ECE 180DA Week 1 Report by **Ryan Kosasih (UID: 105552750)**

Week 1 consists of familiarization to image capturing and beginning of image processing. The individual assignment is available on <https://github.com/ryankosasih27/180DA-WarmUp/>, including the codes written and the references. The screenshots of task 4 is available in this report.

Task 4-1 *(task4-1.py)*

In my case RGB is better since the object used is majority black (in front of a majority of white background). The threshold range used was RGB[55,55,55].

Graphical user interface

Description automatically generated A screenshot of a person holding a camera

Description automatically generated with low confidence

Figure 1: Object detection (black iPhone 7+) with RGB (left) vs. HSV (right) values.

Task 4-2 *(task4-1.py)*

For this problem the light is adjusted to be dimmer. There is a significant difference for RGB values, but not for HSV.

Graphical user interface, application

Description automatically generated A screenshot of a person holding an object

Description automatically generated with low confidence

Figure 2: Dimmer light result (RGB – left vs HSV – right)

Task 4-3 *(task4-1.py)*

Color chosen: RGB[100,100,100]

There are no changes with HSV (still unable to detect object), however if the phone brightness is set to high for RGB, it picks up the noise from the dark surroundings.

A picture containing text, electronics, computer, screenshot

Description automatically generated Graphical user interface, application

Description automatically generated

Figure 3: RGB brighter phone screen (left) vs dimmer phone screen (right)

A picture containing text, electronics, screen, screenshot

Description automatically generated A picture containing text, electronics, screenshot, computer

Description automatically generated

Figure 4: HSV brighter phone screen (left) vs dimmer phone screen (right)

Task 4-4 *(task4-4.py)*

There is a change of dominant colors but both situations are able to be detected properly (most likely due to the brightness of computer screen).

Graphical user interface, text

Description automatically generated Text

Description automatically generated

Figure 5: Bright (left) vs. Dim (right) condition