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Bachelor's Thesis

Analysis of Song Parameters for Content-Based Music Search

Motivation

Modern music platforms increasingly rely on semantic and content-based descriptors to improve music discovery and retrieval. Parameters such as danceability, liveness, valence, and musical energy provide valuable information about the character and perceptual qualities of a song and can help users search for music beyond metadata such as title, artist, or genre.

In the context of the Klangio Song Search platform, the automatic estimation of such song parameters can be used to extend the search functionality and enable new ways of exploring music collections. This thesis investigates how meaningful musical descriptors can be derived automatically from audio signals and integrated into a practical music search application.

Task Description

The goal of this bachelor?s thesis is the analysis and automatic estimation of song parameters such as danceability, liveness, valence, and musical energy based on audio data. In a first step, a literature review on musical descriptors, audio features, and existing methods for automatic feature extraction will be conducted.

Subsequently, a suitable method for analyzing these parameters will be developed and implemented. Both classical signal processing approaches and data-driven machine learning methods may be investigated. The estimated parameters will then be used to extend the functionality of the Klangio Song Search platform.

Finally, the developed methods will be evaluated using suitable datasets and evaluation metrics. In addition, the thesis will examine to what extent the estimated parameters can be effectively integrated into the search and filtering functionality of songs.klang.io.

Prerequisites

- Basic programming skills in Python
- Interest in signal processing, audio analysis, or Music Information Retrieval
- Basic knowledge of Machine Learning is an advantage
- Enjoyment of scientific work

Research Area

- Music Information Retrieval
- Signal Processing
- Audio Analysis
- Machine Learning

Degree Program

- [x] Electrical Engineering and Information Tec
- [x] Computer Science
- [x] Music Informatics (HfM Karlsruhe)

Focus

- [x] Signal Analysis
- [x] Modeling
- [x] Implementation

Start

Immediately

Links

Staff Page
Klangio
Klangio Song Search

Contact

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