Journal Report 14

01/12/20-01/19/20
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Period 1, White

Daily Log

Monday, January 13

Researched other methods of feature detection. Might try implementing Shi-Tomasi Corner Detector or the Good Features to Track OpenCV method later if Harris Corner detection doesn't work well enough.

Tuesday, January 14

Implemented the Harris Corner detection on an image that went through Gaussian blur, median blur, and a bilateral filter. Median blur seems to work best.

Thursday, January 16

Tried to figure out an equation for threshold values in different images. I found a suggestion for the equation, and it seems to work fairly well, but I may have to play around a bit more with the block size for blurring and corner detection.

Timeline

Date	Goal	Met
December 22	Associate objects with their shadows on the image	Yes, objects are grouped with shadows, but the identification of the borders of the object still appear more like a rough sketch.
January 12	Identify at least two key points (corners, sharp points, etc.) on the shadow and object	Yes, the current code does locate two points if given an image where only the shadow regions and boundaries of the object are marked. However, many extra points are also identified.
January 19	Identify at least 4 key points on the shadow and object	Yes, the points are identified, but I still have trouble with deciding which identified points are useful for the next step.
January 26	Associate at least 1 key point on the shadow with its respective point on the object	
February 2	Associate at least 2 key points on the shadow with its respective point on the object	

Reflection

As it turns out, I overlooked the seemingly basic problem that the Harris Corner detector does not work well when the object I'm looking at is spherical. In the image of a baseball, the only critical points identified are the two points where it's the boundary between object, shadow, and background, and the red stitches on the ball itself. With the baseball picture specifically, the red stitching is extremely close to the top boundary of the ball, so that would help with associating shadow and object points, but I will need to use more images with spherical objects to test and figure out what I should do.

In other pictures, I have identified a lot of corner points in both shadow and object. The next step will be to associate the points. I might take the points with the most extreme coordinates, as in upper-rightmost and upper-leftmost, and assume they match with thee lower-rightmost and lower-leftmost, but that will depend on the accuracy in identifying all the corner points.