Journal Report 11

11/27/19-12/6/19
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Daily Log

Tuesday November 27

Organized Github into folders, wrote ReadMe file.

Monday December 2

I watched this youtube video on Real-time shape detection with opencv in python. Figured out how to use the webcam for video in python.

Tuesday December 3

With the help of the video, I coded up a program that puts a box around each of the square stickers it finds on the cube. It doesn't work that well for an angled view of the cube, but if a face is right in front of the camera, it works very well for that face.

Thursday December 5

With the help of the video, I coded up a program that uses the webcam for live video, and identifies shapes it finds in the live video. The shapes don't work that well, but the live video part will come in handy later.

Timeline

Date	Goal	Met
Winter Goal	Be able to identify the cube's state in the program given a clear picture from a good angle of a cube	
Today minus 2 weeks	Finish implementing Hough Transform or Shape Detection on the edge detected image	Yes, but wasn't sure how to interpret the results.
Today minus 1 week	Finish implementing Hough Transform for Square Detection on the edge detected image, and be able to interpret the results of the output image	No, it was harder to translate the theory from pdf's into into actual code.
Today	Finish implementing Hough Transform for Square Detection on the edge detected image, and be able to interpret the results of the output image	No, but was able to draw rectangles around most of the stickers seen in a picture of the cube.
Today plus 1 week	Use this to find the coordinates of many points in each of the squares on the cube.	
Today plus 2 weeks	From these coordinates, find the colors of the stickers, and output the state of the cube in the data structure	

Reflection

This week, I made some visible progress with actually identifying the colors of the stickers on the cube. I was able to draw rectangles around most of the squares on the cube. From here, I need to then pick many random points in each rectangle, average the colors of those pixels, and identify the closest color to that average. This will likely be the color of that sticker in the rectangle. I feel good about my progress, and hopefully will be able to finish the winter goal in time. If I am unable to improve this program to find the colors of squares on a view of three sides at once, I may have to use multiple camera angles eventually to capture the whole cube. However, I'll deal with that problem later.

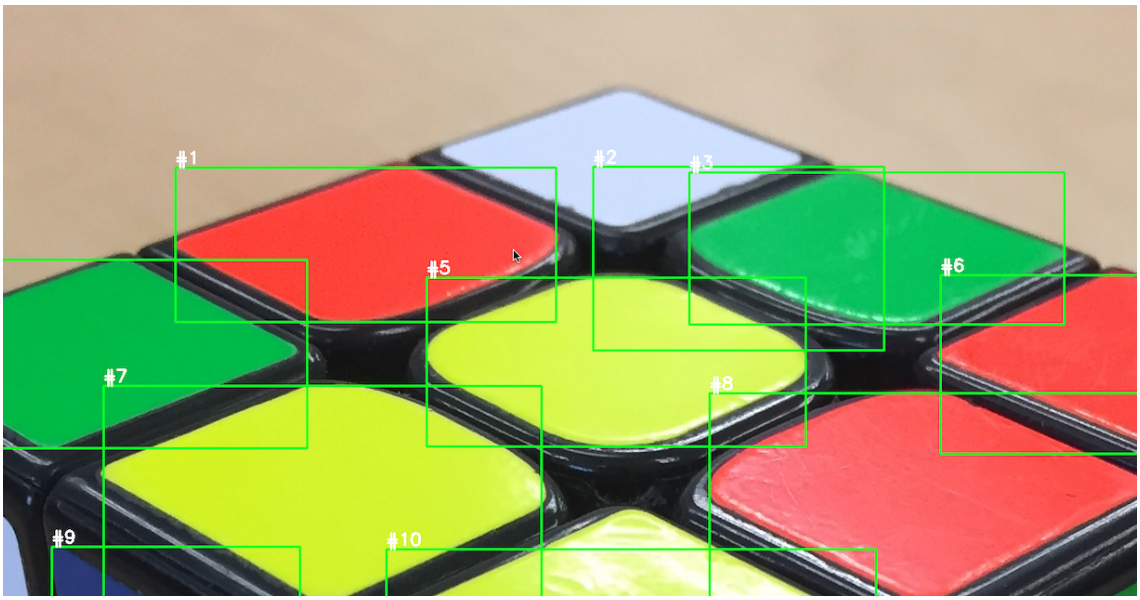

Figure 1: An image of rectangles drawn around the stickers of the cube