

Master project abstracts in collaboration with Soundtrap

Andre Holzapfel, Björn Melinder, Björn Sperber (June 2017)

For more information: holzap@kth.se

www.soundtrap.com

Tempo estimation

Within the Soundtrap production environment, users want to incorporate audio recordings into projects that will in the end become new music compositions, but the tempo of these recordings is unknown. The goal within this project is to adapt a state-of-the-art tempo estimation algorithm to the application within this music production environment. The algorithm will enable the user to easily use arbitrary recordings with a clear beat in her project.

Key estimation

When given an arbitrary music recording, it is not a trivial problem to determine the tonal key of this recording, e.g. if an audio recording is in C major or D minor. The goal of this project is to devise an algorithm that estimates this key from a recording. To this end, a literature study will be conducted and a small group of simple and accurate approaches will be selected, implemented, and evaluated.

Categorisation of massive audio loop library

Finding interesting samples in a large collection of audio loops is difficult, because the data is too large to listen to, and computers are not readily able to sort audio samples according to perceptual qualities. The goal of this project is to categorise audio loops into a group of perception related features, such as the speed, the smoothness, the complexity, etc. In specific, feature extraction motivated by existing approaches will be applied and extended to categorise Soundtrap's massive audio loop library (3000+ loops). The output will be used and evaluated by a large group of software users, to investigate which features improve their orientation within the large database of the production system.

Changing expression of midi data

By default, music in MIDI format may sound boring, because it lacks aspects of human expression that are added when a musician plays the music. This project will explore different ways to change the perceived mood and style of an existing set of Western pop

music. The samples are available in MIDI format, and the goal is to change, for instance, the dynamics and the tempo in a way that makes the samples sound happier, or calmer. This can be used in the creative music production process to alter an existing piece of music to create variations as well as getting fresh input while composing. The basis of this development will be an existing prototype for classical music that needs to be adapted to Western popular music.