

Abstract

As a medium of communication Sign Language is used by the dumb people and the people who have difficulty to speak and hear to communicate within their community or with others people. Hand Sign Recognition involves translation of the sign language to English. There are many sign languages, but here we deal with American Sign Language. There are existing methods to detect sign language by using IOT sensors, colours, glove etc., These will be expensive, time consuming, involves complex work, and are not flexible. Image processing can solve the problem and makes sign language detection flexible, faster, simple and more accurate. Here the sign showed by the user in front of the camera will be translated to English.

Keywords: Image Processing, OpenCV, Machine Learning, Tensor flow, Gesture Recognition, Flask, Keras

Introduction

Human Computer Interaction in short HCI is a study which involves a field of computer technology, in particular, the interaction between the humans and the computers. Hand Sign Recognition is a sub class of gesture recognition. Gestures are some signs or points which are known to computer, so that when user performs these gestures, intent or an action by the computer will be taking place. The main goal of our project is to make a web application which involves translation of the sign language to English. The scope of this project includes the dumb people around the country and people who have difficulty to hear. The main application of this project is that it can be used at places where there is minimal requirement of communication is needed from the dumb people.

Problem Statement

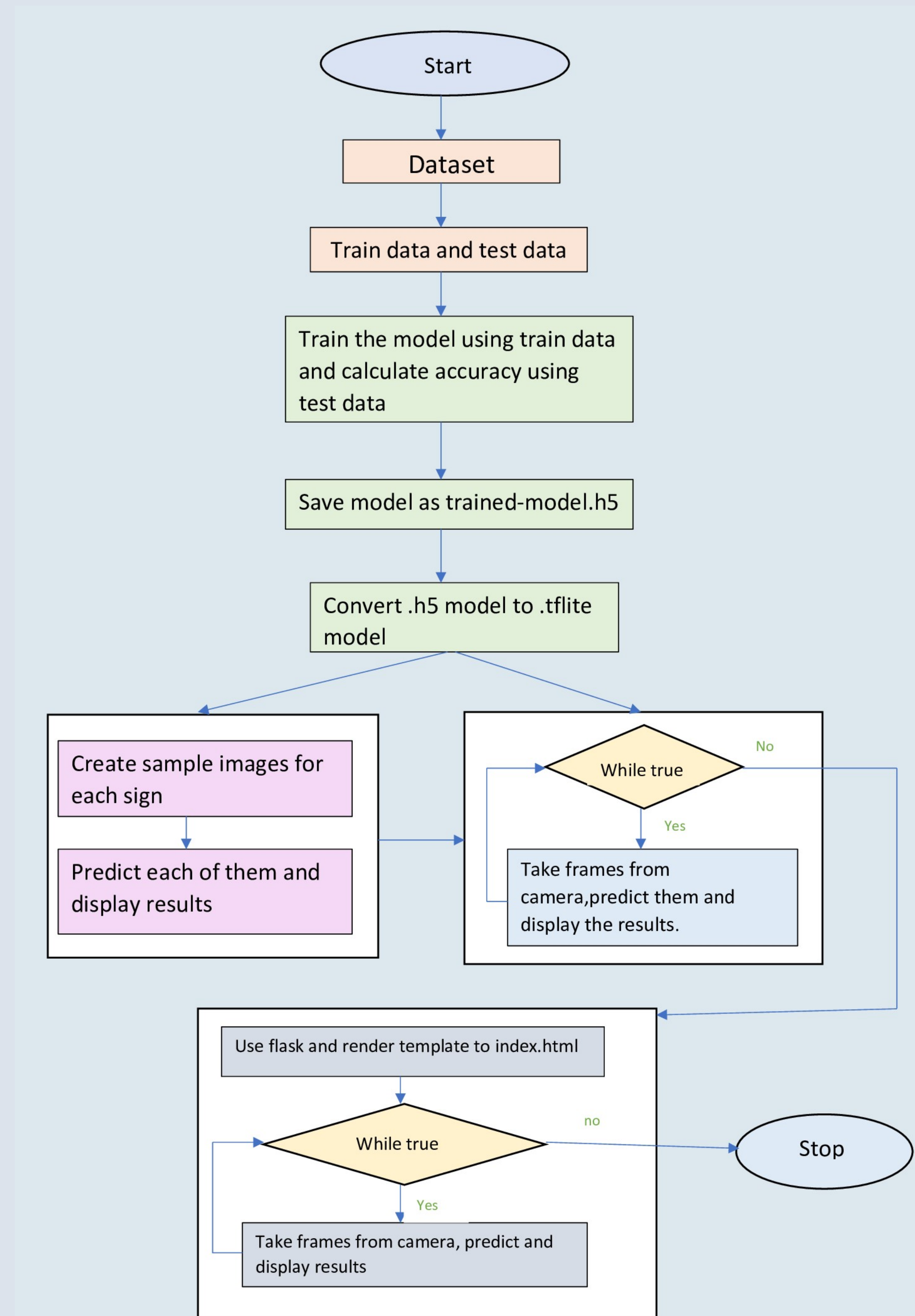
Our project aims to create a computer application to detect the signs. When user shows a sign in real time in this application, the corresponding text will be displayed.

