CS455

HW4: Term Project Proposal

- Music Genre Classification using a Neural Network
- Victor Weeks & Diego Batres
- Million Song Dataset
    - Origin: https://labrosa.ee.columbia.edu/millionsong/
    - Size: A subset of the full 273 GB of data
    - Format: text files, databases, h5 files
- With so many genres and sub-genres of music, it is difficult to identify features of each and how to classify individual songs. Many songs even fall into multiple categories. Tags, or keywords, can positively influence current methods of classifying music. Tags can be used to classify music by genre by first discovering the most accurate tags to describe a song then relating those tags to a specific genre. Our goal is to find the most accurate way to tag music and use those tags to categorize by genre.
- Currently published work:
    - Silla, Carlos N., et al. “A Machine Learning Approach to Automatic Music Genre Classification.” *Journal of the Brazilian Computer Society*, Sociedade Brasileira De Computação, Sept. 2008, www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-65002008000300002
    - Despois, Julien. “Finding the Genre of a Song with Deep Learning - A.I. Odyssey Part. 1.”*Hacker Noon*, Hacker Noon, 21 Nov. 2016, https://hackernoon.com/finding-the-genre-of-a-song-with-deep-learning-da8f59a61194
    - Kozakowski, Piotr, and Bartosz Michalak. “Music Genre Recognition.” *DeepSound*, 26 Oct. 2016, http://deepsound.io/music_genre_recognition.html
    - Matyashovskyy, Taras. “Distinguish Pop Music from Heavy Metal Using Apache Spark MLlib.”*DZone Big Data*, Dzone.com, 26 Oct. 2016, https://dzone.com/articles/distingish-pop-music-from-heavy-metal-using-apache
- We will analyze this dataset by using a portion of it to train a neural net to categorize various genres of music using EchoNest tags. Our plan is to use two neural networks: one to categorize tags, and one to categorize genres using the tags from the first. By

using a combination of both neural networks, we will be able to accurately classify music using a predefined list of tags and genres.

- We will evaluate the effectiveness of our solution by analyzing its performance with a portion of test data that was not used to train it. We will compare the classifications given by the program to the target classifications in the dataset. Our goal is to maximize the accuracy of these classifications.