MA: Extending Social Music Similarity Measures by Audio Features

This document describes the subject and the general time schedule of the master thesis of Roger Odermatt, beginning in the autumn term 2011. Adaptations or changes can be agreed upon by the advisers.

Subject

Several factors, such as the growth of the Internet, peer-to-peer technologies, or the emergence of the compact media formats have changed the way people deal with music. Personal music collections have grown bigger, and, thanks to portable players and advances in storage technology, they can nowadays be accessed anywhere and anytime. The music collections accumulated by music lovers have reached sizes that make it hard to maintain an overview of the data by just browsing hierarchies of folders. Therefore, novel methods to organize music are required – methods that efficiently operate on orders of thousands of songs, and that allow personal music collections to be seen not just as isolated entities, but positioned in the global context of the world of music.

In our lab, we have developed *jukefox* (http://www.jukefox.org), a Music Player for the Android Mobile Platform that addresses these issues. An important ingredient of the application is a "map of music" that reflects music similarity and allows new ways of accessing and browsing a user's music collection. In particular, we have placed more than 1M artists and songs into a Euclidean space, such that similar items reside at similar location in this space. The underlying music similarity measure is based on usage data of the web radio service last.fm: "Preferred song lists" of over 1 million users and over 30 million social tags were utilized in conjunction with Probabilistic Latent Semantic Analysis to construct a music similarity space that solely relies on implicit and explicit human judgment of music perception.

Existing literature indicates that music similarity measures based on usage data generally represent the perceived music similarity more precisely than measures based on audio analysis and audio features. The strength of audio features lie in measuring objective criteria related to music similarity such as timbre, beat, and instruments. The goal of this thesis is to combine the advantages of both approaches.