Objectives

- The main objective is to impart sound education leading to the harmonious and holistic development of the hearing-impaired students so that they can stand on their own feet on this highly competitive society and build a community based on love, freedom and creativity .
- To build a real time gesture classification system that can automatically detect gestures in natural lighting condition.
- It also includes the removal of communication barriers between the dumb and the normal people in the society.

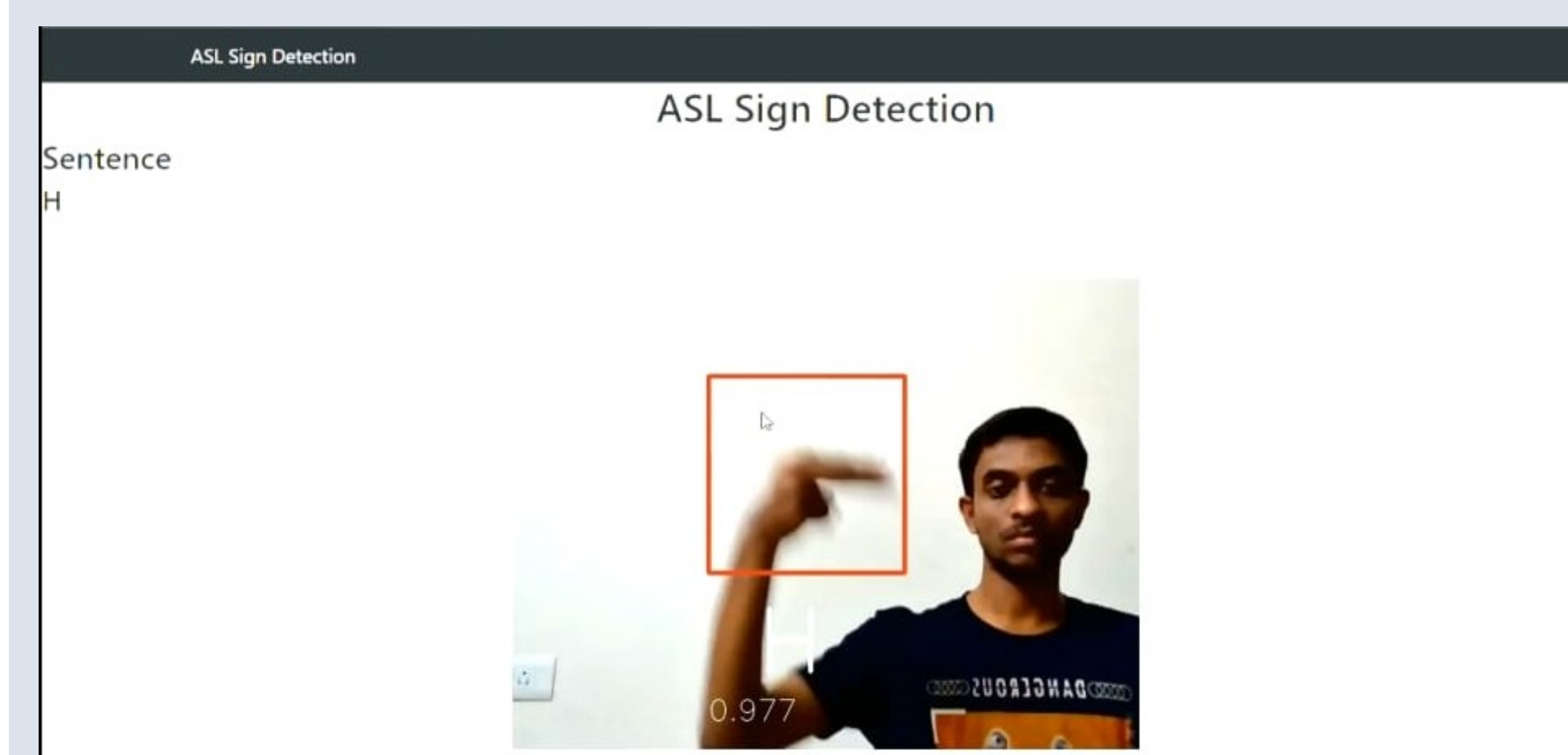
Proposed System

The below process flow diagram displays graphically the project's objective and seeks to more logically order the activities therein.

