Project Proposal: Music Mood Classification

This project aims to use machine learning algorithms to classify songs based on different features the songs are associated with. We will use Kaggle dataset of 'Audio Features for Playlist Creation' for the project, which contains different features associated with each song and these features can be used to classify the song into four different moods. This problem is chosen as we are interests in exploring how machine learning techniques can be used to study various aspects of music and because of our personal liking towards different genres of music. Each song is classified into one of the following category of moods

- Dinner: Songs that sound good when played in a dinner setting or at a restaurant.
- Sleep: Songs that promote sleep when they are played.
- Party: Songs that sound good when played at a party.
- Workout: Songs that sound good when one is exercising/ working out.

Various features associated with each song are id, name, artist, acousticness, danceability, duration_ms, energy, instrumentalness, key, liveness, loudness, mode, speechiness, tempo, time_signature, valence. The dataset has 471 Dinner, 280 party, 361 sleep and 362 workout category songs.

We propose to use multilayer neural network and random forest to train the dataset and classify into different categories. The project will be implemented in python language as we have a better understanding of python packages. Spotify website will be used to understand various features of songs.

Different metrics that would be used to evaluate the project are Accuracy, Area under Roc curve, Confusion matrix and classification report that contains precision, recall and F1-score.

Schedule of Project:

3/31/2017 – Proposal Submission

4/8/2017 – Data pre processing and background study with plan on approach to problem

4/11/2017 – Design of neural Network and implementation

4/18/2017 – Random Forest implementation and comparison of algorithms

2/25/2017 – Final results and model evaluation and conclusion

5/01/2017 – Report submission