A Project Presentation for the Degree of Bachelor in Computer Engineering

Hand Sign Detection System For Deaf and Dumb People

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INTRODUCTION

- Nowadays pattern recognition and gesture recognition are the growing fields of research.
- Being a significant part in non-verbal communication hand gestures are playing vital role in our daily life.
- Hand Gesture recognition system provides us an innovative, natural, user friendly way of interaction with the computer which is more familiar to the human beings.
- There are many ways to interact with a computer nowadays including voice searches and voice assistant.
- But what if the user is mute and is unable to speak.
- Therefore, we are working on a system that can recognise hand gestures for deaf and dumb people.

Gestures Vocabulary
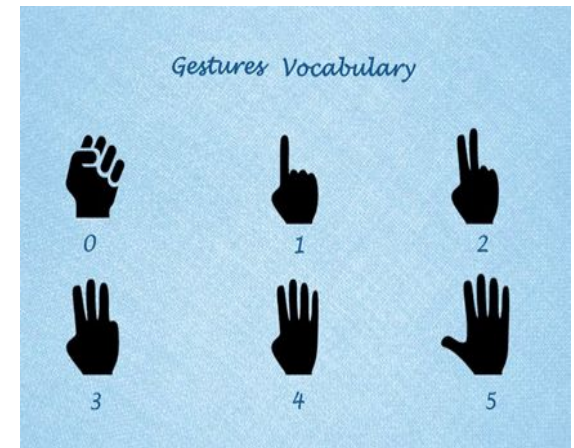
CHALLENGES

- We faced challenge in collecting the dataset having the features required by us.
- Also while training the model, the model was having low accuracy due to background noise.
- The trained model was having low accuracy due to the similarities in the hand gestures and they were difficult to recognise.

OBJECTIVE

- To publish review and research paper
- To detect and devise the problems faced by deaf and dumb people and find a solution for the same.
- To build a cost effective and easy to use system for deaf and dumb people.
- To design and implement a complete system that can detect , recognize and intercept the hand gestures through computer vision in real time .

LITERATURE SURVEY

Sr. No.	Paper Name	Description	Publication Date
01	Hypertuned Deep Convolutional Neural Network for Sign Language Recognition	This study is about sign language translation into text; this technology is for those experiencing difficulty in communicating.	April 30, 2022
02	OpenHands: Making Sign Language Recognition Accessible with Pose-based Pretrained Models across Languages	The paper introduced OpenHands, a library where we take four key ideas from the NLP community for low-resource languages and apply them to sign languages for word-level recognition	February, 2022

LITERATURE SURVEY

Sr. No.	Paper Name	Description	Publication Date
03	Sign Language To Speech Translation Using Machine Learning	The aim is to get the deaf and mute people more involved to communicate and the idea of a camera-based sign language recognition system	July 07, 2022
04	Detection of hand gestures with human computer recognition by using support vector machine	A low-cost approach based on human-computer interaction for predicting hand movements in real time.	April, 2022

LITERATURE SURVEY

| Sr. No.	Paper Name	Description	Publication Date
05	Using Deep Learning in Sign Language Translation to Text	This study is about sign language translation into text; this technology is for those experiencing difficulty in communicating.	March 07, 2022
06	Recognition of Hand Signs Based on Geometrical Features using Machine Learning and Deep Learning Approaches	This paper focuses on the usage of the American Sign Language (ASL) gestures and recognition of few action gestures using single hand.	2021

PROBLEM STATEMENT

- Deaf and dumb people face many problems while interacting with the people around them.
- They face the same problems while interacting with the computers.
- The main objective of our project is to solve this problem in a cost effective and user friendly way.

