Journal Report 4
9/23/19-9/27/19
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Period 4, White

Daily Log

Monday September 23

Finished coding the other 5 sides in the GUI. Tried a bunch of complete scrambles and tested whether the cubes were the same when I performed them on a real cube, and in the GUI. However, the black lines separating each of the squares on the sides don't show up in the original state of the cube. I need to add them so that it is more consistent.

Tuesday September 24

Added the black lines to make it look like there are always nine squares on each side. Also, created methods for moves R2, U2, D2, F2, B2, and L2, which is used in cube notation when two of the same moves are made consecutively. Started edge detection, by reviewing CV, going over some of my old labs, such as the coin lab and the chessboard lab. The coin lab was where we had to identify the amount of money in a picture of a bunch of coins laid out on the table. The chessboard lab was where we had to first identify the chessboard in each frame of a video, and output the same video with a 2x2 square in the middle extruded to a cube in every frame. I can't directly use these because they were coded in C++.

Thursday September 26

Continued reviewing CV, and going over old lab. Also began writing methods in the GUI earlier for other special moves that change the orientation of the centers. Today, I wrote the lowercase r, r', l, l' moves (two layers move at once, equivalent to moving one layer + cube rotation). Not only do I have to change the order of the numbers in each array, but I also have to change the order of the arrays themselves in the one big cube array. The other moves that I still need to write are d, d', b, b', u, u', f, f', M, M', S, S', E, E', M2, S2, E2. However, at the end of the day, I realized that if I just code simple cube rotation moves: x, y, z, x', y', z', all of these moves will be one or two line methods since they are just combinations of the methods I already wrote, and shouldn't take long to code.

Timeline

Date	Goal	Met
Today minus 2 week	Finish programming all the moves and figure out a way of displaying things live in python	Yes, finished programming all the moves, and started to do research about displaying cube live in python.
Today minus 1 week	Make the T-display of the cube with colors and change live as you enter move	No, encountered some problems with live display, as PyGame didn't work. But now it's all good since Tkinter seems to work well. I coded the white side to work (see picture below)
Today	Finish updating the GUI for the cube moves so that the live T-display works for the whole cube. Review edge detection in opencv, and upload a sample image of me holding a cube onto the python program to test the edge detection.	Yes, but realized that there are more moves that change the orientation of the centers. These should be a quick add next week though.
Today plus 1 week	Begin coding edge detection to eventually determine which frames of the video the cube are in the shape of a cube (not in the middle of turning),	
Today plus 2 weeks	Upload a sample image to program, and be able to get a picture of just the edges on the image. Possibly, zone out everything but the cube outline.	

Reflection

This week went pretty smoothly, as I finished coding the cube display. Now, I am beginning the CV part with edge detection. I realized during the week, that in an actual solve, a lot of times there are more moves a speedcuber makes, such as ones that change the orientation of the centers. After beginning to code these moves, I realized that I just need to code cube rotations, and the rest of the moves would follow easily as just a combination of previously coded moves. Below is an image of the fully working cube GUI.

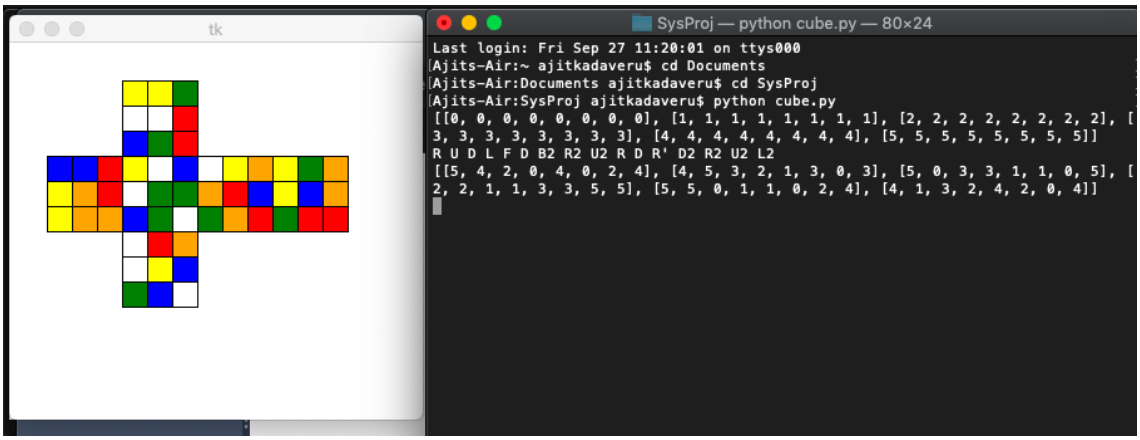

Figure 1: An image of sample scramble of cube