

## Daily Log

### Monday September 9

Worked on figuring out the structure of the ResNet50 classification network. I removed the final classification layer that outputs to 1000 different classes whereas I have only 27. I included the ImageNet weights as a starting point because of their high accuracy when it comes to object classification. I added 4 more layers including the final layer with 27 nodes for the 27 different classes.

### Tuesday September 10

Worked on structuring the training of the network. I froze the first 176 layers (all the ones that I didn't add on) and made them untrainable because I wanted to focus on the network learning the more higher level features of a logo instead of retraining low level features such as edge detection. Made the final 4 layers trainable.

### Thursday September 12

Worked on finalizing all the components to make the network ready to train. Specified the loss functions, metrics, and optimizer. Tried to train for 5 epochs on the original data without augmentations to check the feasibility of training at this stage. Changed the final layer activation function to softmax (previously it was relu and I overlooked that).

## Timeline

Date	Goal	Met
8/27	research CNN implementations/gather data	yes - gathered flickr 27 logos data
9/3	organize data/processing	yes - organized the data into folders/augmentation
9/9	create CNN/start training	yes - built the network and ready to train
9/16	reach acceptable accuracy (over 95 percent) on original training data	no - not yet
9/23	reach acceptable accuracy (over 95 percent) on data with augmentations	no - not yet

## Reflection

This week was largely successful and I achieved what I wanted to complete. I worked on organizing the structure of my CNN that I'm going to train and ran a preliminary test to ensure that everything was at least running. However, I anticipate problems in achieving next week's goal of reaching an accuracy of at least 95 percent on the training data because of the long training times and I will most likely have to optimize the structure a bit as well. Some more foreseeable issues will have to do with the training data as well. In passing, I noticed that some of the images had logos that were cut off/ or barely recognizable and cleaning those images up will probably have to come first before actual training.

```
base = ResNet50(weights='imagenet', include_top=False)
x = base.output
x = GlobalAveragePooling2D()(x)
x = Dense(1024, activation='relu')(x)
x = Dense(1024, activation='relu')(x)
x = Dense(512, activation='relu')(x)
preds = Dense(27, activation='softmax')(x)
return Model(inputs=base.input, outputs=preds)

parse_predictions = []
for dir in glob.glob(PATH+'/*'):
    print("Parsing %s" % dir)
    parse_predictions.append(str(dir)[6:])
parse_predictions.sort()
print(parse_predictions)
```