

Project Proposal

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4.17.17

1 Goals

The goal of the project is to suggest new songs to users based on their musical preferences. We want to emulate the functionality of a service like iTunes Genius, by giving the user new songs or a playlist, based on a song that they like. Optimally, we would also create a visual interface for the user to easily utilize for this purpose.

2 Technical Plans

We will train a neural network on a dataset of top 50 songs from various genres by using the Spotify API to obtain distinguishing features for each song. These features include loudness, acousticness, tempo, etc, and will be the basis for our input vectors. The labels for these songs will be the set of genres they fall under, according to Spotify. Given a song that the user prefers, we will then suggest new songs of similar genres (which is our deterministic method of deeming similarity) by using our net on a variety of songs.

We will start with 1 hidden layer, and have to look at the error rate from our training, to determine certain parameters such as the number of hidden units, learning rate etc. We would also try to eliminate any features that we see are not essential to classification of the genre, by looking at weights that are close to 0. Reducing the model complexity in this way will also help us avoid the potential of overfitting, which we will test for by using datasets that the neural net hasn't seen yet in the training phase.

3 Areas of AI

Deep Learning, Artificial Neural Networks, Multi-class classification

4 Roles

Gaurav: Train neural network using backpropagation, using extracted features as inputs and genres as labels, and help with user interface.

Abhy: Utilize Spotify API to get available features, labels, and ample song datasets, and help with user interface.

Ronak: Use neural network to predict genres from input song and return a playlist of new songs, and help with user interface.