**Friday 1/17/2020**

Today, I presented my research presentation essentially detailing the background of our research idea, our motivation, the methodology, and the progress I have made so far in my research. Dr. Gabor got frustrated at both Omkar and I for taking excessively long bathroom time of 10 minutes, and that bathroom time should take no longer than 4 minutes. He stated 2.5 minutes sufficed generally. We were therefore 5 minutes late to our presentation time. Dr. Gabor stated that if we truly had to use the bathroom for ten minutes straight, then we needed to go see a doctor. I will say I did not exactly need those 10 minutes, but I have other personal reasons to believe there is something irregular going on with my bowel movement and/or my digestive tract, as pointed out by my parents. So, I believe Dr. Gabor was the epitome for me to not only have the mindset of “Oh, I should plan to go see a doctor” (when that is a very weak intention to) but to have a mindset “Yeah, I’m going to contact my parents right now to schedule a doctor’s appointment. I must get this problem resolved.”

I received appropriate, extensive, and invaluable feedback. My main problem was the way my upper body and essentially looking at the screen instead of the audience. And then, I received much feedback about the technical details of my presentation, such as word choice and efficiency.

**Monday 1/20/2020**

My partner and I decided to have a change in our process workflow. We decided that I work on the next milestone of getting our web application to identify multiple features in a photo (which may be done through a multi-label convolutional neural network or training a neural network to identify each feature) while my partner finishes the retraining milestone. We only have around 2 more months to finalize our product, and while that may seem like plentiful time, we have realized over the course of our research so far that two months can certainly fly by without a change in much tangible progress.

**Wednesday 1/22/2020**

I decided to first investigate the multilabel-convolutional neural network route. I recalled that October through mid-November, my partner and I were working on creating a dataset where each photo had multiple features stored so that we could train a multilabel network, and we decided to train a basic neural network for the time being as a setup for our bigger network (since training a multilabel right then and there seemed too complicated to follow a tutorial for at the time, but now we can get to bigger things). It just really goes on to show how much time can fly by, and while one can plan out steps in your research nicely and theoretically, actually getting the milestones done on time is quite unpredictable, unfortunately.

I needed to remember, first off, where the spreadsheet of multi labels was located on our Google Drive. I successfully did that. Next, I looked at our “Useful Links” document to see if I placed a multi-label training tutorial there somewhere. Indeed, I did.

My main concern with a multi-label neural network is that perhaps our dataset is not representative enough of photos that give off a multitude of diverse labels (meaning that each photo in our dataset right now can have certain multi-labels, but those labels might be very consistent with the majority of the other photos in our dataset). I did know I had the option to call FEMA (Federal Emergency Management Agency) or CAP (Civil Air Patrol), but I reserved that for later as I wanted to start getting in the meat of the multilabel neural network first. Again, I realized I had a backup plan of training neural networks separately, so I allayed myself as I entered into this monster of a task.

Then, I thought, “Well, wait a minute, what if the tutorial uses an entirely different framework from fast.ai?” I would not mind completely if it did, but I decided it is best to check first if fast.ai supports the training of a neural network that is multilabel trained since my partner and I are familiar with fast.ai. I realized it’s best to check for that first.

From what I read of it, the process does indeed seem very similar to training a network for a single-image classification. My only question though is how did fast.ai recognize the different labels in the training data frame? Apparently what the author did was that he put a space between each of the labels in the second column of the data frame (the first was the image name (.jpg)). I was not sure if I needed to make readjustments to our data set to match that, because maybe fast.ai has capability of supporting a dataset that we already established. I refreshed the neural network training code I made to confirm their similarity. One funny thing I noticed in the tutorial was that the author showed a piece of code where it said “data.show\_batch(...)”, but “data” was never initialized in the first place. But then, I saw “data” redefined for 256 x 256-pixel images, thought maybe I just needed to replace the “256” with “128” to get the original “data” variable the author initialized.