

# Hand Gesture Recognition Software Manual

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## **Preface**

### **Description of the user**

The user of this product may be a student, teacher or enthusiast who wishes to improve their communication skills with the deaf or hard-of-hearing community. You may have experience with technology and the use of programming languages to be able to delve deeper into the mechanisms of the program however this is not mandatory. This is an efficient and user friendly tool to be able to help you practise your american sign language skills, and this program fills the purpose of being a unique solution.

## **Program Description**

### **Intended use**

This program is intended to teach the user hand sign gestures and be able to receive real time feedback on the accuracy of their gesture

### **Requirements**

There are certain things that you may need to install on your machine to be able to use this program, as this is a technical demo and not a full release, you will need to set all of this up on your machine yourself. Here is a list of the required tools;

- Python (Programming Language)
- Tensor Flow (Python Module Import)
- Google's Mediapipe
- OpenCV
- A python compiler such as; (Recommended Compilers listed)
  - Visual Studio Code
  - PyCharm
- Numpy (Python Module Import)

## **Safety Instructions**

This is a software program therefore there are no physical safety concerns associated with its use, however the following safety instructions still apply.

1. Ensure that your machine is functioning correctly and is free of suspicious activity such as malware and/or viruses before using the program.
2. Only download this program and other other technical specifications required from reputable sources. Do not download from unknown or untrusted websites.
3. Take regular breaks to avoid eye strain and other discomforts associated with using a machine for a prolonged period of time.
4. Do not use the program while performing activities that require full attention, such as driving.
5. If you experience any issues or errors while using the program, refer to the user manual.

## **Preparation**

To use this program on your machine, you require only one extra input device, that being a webcam. Ensure that your webcam is correctly plugged in and working otherwise the program will not run.

Navigate to the file named 'app.py' and run it.

Be patient with the program as depending on your machine and webcam it may take different lengths of time for each user to receive a response from the program.

## **Use**

This user guide has all the hand gestures that are readily assigned to the program listed, refer to the instructions listed to know which hand gestures are usable with the program.

To cancel the program, in your IDE's terminal, press CTRL + C, on your keyboard and the program will cease to run.


To ensure that the program continues to run as intended, unless you are familiar with the technology behind the program, it is best not to edit any of the files included or navigate/move around any of the files as this could lead to an error.

## **Troubleshooting**

If the program ceases to run, and does not function as intended, request technical support or try deleting the program from your machine and reinstalling it again.

## Hand Gestures

In order to use the program, the hand gestures must be displayed to the webcam as accurately as possible. Remember that the program is currently in development and is in an extremely early stage of its development. As a result the program may not be able to accurately recognise all the hand gestures and has limitations in terms of its recognition capabilities.

Number	Hand Gesture	Correct Label / Identity
1		1

2




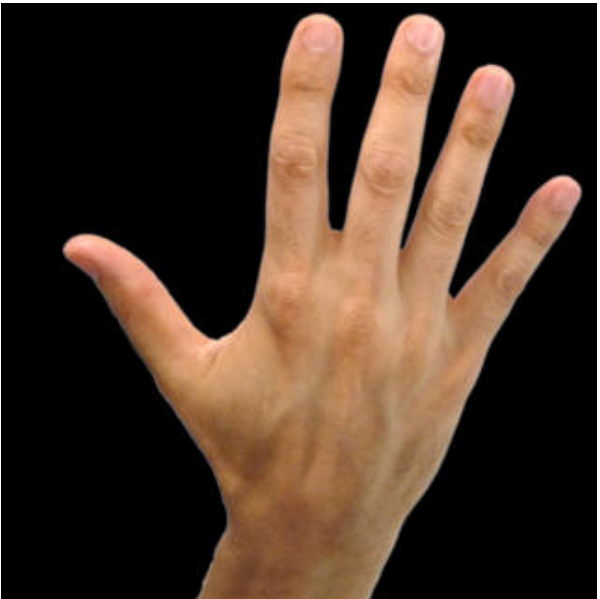

2


3



3



4		4
5		5
6		A

7		OK
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Images Collected from these sources.

Debasrita Chakraborty. (2018). 24 Static Hand Gestures for American Sign Language Letters. [Online]. Research Gate. Available at:  
[https://www.researchgate.net/figure/24-Static-Hand-Gestures-for-American-Sign-Language-Letters-6\\_fig](https://www.researchgate.net/figure/24-Static-Hand-Gestures-for-American-Sign-Language-Letters-6_fig) [Accessed 17 April 2023].

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