

## Daily Log

### Monday, October 7

Modified LAB criteria to better identify shadow. Original picture must be in RGB, not a gray scale picture, for this method to work best. There are still problems with differentiating between dark colored objects, especially black colored objects, and actual shadow regions.

### Tuesday, October 8

Overlay the k-means segmented image with the shadow pixels only image. Tried using larger segments with mean shift algorithm to get shadow regions, but again ran into problem of now either both shadow and object is highlighted, or neither is highlighted.

### Thursday, October 10

Returned back to combining k-means segmentation with LAB color determination. Adjusted k-means to greater segmentation number depending on image size to better group regions of shadow together without combining shadow and non-shadow regions in one segment. Switched data structures, changing lists to sets where possible to speed up data point retrieval, reducing run time by about 5 seconds for smaller pictures.

## Timeline

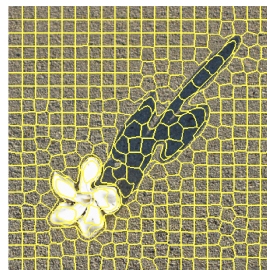
Date	Goal	Met
September 29	Group superpixels into regions in under 2 minutes	Yes. The program now takes about 10-20 seconds based on the image size.
October 6	Train a functioning LSSVM or SVM classifier	No. But my new method of identifying shadow regions no longer require using an LSSVM or SVM classifier.
October 13	Identify 90% of shadow superpixels/regions in image	Yes. Every superpixel where a majority of pixels inside are shadow pixels is counted as a shadow region as a whole.
October 20	Associate each shadow with respective object for images with one object	
October 27	Associate shadow with respective object for images with multiple objects	

## Reflection

The program seems to work best the greater contrast there is between shadows and their background. There is still a bit of a trouble when there is a black object, but darker objects are less likely to be classified as shadows now. This image has the best results so far because of the high contrast and minimal number of objects in the picture.



The original picture:



The k-means segmented picture:



The shadow identified: