Erick Stone
CS6600 Project 1
Report on training, testing, and validation.

This was not an easy project to put it lightly. I first had to get comfortable with the error messages that tflearn gives of which there were several. I spent many hours figuring out how to line up the input data with the neural network. Do we use lists of lists or numpy arrays? I kept having problems which I discovered was the usage of numpy containers instead of numpy arrays. There was no clear indicator as to why this was happening. I had to reduce the color to grey scale. It still would not train, so then I converted it to 0 to 1 range values for the images. It not would run without errors, but would not train. Next I had to figure out a set learning rates, and layers. Also not easy. I tried various optimizers (Adam, CrossEntropy, SGD). I also tried several activation functions (softmax, relu, sigmoid, linear). Only SGD with sigmoids seemed to work for me.

For the images convolutional network, I worked off of the previous homework networks and found that I needed more layers. It also trained incredibly slowly which likely was a result of the larger neural network. I trained it for 4000 epochs and had 99%. But things happened and I had to retrain it on a thin time scale.

As for the audio, I was able to get a network setup and it would train, but it wouldn't get above around 45%. This was including the tip another student gave to clip the beginning and end.

I would say the most difficult part of this assignment however was an error message saying that the inputs did not match up, but including a mysterious 64 on the front. I wasn't able to get past this for the audio convolutional net.

Training Score:
Image_ANN: 94.69%
Image_Conv: 75.69%
Audio_ANN: 45.45%
Audio_Conv: None

Loss:
Image_ANN: 0.12
Image_Conv: 0.17
Audio_ANN: 0.22
Audio_Conv: None