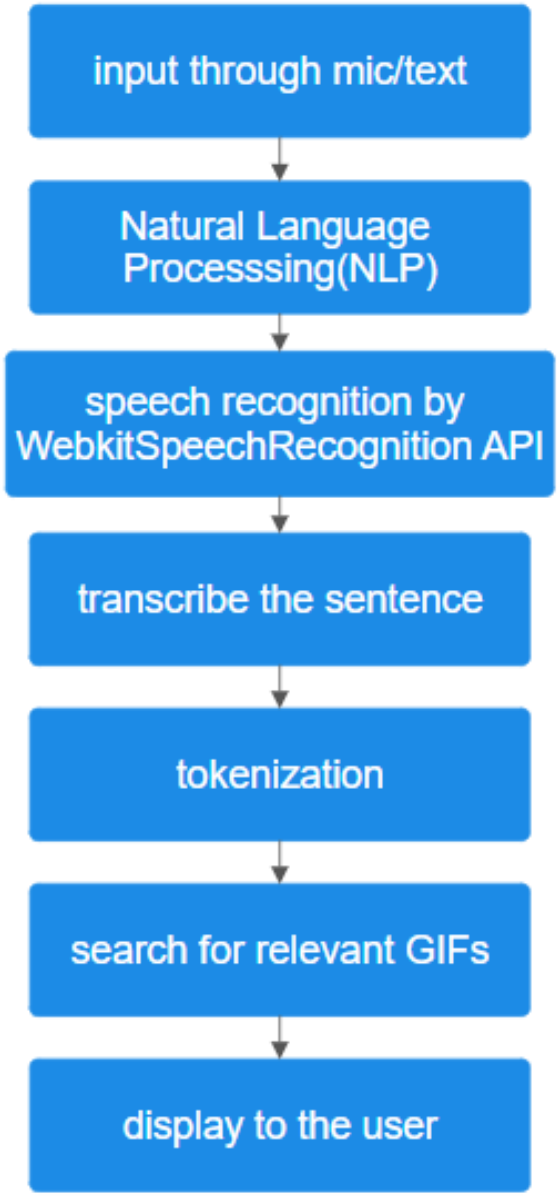
1. Google Cloud Speech-to-Text API
2. Python for scripting and development (3.11.5)

- Natural Language Processing (NLP):

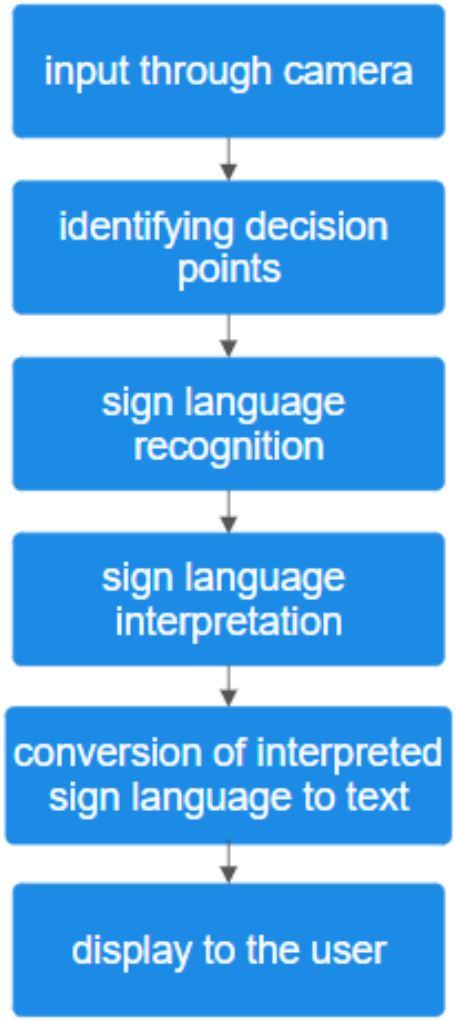
1. Python for NLP implementation (3.11.5)
2. NLP frameworks like NLTK (Natural Language Toolkit)

- OpenCV (4.8.0)
- PyTorch (2.0)

7. Block Diagram



Speech to Sign



Sign to Text

Thank You...!!