



# Gesture-Based Language Recognition

# Introduction

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# 1. Problem Statement

Develop an innovative system that utilizes camera technology in web to translate Sign language gestures into text. The primary goal is to enhance Communication accessibility for the Deaf and Hard of Hearing Community by providing a real-time sign Language-to-text translation solution.



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## 2.Modularization Of Problem Statement

- 1.Real-time gesture recognition
- 2.Text translation
- 3.Accessible interface

# 3.Design methodology

## 1.Real-time Gesture Recognition

Utilize camera technology for capturing hand gestures.

Implement hand tracking using Mediapipe.

Train a TensorFlow model for recognizing sign language gestures.

## 2.Text Translation

Develop a machine learning model using TensorFlow to translate recognized gestures into text.

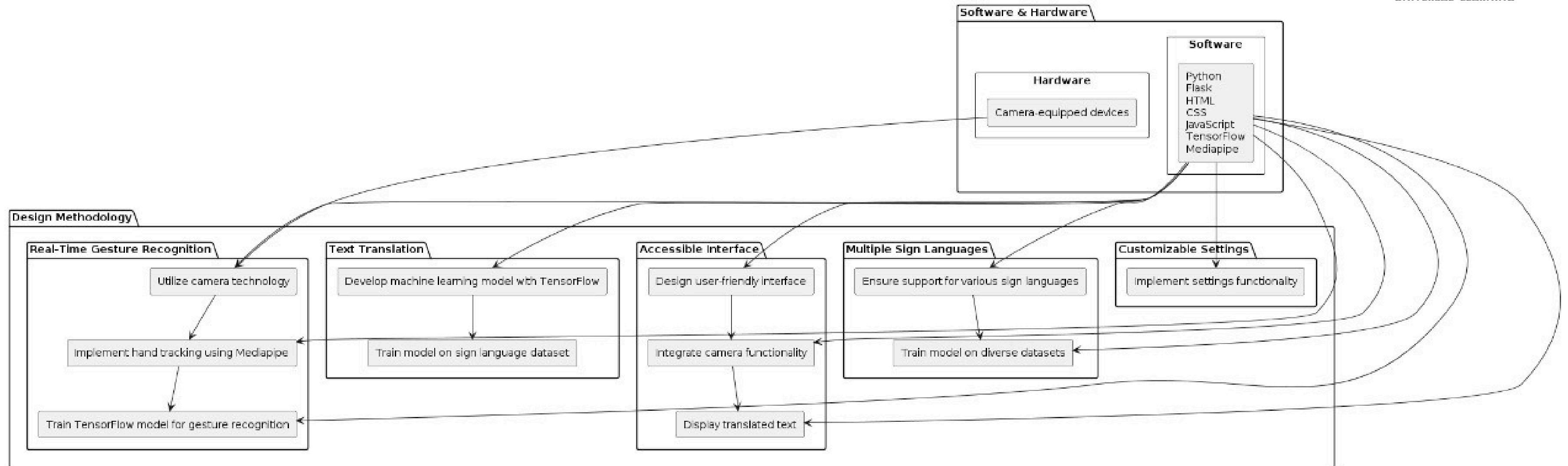
Train the model on a dataset of sign language gestures and their corresponding text labels.

## 3.Accesable Interface

Design a user-friendly interface using HTML, CSS, and JavaScript.

Integrate camera functionality for gesture capture.

Display translated text in a readable format.



