

## Daily Log

### Monday, March 2

Attempted to change some lists to sets and change how I parse through each pixel on the image (for example, parsed through a smaller square once I found the shadow pixels). Larger pictures still have unreasonable run times.

### Tuesday, March 3

Resized original image and ran the program on that smaller image. Clarity of the image decreases as I make it smaller, especially since I add a blur to the image to help with finding key points. On the plus side, when the image gets smaller, like around 600 by 600, it becomes easily processable. I do have to make sure to preserve side length ratios though, since projecting the light rays will depend on that.

### Thursday, March 5

Tried the resized images with lesser blurs and no adjustments for contrast. It works for the most part, and always runs under 45 seconds. However, the accuracy has gone down a bit. I will need to do more testing on larger images to decide if the accuracy is still high enough to identify matchable key points.

## Timeline

Date	Goal	Met
February 23	Find critical points for round objects	No, I used the shape as a whole to try and find its corresponding shadow, and I could not figure out to handle objects that were round enough to not have any corners detected but cast a shadow not round enough to be considered a circle or oval.
March 1	Associate at least 1 key point on the shadow with its respective point on the object	Yes, for the most part. It may not be as accurate as when a human identifies the points, but it's matching points assuming that the identified points are correctly identified as corners.
March 8	Decrease run time to within one minute.	Yes, the larger images run faster now that they're scaled smaller, but its accuracy has also decreased.
March 15	Associate at least 2 key points on the shadow with their respective points on the object	
March 22	Draw rays between matched points to predict location of light source	

## Reflection

I'm not completely sure how fast I'll be able to match up the second pair of points to find the location of the light source. I'm debating on focusing more on accuracy or on how far I take the light source prediction. If it's a fairly accurate pairing of the points, then I'll work towards finding the light source in 3D space rather than just on the 2D surface like I am currently doing, however that may be a whole new level of added complexity. On the other hand, I might also work towards getting more accurately pinpointed points. For example, right now, I'm matching a point near the corner of the shadow, but not quite on the actual corner, with the actual corner of the object. While it's extremely close, there still is a loss of accuracy there, and I'm not sure how significant it will be overall yet. I will have to expand my test image set even more than now just in case my current test set unintentionally favors certain cases or overlooks certain cases (like having a overall lighter or overall darker image).