SOLUTION PROPOSED

- The proposed solution makes use of Convolutional Neural Network for the recognition of gestures based on a hand Histogram.
- The hand histogram will be a 256*256 binary image that will be set based on the skin colour of the user.
- The model is trained for 28 gestures including 26 letters and 2 gestures. The CNN will learn each gesture and predict it.
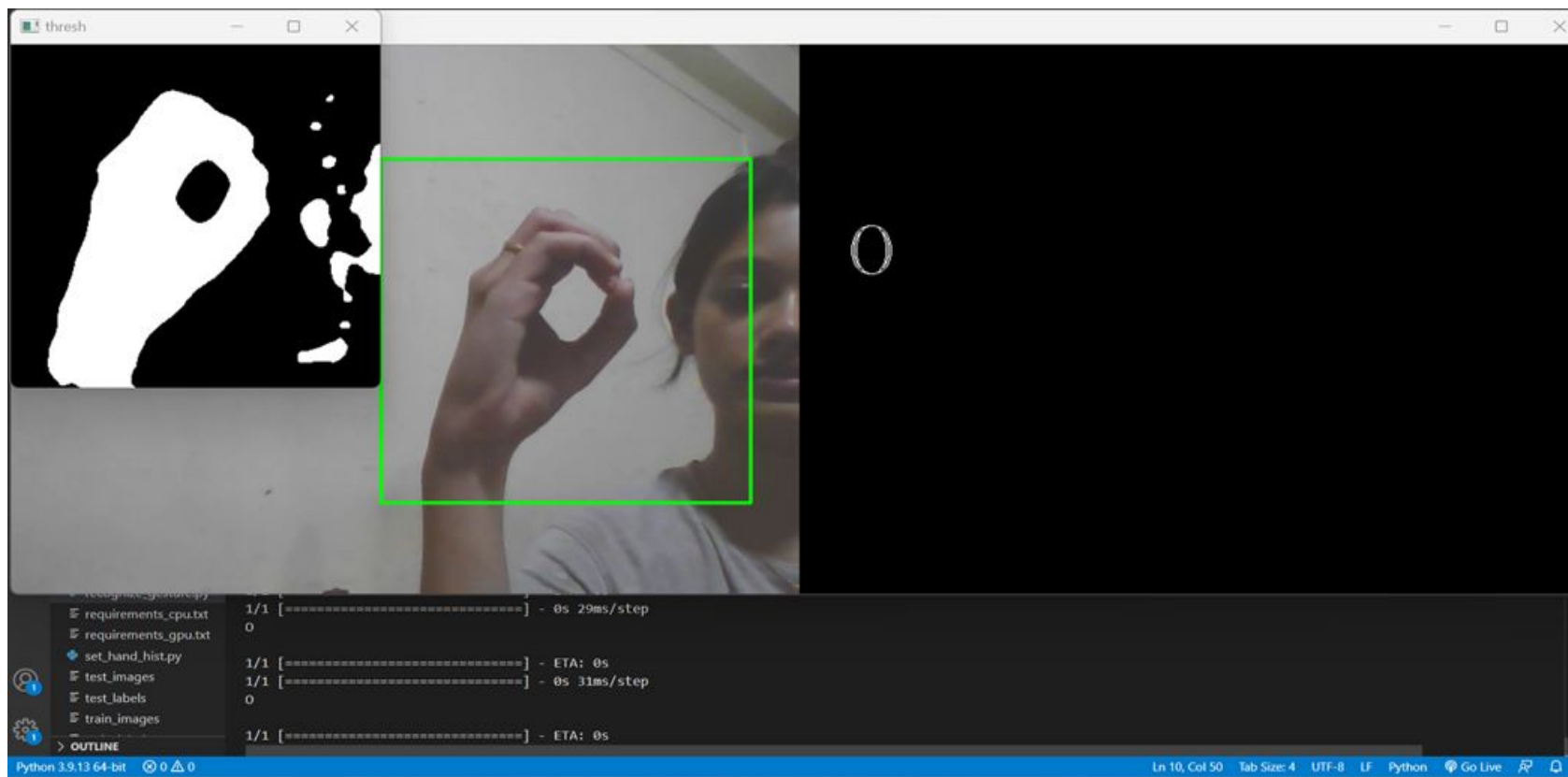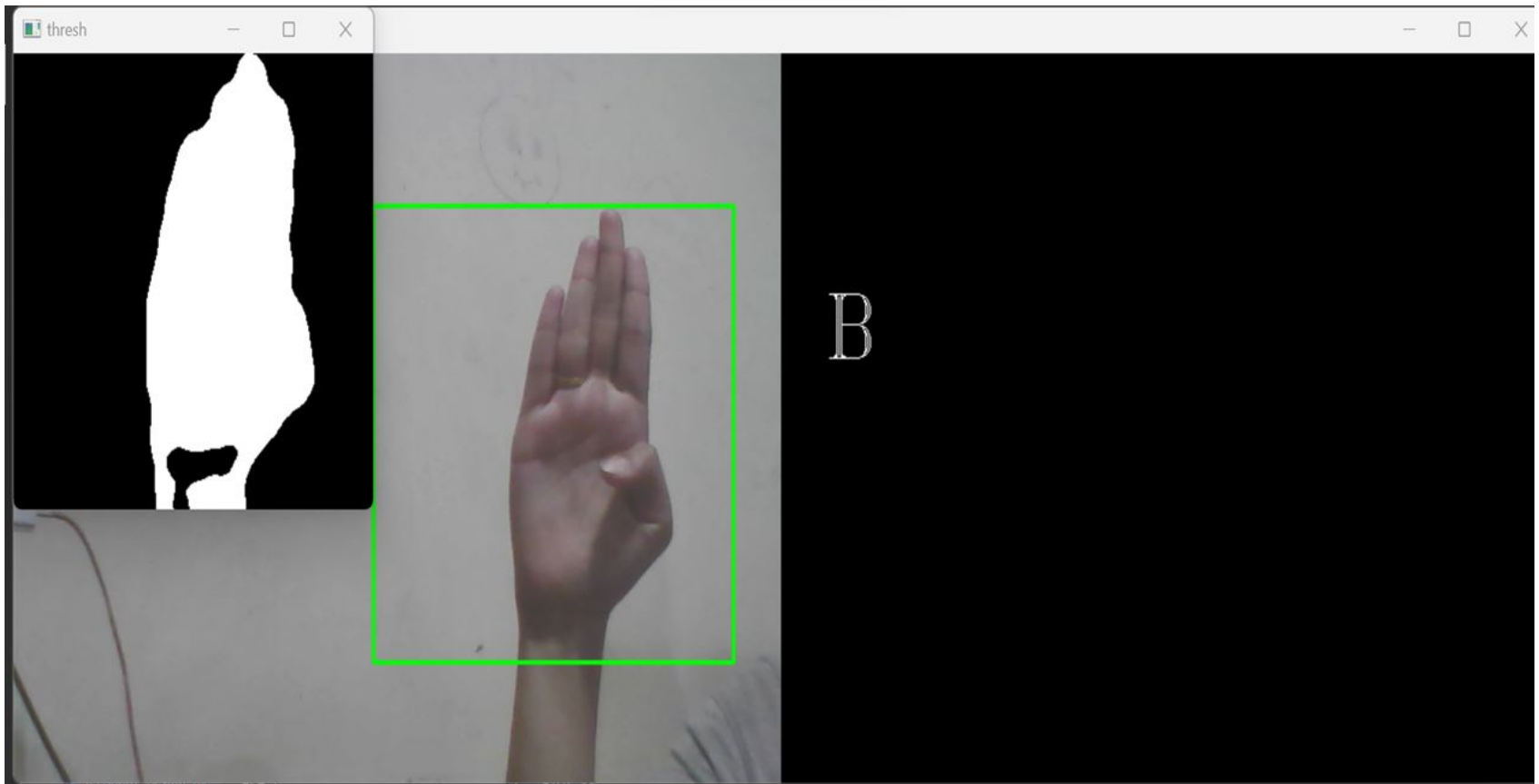
REQUIREMENT ANALYSIS UML DIAGRAM
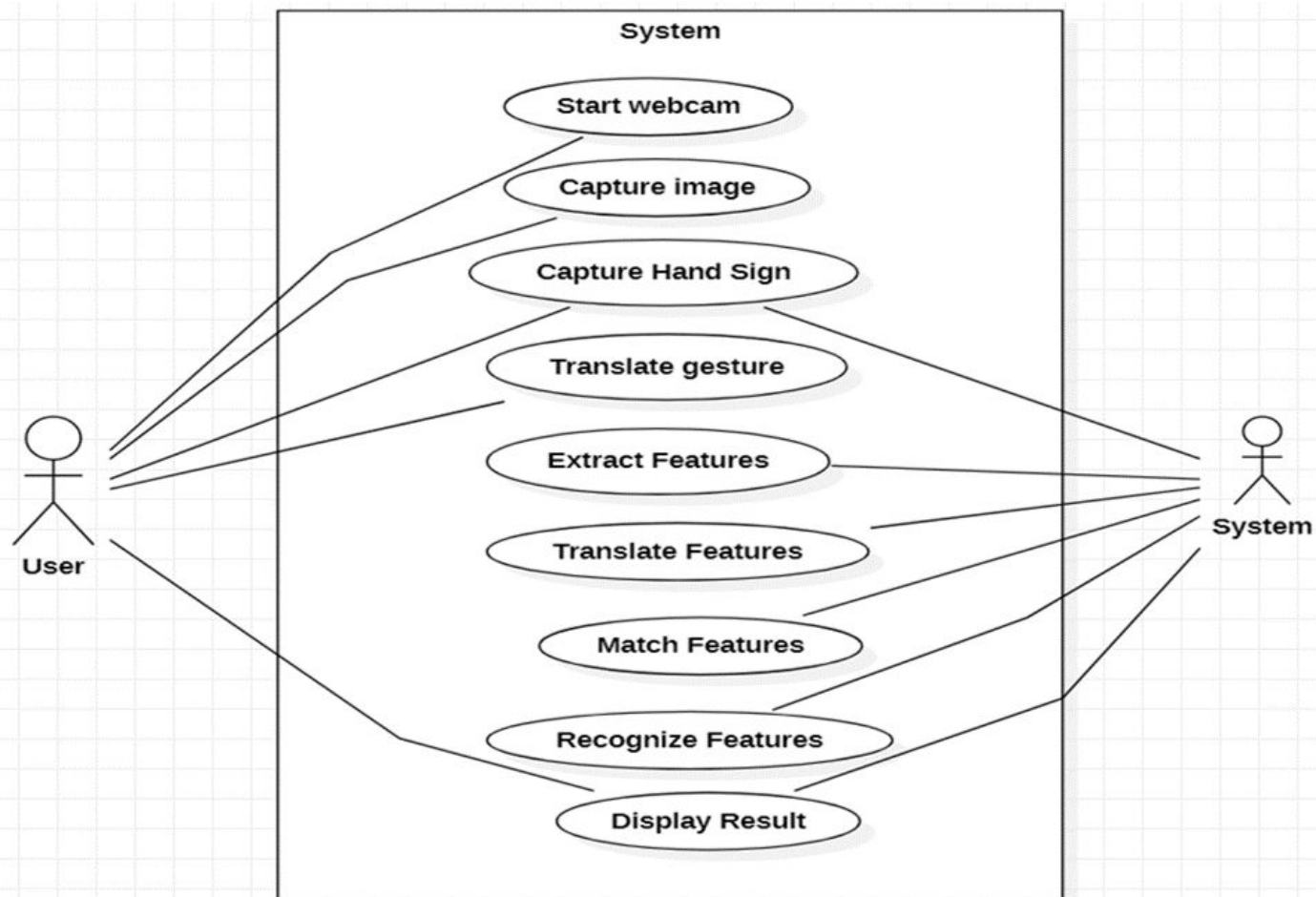
ALGORITHMS

