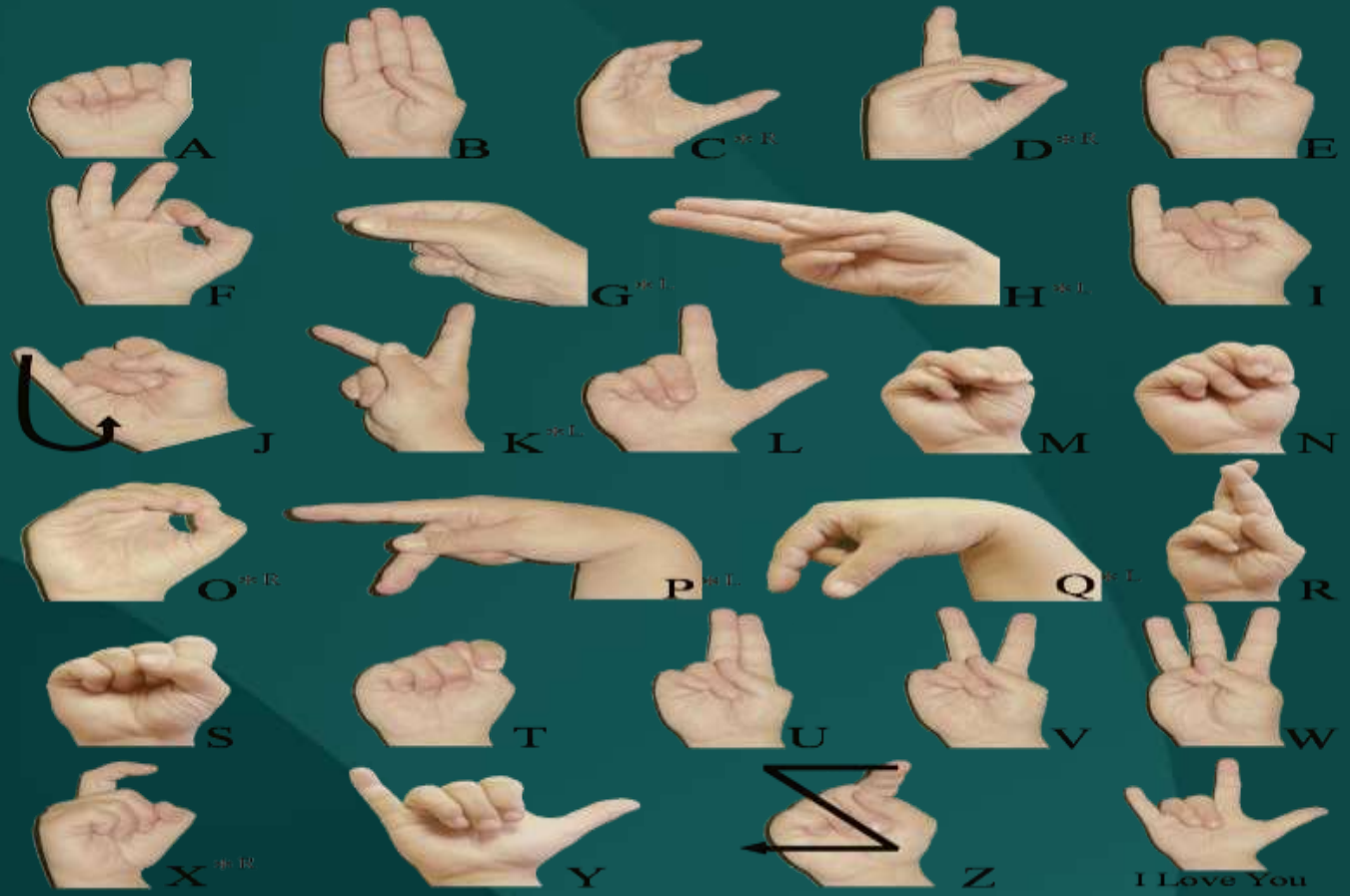
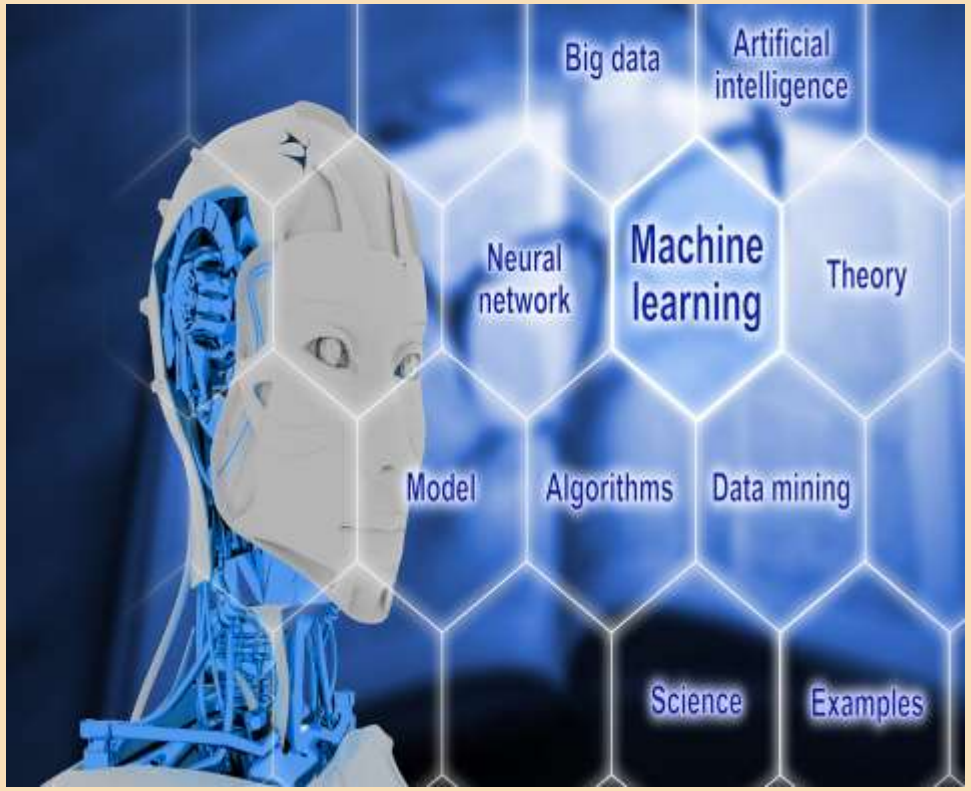
Sign Language Interpreter for Hearing Impaired

