EchoGest

“Merging gestures by echoing them

As text”

Communication is essential to human interaction, but deaf and mute individuals face significant challenges in engaging with non-signing communities. American Sign Language serves as a critical tool for non-verbal communication, but the language barrier b/w signers and non-signers remains.

SignalSync

Project Description

The project aims to bridge the communication gap b/w deaf & mute individuals and the broader community by converting sign language gestures into text and audio. This real-time translation system will enhance accessibility, enabling individuals to communicate more effortlessly.

1

Sign Language Input

The system utilizes advanced computer vision techniques to to analyze and interpret sign language gestures in real-time. time.

2

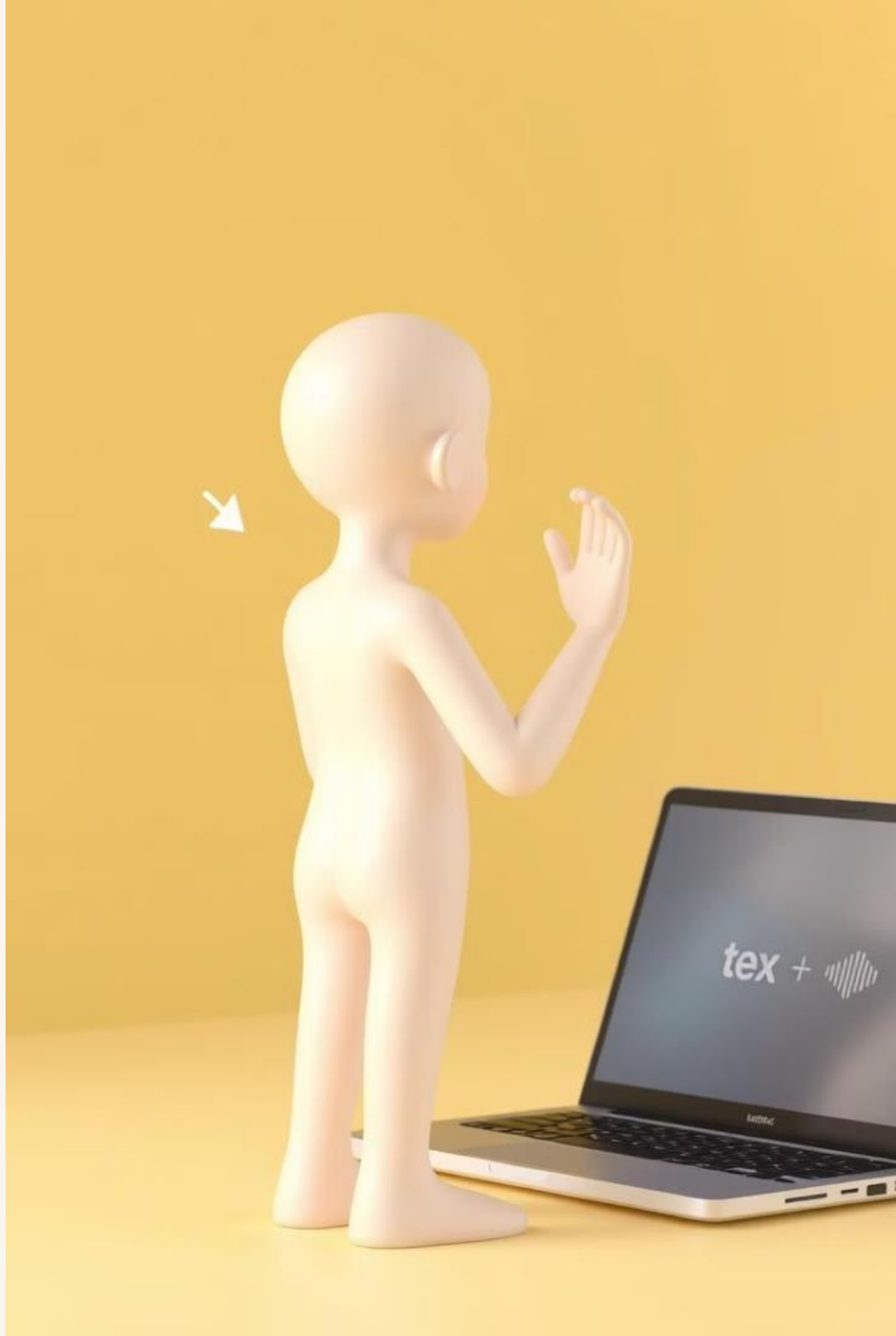
Language Processing

The system leverages natural language processing (NLP) to convert sign language into text.

3

Text Output

The translated text output are presented to the user in a clear and accessible manner.



Novelty

This project introduces an innovative solution by leveraging real-time gesture recognition technology to convert American Sign Language into text, creating a more inclusive communication system.

