



## Daily Log

### Monday January 6

I realized that a big part of improving the accuracy of my model is to increase the size of my dataset, so I started downloading new Hot 100 songs. The problem with that is that it takes a really long time and I haven't really found a better way to do it than with the command line Github package I installed, Spotify-Downloader. I also increased my number of MFCC inputs from 1 to 10.

### Tuesday January 7

I realized that I was going about MFCC inputs wrong. I thought that if I input 10 MFCCs, that would give me 10 individual numbers. However, it actually returned 10 MFCC time series (10 different arrays). Now I'm back to working with one MFCC time series. The reason I mistakenly thought that I had to return more MFCCs is because I kept getting arrays filled with the same number; once I specified a data type to be stored in my MFCC arrays (float), that error was resolved. In order for the CNN to accurately read each number in an MFCC input array, I reshape my input using NumPy. Once the data is reshaped, I pass a tuple containing the dimensionality of my input data into the first layer of the model.

### Thursday January 9

I wasn't in class this day.

### Friday January 10

To increase accuracy I need to add more layers to my neural network, so I read up on the different layers Keras offers. I'm currently using a 1-D convolutional layer as my first (and only) layer. I think I'll use a couple of Dense layers and a dropout layer to start. I also need to reshape the output. Right now the model somehow thinks the target data is greater than 1-dimensional (I think), which is incorrect since my targets are singular integers.

## Timeline

Date	Goal	Met
12/02/19-12/06/19	Continue work on CNN	Yes
12/09/19-12/13/19	Feed training data into 1-D CNN	Yes
12/16/19-12/20/19	Feed training data into 1-D CNN and train	Yes
1/6/20-1/10/20	Improve CNN accuracy	In progress
1/13/20-1/17/20	Improve CNN accuracy	In progress

## Reflection

I actually made a decent amount of headway this week. I was starting to get frustrated because of my MFCC dimensionality problem, but I'm really glad I finally made a breakthrough with that. I didn't reach my winter goal of 80% accuracy since I didn't have a working model by the time it was due, but now the steps I need to take to increase my model's accuracy are much clearer to me. Also, I still have to add song features to my data set.