SIGN LANGUAGE



MACHINE LEARNING



TEAM GUIDE:

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TEAM MEMBERS

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Agenda

- Objective and scope of the project
- Basic concepts related to your project
- Analysis and explanation of the identified Problem
- Existing System
- Proposed System

Objective

To develop a Python-based program that converts the spoken language into sign language, which helps the deaf and difficulty in hearing people. Our program will use speech recognition to capture our spoken input and then it converts it into the corresponding sign language representation.

Scope

Speech Recognition: It is used to accurately transcribe the words spoken by the user into text.

Sign Language Conversion: Using the text transcribed using speech recognition, we will match it with the corresponding sign and display it.

User Interface: Our program has a user friendly interface which has minimal widgets in it and it is easy to used by everyone.

Analysis and Explanation of Identified Problem

- Problem Statement: Individuals with hearing impairment often faces challenges in communication when interacting with those who don’t know sign language. The older methods were using a manual translator or some complex setups.
- Since finding a manual translator at all times is difficult we propose our system which can be accessible at all times. It can be used for real time conversion.

Global Overview of People with Hearing Impairment

According to **WHO**, over **430 million people** globally are currently experience hearing loss.

And this is expected to be increased to **700 million** by **2050** since the global population ages, and the factors like increased noise exposure and other environmental risks.

Estimated Number of people who are affected by hearing loss in key countries(2024)

Country	Estimated number of people in millions
United States	37.5
India	63
China	27
European union	60
Brazil	10
Mexico	3
United Kingdom	12
Japan	7
Australia	3.6
Canada	4
Nigeria	3

Existing converters

- **SignAll:** uses AI to convert speech into American Sign Language,
- **Google's Project Relate:** Mobile app which converts speech to text and is in experimental phase to allow translation of text into sign language through Google's translate app,
- **Hand Talk:** Mobile app that converts Portuguese into Brazilian Sign Language.
Uses 3D models to display signs,
- **Sign Speak:** converts speech into ASL and BSL(British Sign Language),
- **MotionGlove:** Captures Hand movements and translate them into speech or text.

Basic Concepts Related to our project

- Speech Recognition
- Sign Language Representation
- Python Libraries and Tools

- Speech Recognition:

Converts spoken words into text using Natural Language Processing (NLP) techniques and algorithms.

- Sign Language Representation:

The Sign language is represented using images which we have obtained from Kaggle.

