The Github repository for this project can be found in:

<https://github.com/EmilJohn24/LopezCV>

**Objective**

The primary objective for this project seems to be hand detection and doing actions on a canvas based on the position and gesture of the hand in frame. I will divide this up into the following modules: (1) hand detection, (2) hand gesture recognition, (3) canvas drawign, and (4) web service hosting for spectating the session.

**Hand Gesture Recognition**

I found an interesting paper on the matter here:

*Real-Time Hand Gesture Recognition Using Finger Segmentation*

<https://www.hindawi.com/journals/tswj/2014/267872/>

I am currently looking for web-based APIs that might be able to do the task of gesture detection for me

On this matter, I found this article:

<https://ai.googleblog.com/2019/08/on-device-real-time-hand-tracking-with.html>

Within this article, I found an interesting open-source library I could quite possibly use.

*Mediapipe*

<https://github.com/google/mediapipe/>

However, I might not choose to take the directions laid down above. For this, I might turn to a simple implementation found in this article:

<https://gogul.dev/software/hand-gesture-recognition-p1>

<https://gogul.dev/software/hand-gesture-recognition-p2>

I will now test the code in Jupyter. I shall post the results of this sampling below. The results can also be found in a notebook in the sampler folder in the root directory of this project

This previous example above needs **imutils** installed for python, so the article below must be followed:

<https://stackoverflow.com/questions/37382296/anaconda-python-install-imutils-in-windows10>

I could also choose to take another interesting route and do finger detection instead

<https://dev.to/amarlearning/finger-detection-and-tracking-using-opencv-and-python-586m>

Yet another algorithm for hand tracking in this paper:

<https://link.springer.com/article/10.1007/s11042-013-1501-1>

A possible implementation of the algorithm above

<https://github.com/RobinCPC/CE264-Computer_Vision>

**Web Service**

Interestingly, I have a strong desire to create a web service for this system. This is because of my recent explorations into REST architectures

So here are some resources for Python REST.

<https://www.slideshare.net/larrycai/learn-rest-apiwithpython>

For this project, I will use the Python Requests API which is of course used to establish HTTP Requests.

Here is the API for Requestsh

<https://2.python-requests.org/en/v2.7.0/api/>