# 4. Software and Hardware Requirements



## Software Requirements:

1. Html
2. Css
3. Javascript
4. python
5. flask
6. Tensorflow
7. mediapipe

## Hardware Requirements :

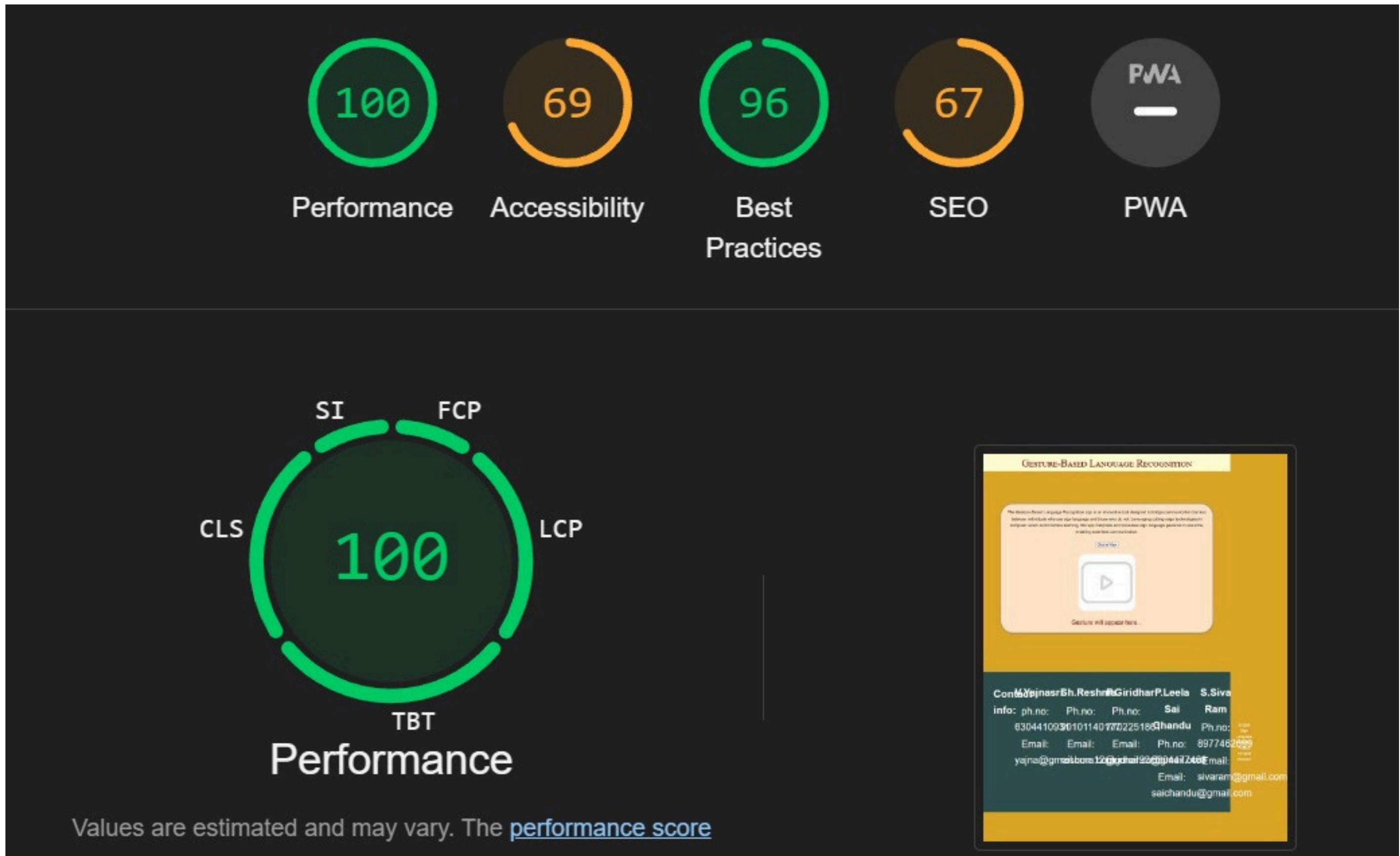
8. Camera - equipped devices (webcams for desktop, front-facing cameras)