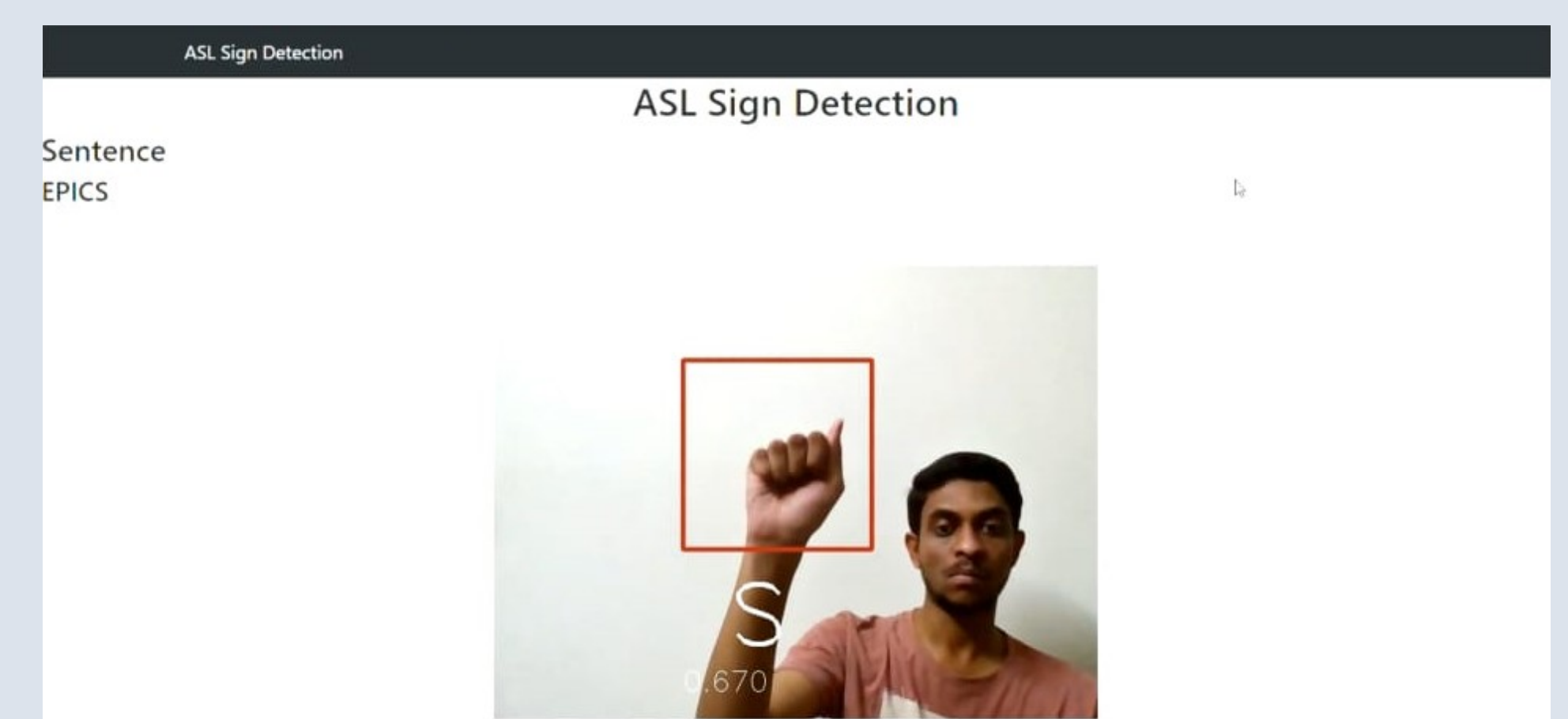
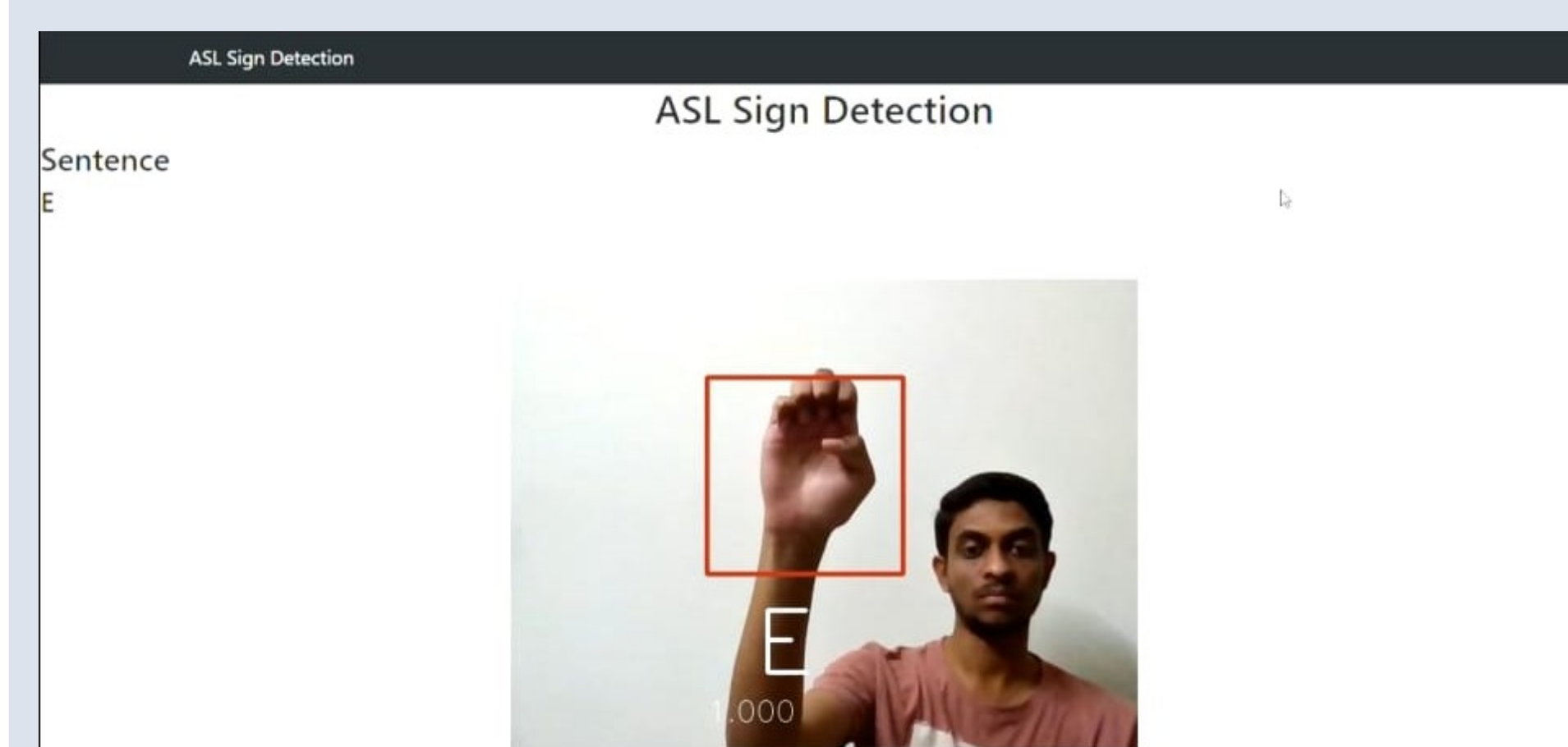


Result

Output screenshots related to the message "HELLOALL"



Output screenshots related to the message "EPICS"



Conclusion

The proposed project aims in translation of the sign language to the English language. The sign displayed by the user in the prescribed area on the screen will be predicted using the model trained by taking the help of created data set and the sign will be calculated from the labels available. The predicted sign will be appended to the string sequence. This string sequence will be shown to the user on the screen.

References

- [1] Machine-Learning. <https://data-flair.training/blogs/machine-learning-tutorial/>, [Last Accessed on 21-05-2022]
- [2] Open-CV is a tool used for imageprocessing. <https://pypi.org/project/opencvpython/>, [Last Accessed on 21-05-2022]