Journal Report 5
9/29/19-10/6/19
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Period 1, White

Daily Log

Monday, September 30

Researched SVM and LSSVM classifiers. Tried to use a combination of sklearn and opencv methods, but is not working at all. I don't know what to put in the method variables and I get a lot of array dimension errors.

Tuesday, October 1

Attempted to understand the SVM classifiers again. It's similar to a neural network, but then the leave-one-kernel-out part confuses me because I'm not sure if that is a new layer or if that's a function to put at the very end of the network. The code runs but it returns all zeroes, and I'm not sure what dimensions it's using because it's not the image's dimensions.

Thursday, October 3

Switched from trying to use SVM classifiers to find shadow regions to using LAB color threshold. Found that L (light intensity), A (green/magenta spectrum), B (blue/yellow spectrum) was good because shadows are distinguished by their light intensity in the picture, since they are dimmer than their surroundings, not just closer to the color black. Identified shadows in the image by pixel.

Timeline

Date	Goal	Met
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	No. But my new method of identifying shadow regions no longer require using an LSSVM or SVM classifier.
October 13	Identify 90% of shadow superpixels/regions in image	
October 20	Associate each shadow with respective object	

Reflection

My program takes an image and outputs a new image where all shadow pixels are black, and everything it doesn't identify as a shadow pixel is white. I'm thinking of layering the k means superpixels over so that if one superpixel has over some percentage, say 80%, of its pixels identified as a shadow pixel, then the whole superpixel is marked as a shadow region. Then use meanshift once again to combine shadow regions together to put each separate shadow as a separate object. I have yet to test with an image with more than one shadow.

It will be harder to associate objects with their respective shadows. I think that it will be fairly quick to layer the k means mask over the current output, but I'm not sure how much harder it will be to associate the shadow-object while keeping the necessary information to associate points on the shadow to corresponding points on the object to help find an array leading to the light source.