Hand Sign to Text Converter

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Abstract: *Voice and Language are the main things that help humans to communicate with each other. Due to hearing ability, we can understand the thoughts of each other. Nowadays, we can give commands using voice recognition. But what if one cannot hear anything and eventually cannot speak? So, Sign Language is the principal communication tool for hard of hearing and mute people and to ensure an independent life for them. The automatic interpretation of sign language is an extensive research area. With image processing and artificial intelligence, many techniques and algorithms are in this area. Every sign language recognition system is trained to recognize the signs and convert them into the required patterns. The proposed system aims to provide speech to the speechless. In this project, the double-handed Indian Sign Language was captured as a series of images, then processed with the help of Python, and then converted to speech and text.*

Keywords: Sign Language Recognition, Automatic Interpretation, Image Processing, Artificial Intelligence, Speech- to-Text Conversion

I. INTRODUCTION

The Hand-To-Text Converter is a transformative innovation that translates sign language into text, enabling effective communication for the Deaf community. This breakthrough technology promotes inclusivity, enhances education, and fosters accessibility in various aspects of life, ultimately bridging the gap between the Deaf and hearing worlds. This article explores the significance of this innovation and its potential to create a more equitable and inclusive society.

II. MOTIVATION

The development of a Hand-to-Text Converter for Deaf communication was driven by a profound motivation to address longstanding challenges and inequalities faced by the deaf community. At its core, this technology aims to level the playing field by ensuring communication equality for deaf individuals. It seeks to break down communication barriers, foster inclusivity, and empower deaf individuals in their interactions with the hearing world. Additionally, the Hand-to-Text Converter strives to enhance educational opportunities, create equal career prospects, and leverage cutting-edge technological innovation to improve the lives of deaf individuals. By promoting stronger social connections, reducing isolation, and having the potential for a global impact, this technology embodies a commitment to creating a more equitable and inclusive society for all.

