Progress Report 2

Arihant Tiwari, 12 June 2021

Introduction

As discussed earlier, there are two major tasks assigned to me;

Task 1: To connect an Infrared LED and a detector to the Arduino and obtain the console's reflection data.

- The Arduino and the other required components were delivered on 10th June at 1600 IST.
- All the components were in working condition, and the Arduino established a secure connection with the laptop, the Infrared LED, and the detector.

As the devices have arrived recently, I did not have much time to work with them. Since the task lying ahead is pretty straightforward and less time-consuming, I plan to finish it ASAP and get in touch with the professor for further instructions. The photos of the devices and components delivered are also submitted as separate files.

Task 2: To develop an android application that could detect the color of a particular location in an image.

- I am using the MIT App Inventor for the same. I have prepared a preliminary application that can take any image as input from your gallery and save it temporarily in its memory so that the color detection algorithm could work upon it.
- For the color detection part, I found that Python is the easiest way for me. I used Pandas and the OpenCV library.
- The program takes an image as an input from the user, which is then read into the program as a CSV file through Pandas. We then make a function that could detect the double click from our mouse and interpret it as the location of the pixels in the image and give us the corresponding RGB values in that location of the particular image. To display the name of the color, we compare the values of the RGB of the selected point in our image to the standard scale and calculate the closest "named" point to the point of our concern. (The codes are attached as a separate file)

Challenges

In context to task 1; Since the devices arrived recently, not much interaction was possible with them; also, as the task is pretty straightforward, there are no challenges at present.

The major challenge faced during task 2 was to convert all sorts of image types into the program compatible without compromising the quality of the image. I did some research online and found the solution to it but converted the photos into tensors to avoid chromatic manipulation.

Future Work

The plan for my upcoming week is

- Start working on getting the reflection data of the IR LED and the detector in the Arduino interface **as the devices have now arrived.**
- To connect or direct my android application to the image detecting python program. Or, for ease, shift the android application to Android Studio, where we can work with Java and Python together and build a more robust interface at both, front and back end.