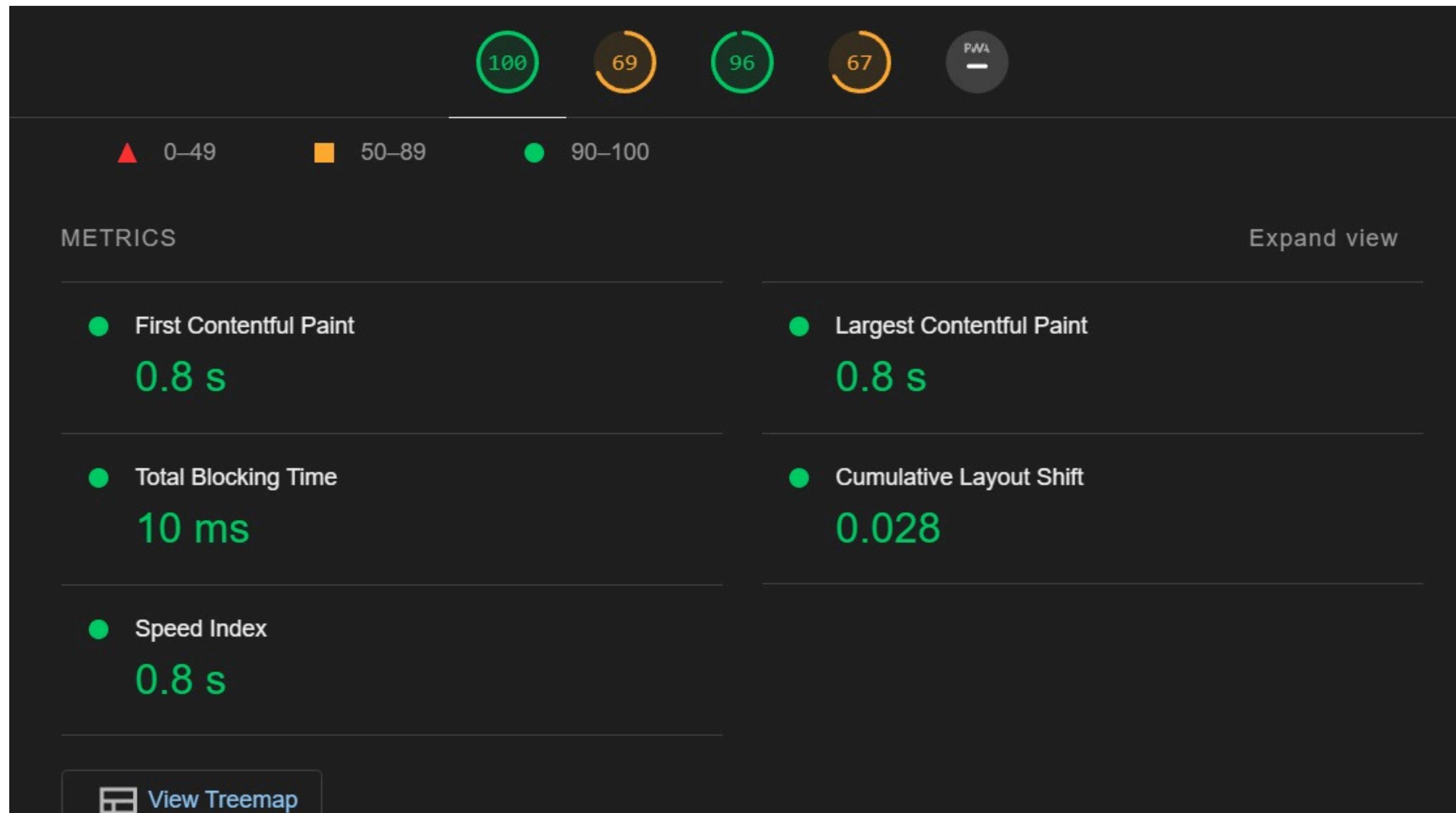
## 5. Test case Specification

Input: Capture various sign language gestures using the application.

Expected Output: Accurate translation of gestures into corresponding text.

Test Scenarios:  
Test with various hand positions and movements.  
Test with different sign languages.





# 6.Screenshot Of Output



GESTURE-BASED LANGUAGE RECOGNITION

The Gesture-Based Language Recognition app is an innovative tool designed to bridge communication barriers between individuals who use sign language and those who do not. Leveraging cutting-edge technologies in computer vision and machine learning, this app interprets and translates sign language gestures in real-time, enabling seamless communication.

