Daily Log

Monday, September 23

Researched the sklearn library's meanshift method more. Fixed the long run-time problem. Before, I was running meanshift on each pixel of the image, so I was running the algorithm on about a million data points. Now that I've fixed it to run using the superpixels from k-means, the program runs in about 10-30 seconds depending on the size of the image.

Tuesday, September 24

Attempted to speed up k-means and meanshift. Used different criteria to evaluate proximity in LAB color and XY pixel distance. Program sped up but at the expense of accuracy in outlining separation between shadows and objects.

Thursday, September 26

Tested current program against a lot of pictures in more natural setting where shadows aren't gray on white, so shadows have some colored tint and isn't always contrasted starkly against bright white. Tweaked the color and pixel distance criteria. The shadow superpixels are outlined, but the meanshift doesn't work as well when grouping the shadow regions together.

Timeline

Date	Goal	Met
September 15	Create program implementing SLIC without using SLIC method from pre-built library	Yes, but current implementation is much slower than the pre-built library
September 22	Identify 60% of superpixels that are shadows in the image	No. It's taking much longer than I predicted to be able to identify shadows.
September 29	Group superpixels into regions in under 2 minutes	Yes. The program now takes about 10-20 seconds based on the image size.
October 6	Train a functioning LSSVM or SVM classifier	
October 13	Identify shadow regions in image with 60% accuracy	

Reflection

Right now, my program sometimes groups a shadow region with the object that created the shadow. I'm not sure if changing the criteria for determining the value to calculate a meanshift with will be able to isolate the shadow from the image. I might impose edges from a canny edge detection to help separate the shadow from the object.

I am still working on trying to understand the SVM and LSSVM concepts, so if I don't understand it by Tuesday I will turn to other methods to identify and classify regions as a shadow. Right now being able to associate shadows with their objects together may help in the long run, but may also get in the way for identifying which regions are actually shadows. For now, I will separate the regions, but may return to the object-shadow association groups later when I start calculating the origin of the light source with respect to the objects in the image.