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**To:** Dr.Kaputa

**Subject:** Lab 1 Tennis ball

# Introduction

For the first ESD 2 Lab students were tasked with detecting a tennis ball with OpenCV and python code. The Code also needed to be able to change image inputs and detect the centroid of each images ball*.*.

# Analysis

The top level of the code is the head, top.py displays both the docked windows(Calibration and Tracker). Within the top level is a File menu with an Add button. This button allows users to change the image into one of their choosing with the type “.jpg” .

Calibration windows is used to detect each ball using a variety of sliders to be able to change the colors masked. The colors red, blue and green have minimum and maximum sliders that are put into an array and masked with the image to either highlight or darken said colors. Calibration also has two buttons that can take the parameters that are given(with the sliders) and either save them for later use as a txt file. Or Load another text file for use or editing.

The Tracker window is where the image is shown and the centroid is circled. Users try to find the center of the ball with the sliders in Calibration and are rewarded when the x and y values appear in the consoles.

# Conclusion

*The lab was successful in that the specifications were met. One bug noticed, in the beginning as the program starts, an error appears where the code states it cannot calculate due to an arithmetic type error. This error is negligible because it does not take away from the overall effieciency of the program. Once the Green Min slider has been adjusted the error disappears and the program resumes regular operation. Removing this error would be easy but due to time constraints it will remain.*