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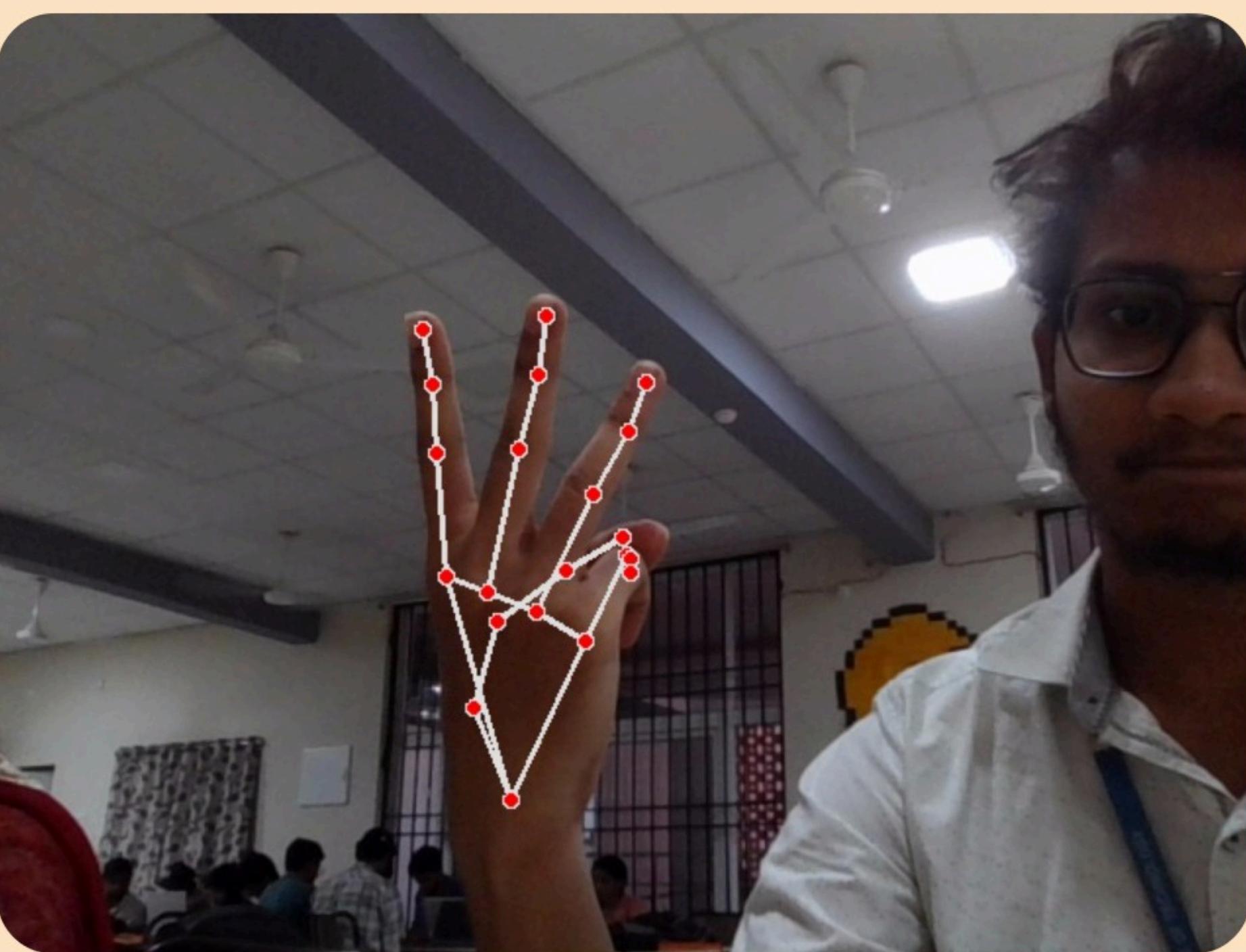


Gesture will appear here...

Contact info:

V.Yajnasri ph.no: 6304410931 Email: yajna@gmail.com.com	Sh.Reshma Ph.no: 90101140177 Email: reshma12@gmail.com	P.Giridhar Ph.no: 7702251861 Email: giridhar93@gmail.com	P.Leela Sai Chandu Ph.no: 6304477463 Email: saichandu@gmail.com	S.Siva Ram Ph.no: 8977462699 Email: sivaram@gmail.com
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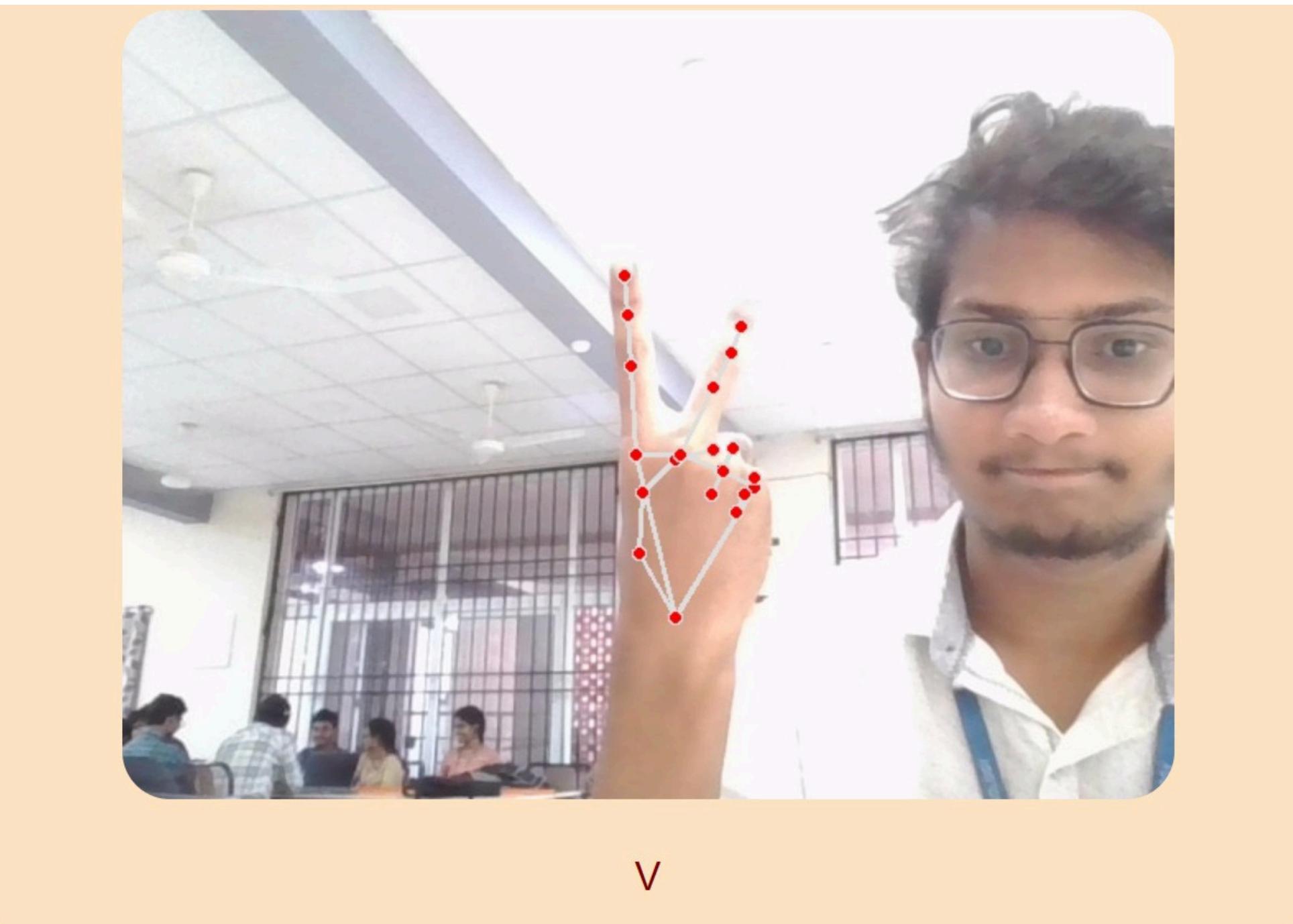
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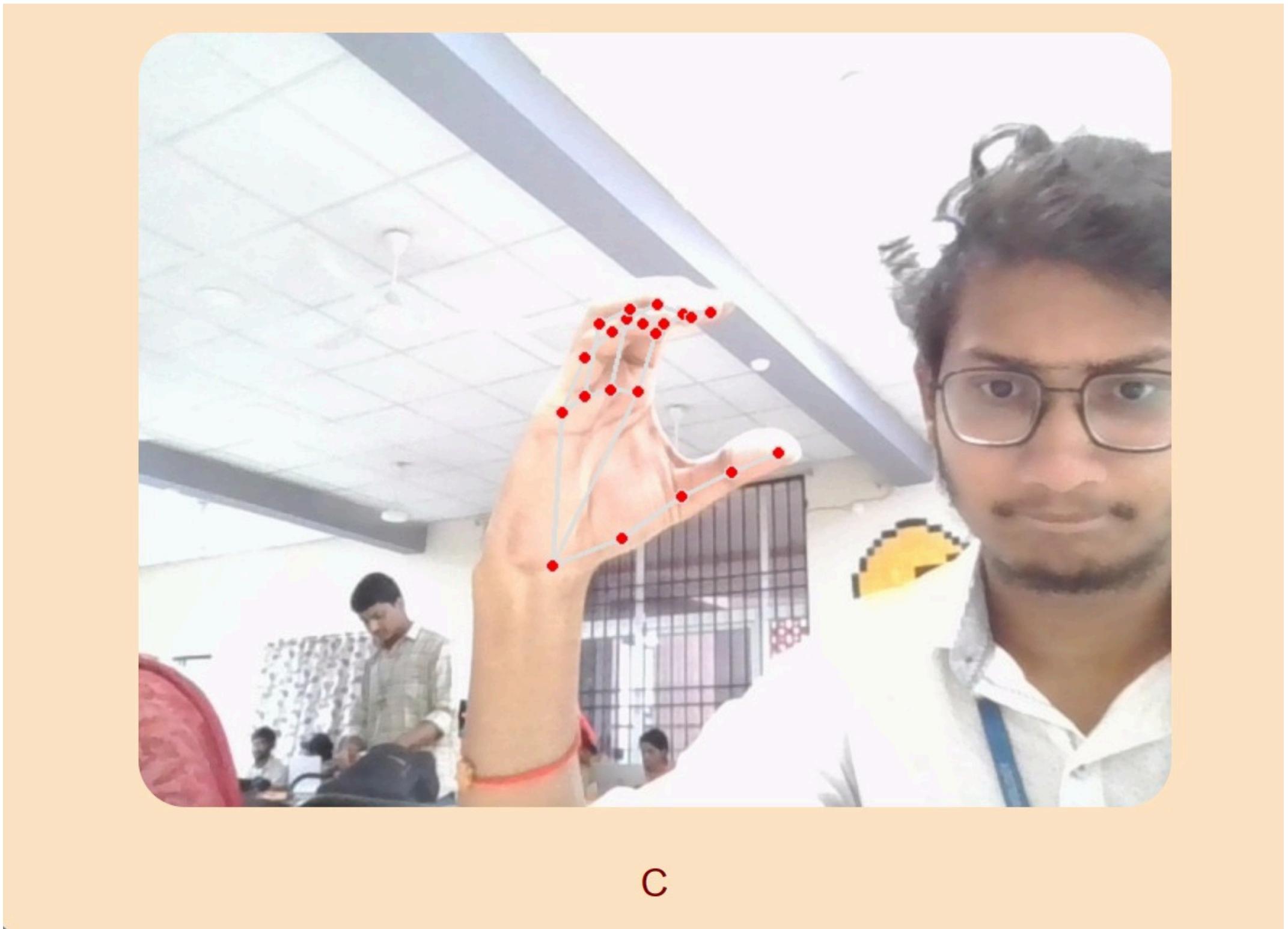


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## 7. Conclusion

Developing a real-time sign language recognition and translation system can significantly improve communication accessibility for the Deaf and Hard of Hearing community. By leveraging modern technologies such as machine learning and camera technology, this project aims to bridge communication barriers and provide a seamless experience for users interacting with sign language. The modular design approach ensures scalability, flexibility, and easy maintenance of the system.



# Team members:

- 1.P.Giridhar - (21pa1a1293)
- 2.V.Yajnasri - (21pa1a12c6)
- 3.P.Leela Sai Chandu - (21pa1a1297)
- 4.S.Siva Ram Krishna - (21pa1a12a6)
- 5.Sk.Reshma - (21pa1a12b3)



Thank you