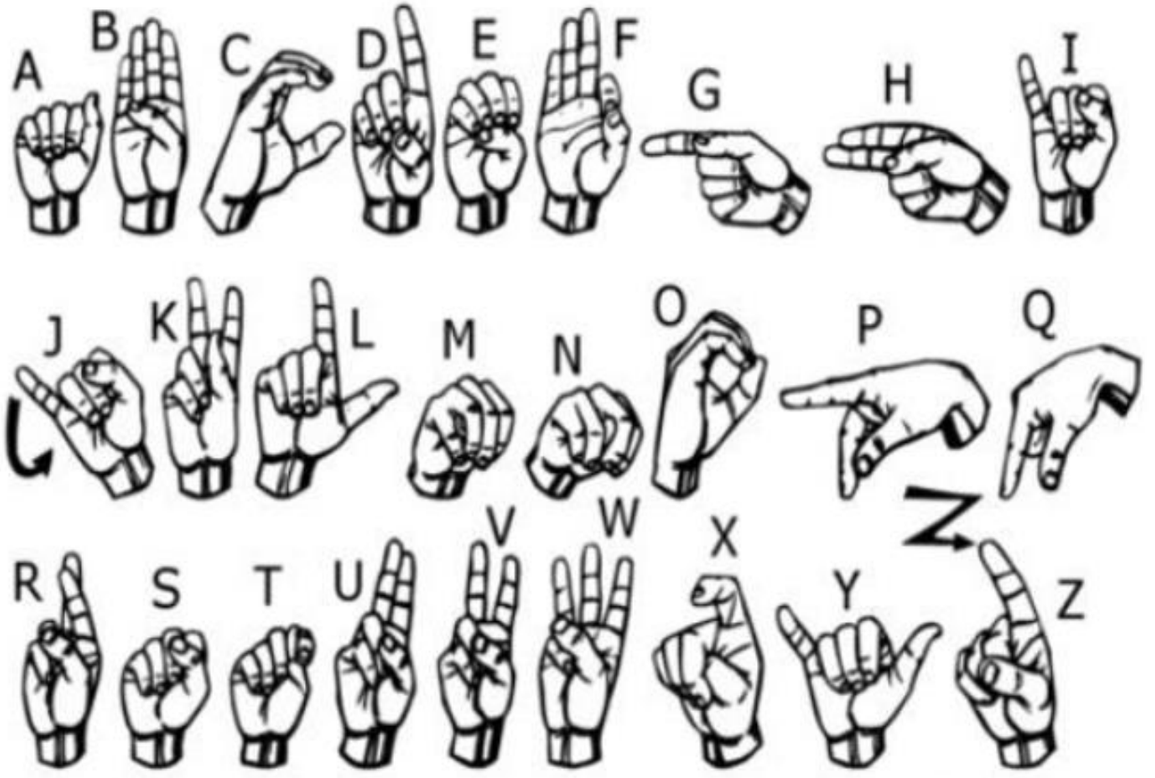
Real-Time Translation

Unlike traditional methods that rely on human interpreters, this system offers real-time conversion of sign language into text.

AI-Driven Gesture Recognition

Designed to work across multiple devices, including smartphones, tablets and computers, this system is user-friendly and accessible for people on the go, making communication seamless in various environments.

We implemented 27 symbols(A-Z, blank) of ASL in our project.



Gesture to Text

Gesture to Text

How the Translator Works

The translator utilizes a combination of computer vision, natural language processing, and machine learning algorithms. It analyzes hand gestures, facial expressions, and body language to interpret sign language.

1

Input Capture

The system captures sign language input using a camera or webcam.

2

Gesture Recognition

Computer vision algorithms identify and analyze hand gestures, recognizing individual signs.

3

Language Translation

The recognized signs are translated into text output using machine learning models.

Application

1 **Education**

Assisting in classrooms and learning environments to help D&M students communicate with teachers and peers who do not know sign language.

2 **Healthcare**

Enabling better communication between Deaf and Mute patients and healthcare providers, improving medical consultations and patient care.

3 **Customer Service**

Facilitating interactions between Deaf and Mute individuals and customer service representatives in various sectors like retail, banking, and hospitality.

4 **Social Integration**

Encouraging more inclusive social interactions by allowing Deaf and Mute individuals to communicate effortlessly in everyday situations, such as at social events, restaurants, or public spaces.

5 **Workplace**

Providing accessibility tools for Dead and Mute employees, enabling smoother communication with colleagues and employers in professional settings.

Key Features and Capabilities

The translator will support sign languages, including American Sign Language (ASL).
It will provide text output, catering to different user preferences.

1 Offline Functionality

Users can access the translator even without an internet connection.