III. OBJECTIVE

The objective is to give them the ability to express ideas and thoughts. They can get help in increasing their motivation and confidence; it will help them to think positively and to conquer that physical disability. Using the latest technologies and tools, we aim to develop a system to overcome this global-level problem.
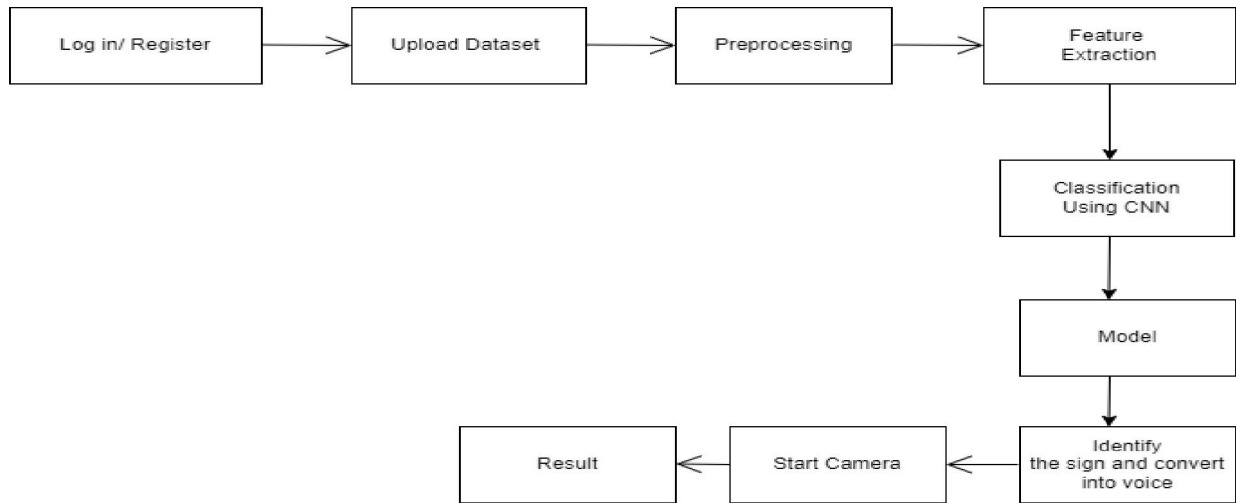
IV. SYSTEM ARCHITECTURE
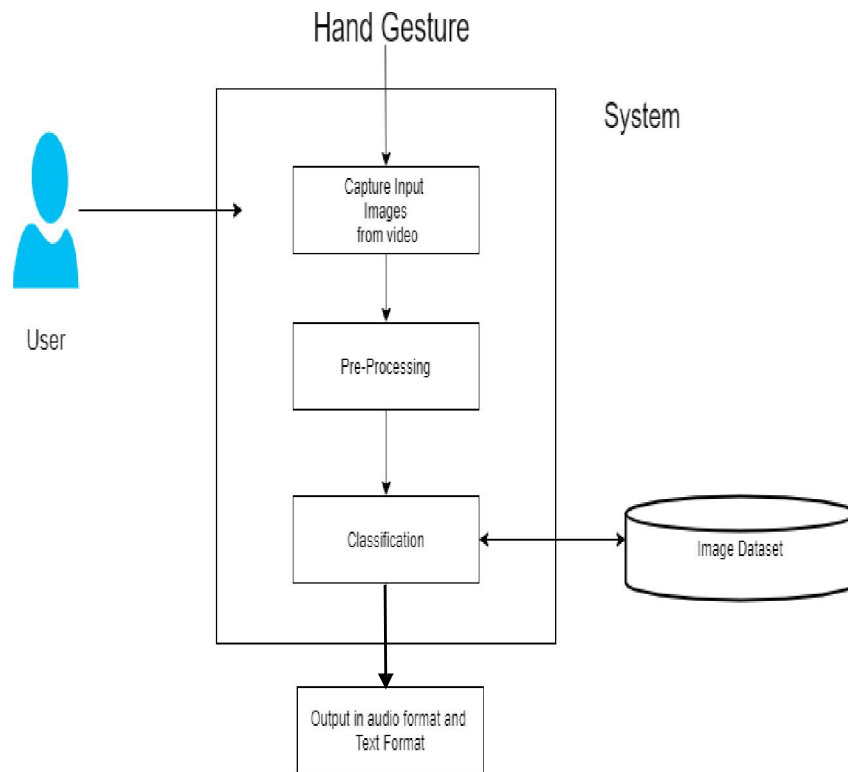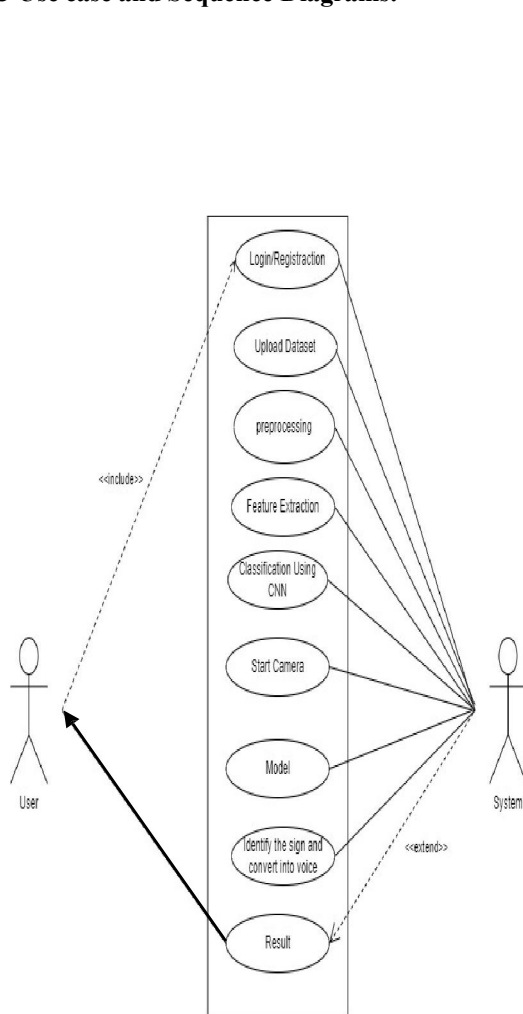

