**Title of Project**: Mood Music

**Overview of Project**: We want to solve the problem of lackluster predictive playlist generators (Pandora, Genius, Last.fm). These products simply use metadata to determine the next song, and don’t utilize machine learning to learn what you like. We want to make a playlist generator that learns from the songs you choose to be able to generate playlists based on whatever mood you’d like.

**Previous research**: Previous research includes the algorithms used in Pandora, Genius, Last.fm, etc. Also, Moodbar (<http://en.wikipedia.org/wiki/Moodbar>) determines mood of different parts of the imported songs. It is part of the larger Music Genome Project (<http://en.wikipedia.org/wiki/Music_Genome_Project> ), which Pandora uses. George Tzantakis has also been doing a lot of research into methods for analyzing digital audio files.

**Draft of the idea**: We want to combine hard data of music (bpm, genre, date, etc.) with user input (whether songs are similar or not). It will have a comparison engine that will ask you if two songs are similar. The more data you give it, the smarter it gets, and the more accurate playlists it can generate. Therefore, we will be using machine learning as well as analytics (including Fourier transforms) to create the best possible playlists for the user. When it generates playlists, you can tell it which ones don’t belong to further expand its knowledge base.

**Development Plan**:

Pieces of the project:

* GUI: how the user interacts
* User interaction: how the user decides which songs belong and which ones don’t
* Feature Detection: identifying features of songs
* Machine Learning: using the features and the user input to generate playlists
* Output: perhaps to a m3u playlist file

For the first iteration, we’ll focus most of our resources on the Feature Detection and some of our resources on the User Interaction. We’ll make the GUI when we have time, but it is not a necessity. We’ll want to make the application to be able to generate some features from songs and generate playlists based on those.

For the second iteration, we’ll add in the machine-learning component and fine-tune the feature detection algorithms to create meaningful playlists, in addition to enhancing the user interaction and GUI components.

**How do you know when you are done**?: We will be done when we create an application that will accurately create playlists without too much error. We’ll use a user base to test the functionality as well.

**What tools will you use and why?**:

* Python as the base language for the app
* Python libraries: SciKits, SciPy and NumPy to perform our mathematical calculations and audio analysis

BPM, Song structure