●**Step 1:** Start

●**Step 2:** Acquire Image

●**Step 3:** Extract The Feature of Hand Signs

●**Step 4:** Compare With Stored Feature Of Extract

●**Step 5:** If Match Found

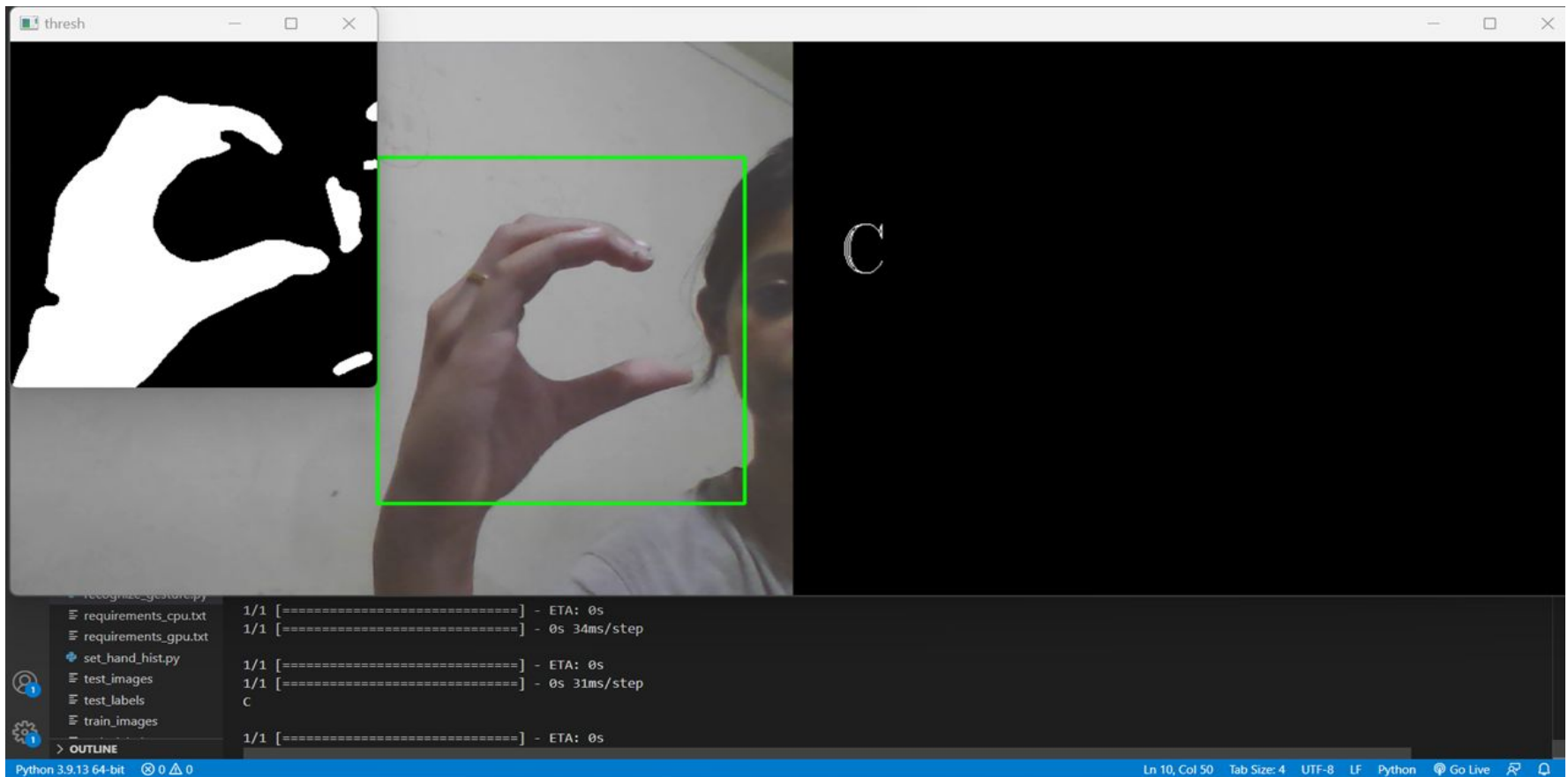●**Step 6:** Output The Corresponding Display And Audio Signals

●**Step 7:** Stop

RESULT

RESULT

RESULT

FUTURE SCOPE AND CONCLUSION

- This module can be used by various systems and applications as an option for voice search by deaf and dumb people.

- This module can also benefit deaf and dumb people in interacting with humans as well as computers.

- Also, this module is user friendly and do not need any special experience for using it.

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THANK YOU