



Sign Language Recognition

Based on Hands Symbol Classification
using ASL Dataset

Why Sign-Detection Model?

- Accessibility: Sign language is the primary mode of communication for many deaf and hard-of-hearing individuals. By creating a sign language detection model, we can improve accessibility for these individuals by enabling machines to understand sign language.
- Communication: Sign language is an important means of communication not only for the deaf and hard-of-hearing community but also for individuals who may have difficulty speaking due to conditions such as cerebral palsy or stroke. A sign language detection model can help these individuals communicate more effectively.



NEED FOR ASL

- Recognition and acceptance: ASL is recognized as an official language in the United States and is widely accepted in many parts of Canada. This recognition and acceptance has led to increased resources and support for ASL users, including interpreter services, education, and employment opportunities.
- Historical context: ASL has a rich history that is closely tied to the deaf community in the United States. It has been used as a means of communication among the deaf community since the early 1800s and has evolved over time to become an important part of deaf culture



Platforms Used

- Visual Studio Code
- Youtube
- StackOverFlow
- OpenCV Documentation
- Google Teachable Machine

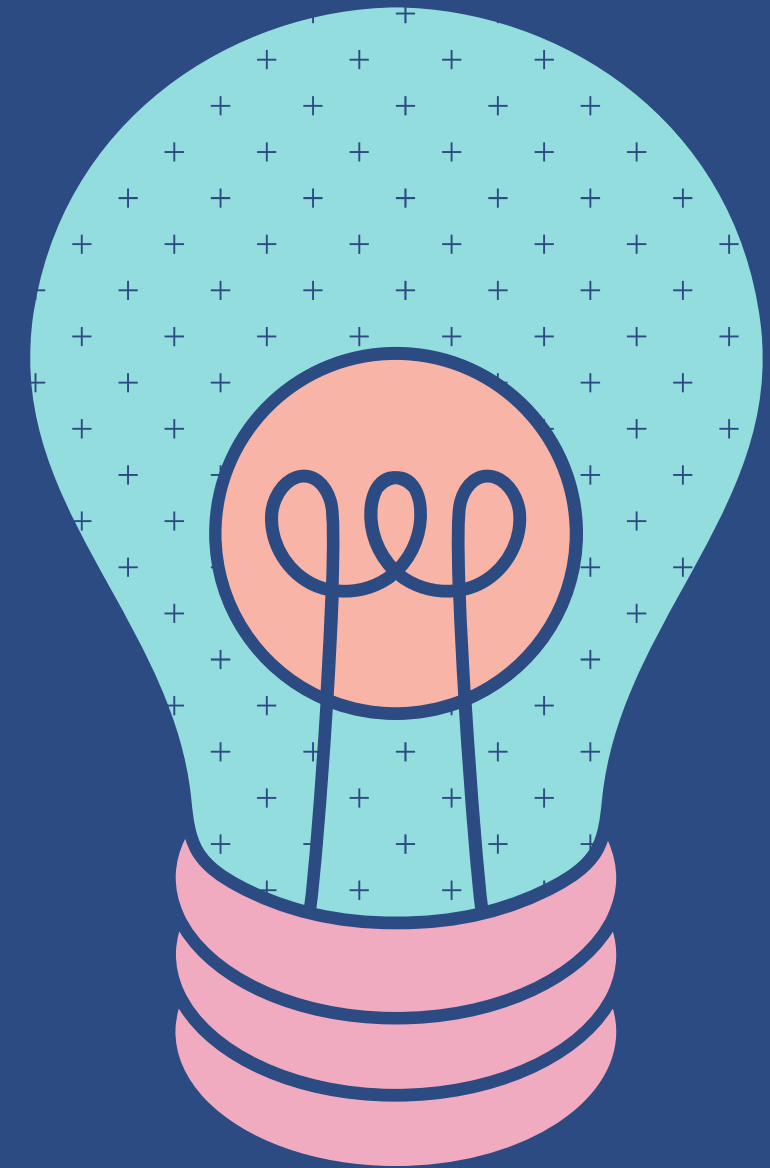


OBJECTIVE

To develop a model that can accurately detect and interpret sign language gestures in real-time. The model recognizes a range of sign language gestures corresponding to alphabets from American Sign Language (ASL). The project aims to achieve high accuracy in recognizing sign language gestures, while also being scalable and able to perform in real-world scenarios. Ultimately, the goal is to create a tool that can improve accessibility and communication for deaf and hard-of-hearing individuals, as well as enable more efficient and effective interactions between humans and machines.

Impact of Sign Language Recognition

- 1. Education:** Sign language is often taught in schools and educational institutions as an alternative or additional language. By creating a sign language detection model, we can make it easier for teachers and students to learn and use sign language in their classes.
- 2. Automation:** With the advent of new technologies such as virtual assistants and smart homes, it's becoming increasingly important to create sign language detection models that can be integrated into these systems. This can help deaf and hard-of-hearing individuals to interact with these technologies more easily and effectively.



JOURNEY

1 ————— 2 ————— 3 ————— 4 ————— 5

Learning Phase

Learning new
Technologies
associated with
the Sign-
Language
detection.

Start from basics

Preparing the
data model by
training it with
the basic
datasets like 1,
2, 3 etc.

Advancing to better

After
clarification
with the basics,
we advanced to
using complex
hand signals..

Accuracy check

Improving the
datasets, which
we created, so as
to increase the
accuracy of the
data model.

Finalizing with the best

Finally we started
working with the
complete dataset.
Tweaking the
model training
parameter to get
the required
results..



Conclusion:-

Concluding, We would like to say that this has been an innovative and insightful experience working with OpenCV and machine learning, creating something that has practical use and scalability. Our team enjoyed working on the project and overcoming the various challenge that arose while developing a classification model for a variety of hand signals.

References

[Murtaza's Workshop to recognize hand signals](#)

[ASL detection using scikitlearn](#)

[OpenCV Documentation](#)

[Google's Teachable Machine](#)

StackOverFlow

ASL Dataset

Result

The classification model can identify and present the ASL alphabet corresponding to the hand signal captured from the webcam.