4.1 UML Diagram:
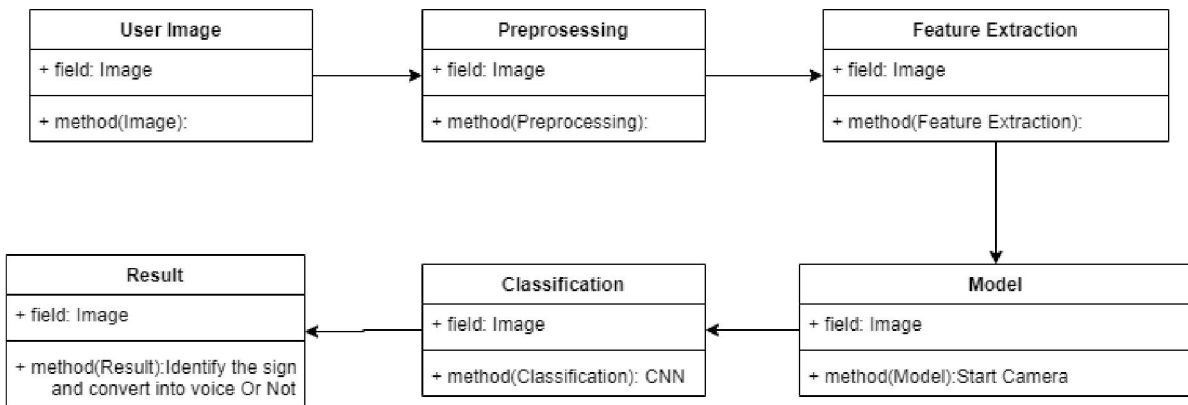
4.2 Data Flow Diagrams:
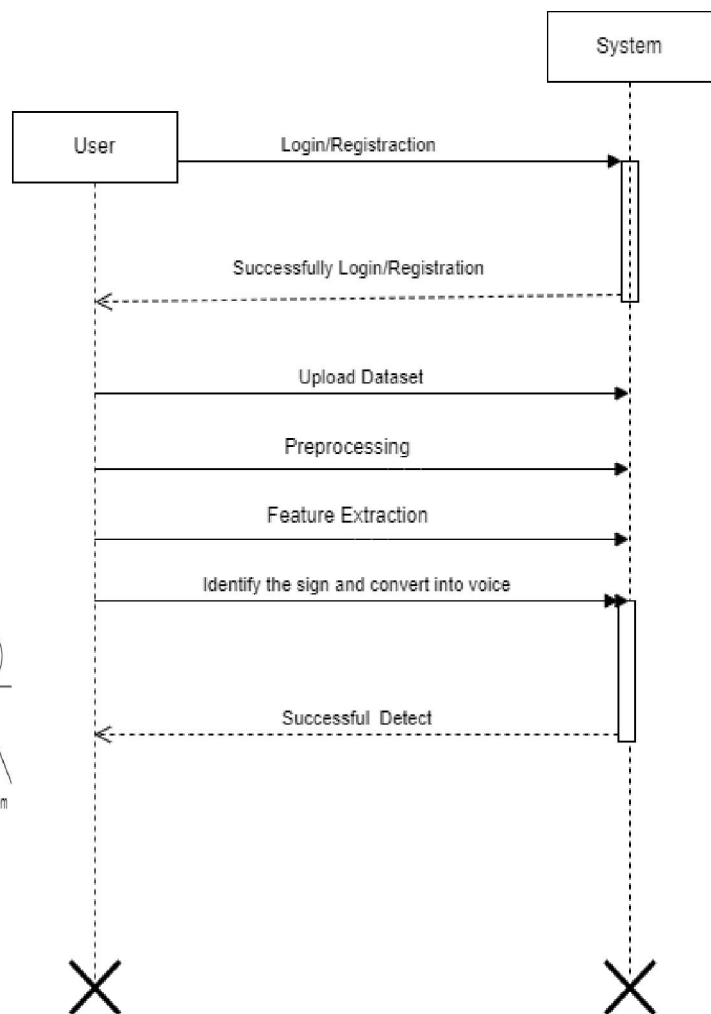

Data flow (0) diagram

Data flow (2) diagram

4.3 Use case and Sequence Diagrams:

Use case diagram

Sequence diagram

V. SOFTWARE REQUIREMENTS

- Operating System: Windows10
- LDE: Spyder
- Programming Language: Python

VI. HARDWARE REQUIREMENTS

- Hardware: intel core
- Speed: 2.80 GHz
- RAM: 8GB
- Hard Disk: 500 GB

VII. APPLICATIONS

- Real-time Communication: Converts sign language into text or speech for immediate understanding.
- Education: Facilitates communication in schools and colleges.
- Workplace: Enables communication with colleagues and customers

VIII. CONCLUSION

Sign Language is a tool to reduce the communication gap between deaf/mute people and normal humans. The system proposed gives the methodology that aims to work the same way as two-way communication. The proposed method facilitates the conversion of signs into speech, overcoming the requirement of a translator because of real-time conversion. The system acts as the voice of the person who is deaf/mute. This project is a step towards helping specially challenged people. We can enhance it by making it more user-friendly, efficient, portable, and compatible with many more gestures, as well as dynamic ones. We can improve the system further by making it compatible with mobile phones using its built-in camera. We can increase its working distance using a larger trans-receiver module or over Wi-Fi.

IX. ACKNOWLEDGMENT

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