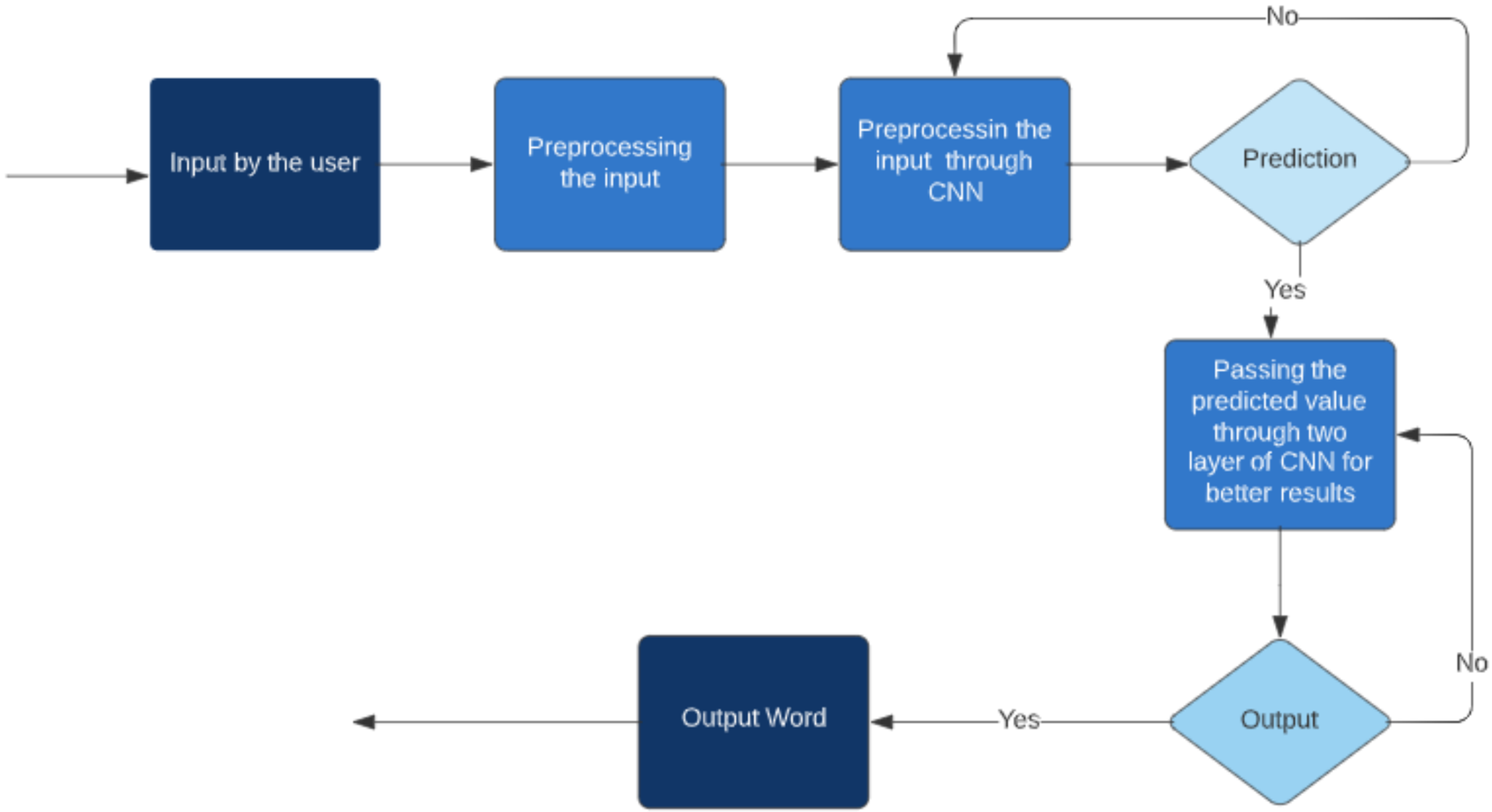
2 Real-Time Translation

The system offers real-time translation, enabling seamless communication.

3 Personalized Settings

Users can customize the translator to suit their individual needs and preferences.

Gesture Classification



Software Requirements

- Python 3.6.6
- Tensorflow 1.11.0
- OpenCV 3.4.3.18
- NumPy 1.15.3
- Matplotlib 3.0.0
- Hunspell 2.0.2
- Keras 2.2.1
- PIL 5.3.0

Conclusion

This projects addresses the significant communication barriers faced by Deaf and mute individuals through the development of a real-time sign language translation system.

By converting American Sign Language gestures into text, the solution fosters greater inclusivity and accessibility in various aspects of life, including education, healthcare, and social interaction.

Leveraging AI and gesture recognition technology, this system bridges the gap between signers and non-signers, promoting a more inclusive and connected world for all.

Teamwork

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Backend	Backend	Backend
PPT		Project Report

Thank You

Thank You