- Python Libraries and Tools

Speech Recognition: For capturing and transcribing speech.

Tkinter: For Graphical User Interface (GUIs).

Existing System

Current Methods:

1. Manual Interpretation: Right now people might require a human interpreter who knows sign language.
2. Text-Based Translation: Converts speech to text, which is then translated to sign language by a human or static system.

Limitations:

1. Manual methods are not scalable.
2. User may find the text-based solutions less engaging and interactive.

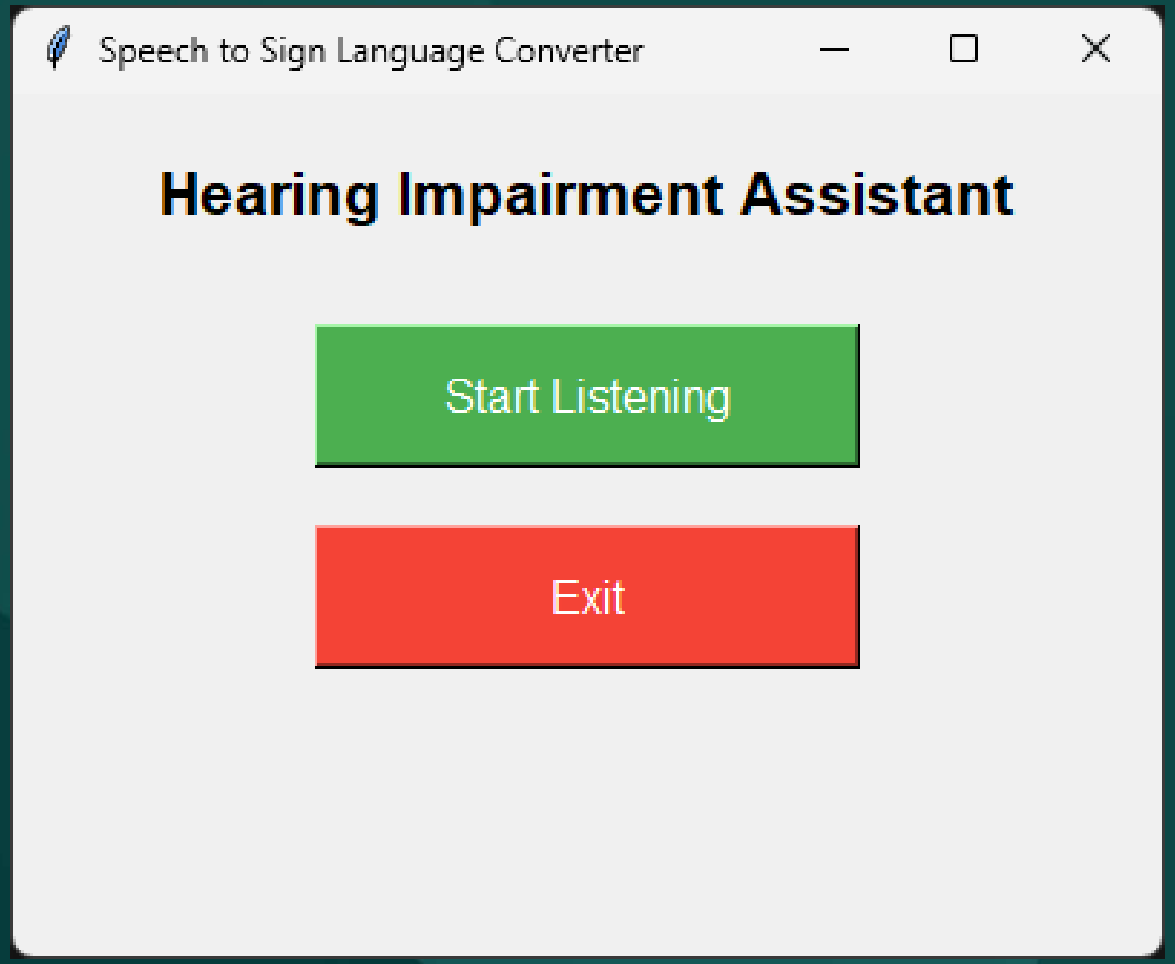
Proposed System

Current Methods:

1. Speech Recognition module,
2. Text-to-sign language module,
3. User Interface.

Features:

1. These are easily accessible to everyone.
2. Processes and translates speech into sign language instantly.


Speech to Sign Language Converter
Hearing Impairment Assistant
Start Listening
Exit

Thank You