Progress Report 3

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Introduction

The major tasks in the internship can be divided into two major tasks, which are:

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

- The Arduino was connected to a light-dependent resistor (LDR) to check its input-taking range and capacity. We then expose the LDR to some light source and connect take its drop end to the input pin in the Arduino.
- We obtain a graph that suggests that the input pin is registering voltage drops across the LDR with respect to the intensity of light incident on it. This was scaled to an appropriate value by multiplying by 5/1023 to convert it into the relative value of the voltage.
- Next, I build a circuit with an IR Transmitter and Detector and used the Arduino to pick up the detected IR radiation by the detector.
- I was able to get the **reflection data in the Arduino,** (as was required to do) and was able to plot it. I then attached a red LED and a buzzer to the circuit and encoded it to give a sound if the detector picks up a signal greater than 600 mAmps.

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

Task 1: The major challenge faced is when the detector receives the IR reflection data, we obtain a peak. But if there is no input from the user then also the detector picks up some IR noise which is probably due to the heated walls in my room and the IR transmitter leaking IR radiation itself.

Task 2: The major challenge faced during task 2 is to integrate the python color detection code into the Android Studio applet that works majorly on JAVA.

Future Work

The plan for my upcoming week is
- Discuss future tasks, as the reflection data is successfully being collected, Hence I look forward to the next work
- To connect or direct my android application to the image detecting python program in the Android Studio application.