# Project Progress Report

At the beginning of this project our knowledge of deep learning and image recognition was an absolute zero. To begin, we searched the internet for everything and anything to do with image recognition as it was a logical starting place for this project. After going through several different sources, and with the help of our advisor, we settled on two initial sites for gathering information: Pyimagesearch.com and Coursera. Each offered unique perspectives on where we could start. The first month of the coursera course offered basic information on deep learning and how it is used in image recognition. It embellished the little knowledge we learned in class. Pyimagesearch.com was also helpful because it gave us a better understanding of what technologies are available to us when getting started with image processing on our own machines.

After getting a direction to work in, we first expanded our knowledge of basic image processing techniques. We looked at various ways that we could extract data including edge detection and optical character recognition. After deciding that this wasn’t the direction we wanted to take initially, we started looking at ways we could use a neural net to categorize images. We learned a little bit about how keras can be used to make calls to a convolutional neural network and display the results. Since then, we have been retraining Tensorflow to allow us to categorize the images given to us. This allowed us to start writing code to go through the data we had and put labels on the dataset from the ones found from imagenet. This then led us to start looking into retraining the last layer of the neural network found in imagenet to produce our own labels for our images. Potentially, we are planning to use a simple statistical method to measure the prediction accuracy of our model.

One of our biggest challenges was that we didn’t have any discernment on learning materials. We had covered lots of different topics, but we weren’t quite sure how to link up what we learned and being able to take advantage of it. Another challenge we faced was figuring out what technologies we needed, and then spent a relatively large amount of time installing packages due to errors and configuration settings across all the technologies we used on different operating systems. Later to discover that certain technologies we did start using were incompatible with others. When we finally did have something working, we then were only able to get through a very small subset of images before our machines started running out of memory to continue processing. Finally, we had issues getting the data necessary for us to be able to use a supervised learning approach on the images given to us. We also wished to have a better access to cloud resources in order to deal with images.

In the end we still haven’t been able to achieve a whole lot of what we initially set out to do, but we have learned a lot through the challenges we have faced thus far. We now have a greater understanding of what is required when approaching this kind of problem and what technologies and support is out there for public use. We also understand how difficult it is to do image processing and why there are lots of really smart people out there working really hard to make deep learning with images better and more efficient. We sure have enjoyed this journey into the world of Big data and wish to continue. We are thankful for the Wal-Mart and their kindness in leading us.