

## Daily Log

### Tuesday September 3

Installed OpenCV for Python, which is likely the main library I will use for the entire project

Did research on how to perform text detection (finding the actual locations of the text) in OpenCV using the EAST text detector (an image processing deep neural network model) followed by non-maximum suppression

Began writing program for text detection on pictures of images of food (primarily tested using a box of Cheez-Its)

### Thursday September 5

Completed program for text detection on food pictures, and was able to mark bounding boxes of text locations on a picture of a box of Cheez-Its

Learned about Tesseract OCR, a library for optical character recognition, because I not only want to know where in the image words are, but also be able to read and process them

Installed Tesseract OCR and tested it on images of various types of food including Cheez-Its box, can of peas, and box of corn flakes. Found unsatisfactory results for food boxes.

Had idea of testing Tesseract OCR on nutrition labels of different foods, and saw much better results than with food box results.

## Timeline

Date	Goal	Met
8/22/19	N/A (school not in session)	N/A
8/29/19	Become familiar with syslab, talk about resources with Mr. White, and begin project	Yes; Talked to Mr. White about cameras in Syslab (decided to work on this part of project later and focus on software now. Began looking at libraries, etc.
9/5/19	Be able to achieve basic text recognition and detection	Yes; Able to locate portions of text on certain pictures of food and read nutrition labels quite successfully
9/12/19	Find a way to get reliable text reading (OCR) for food products and perform shape recognition (can, box, etc.)	
9/19/19	Implement barcode recognition API and object lookup method (use clues from text reading, nutrition labels, shapes, and barcode to be able to identify objects)	

## Reflection

This week was filled with quite a few successes, however there was one setback as well. In the first place, my timeline was definitely sped up from what I initially anticipated when planning my project at the end of last school year. I did think that I would begin the project by setting up the cameras, however after working with Mr. White, we both agreed that working on software was better, which did put me a little ahead, but I also was able to set up a basic text recognition system within about a week, when I thought it would take closer to 2-3 weeks. I already am able to get effective results for nutrition labels, and am also working on bringing it up to speed for actual food products.

My one major setback was that the OCR library I found did not perform well on actual pictures of food products. The library did do well on nutrition labels however, and so I suspect that the reason it didn't work well for food products was because of the large range of fonts that are on food products. Because nutrition labels have mostly easily readable fonts, the OCR was able to work quite effectively, but the food products often use bubble letters, cursive script, or different types of styles. I wasn't expecting cursive script to work, but I did expect bubble letters to work. In the coming week, I will be looking for an OCR library/program that works on these different types of fonts.