User-Controlling Expressed Emotions in Music with EDME

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Abstract. Emotion-Driven Music Engine software (EDME) expresses user-defined emotions with music and works in two stages. The first stage is done offline and consists in emotionally classifying standard MIDI files in two dimensions: valence and arousal. The second stage works in real-time and uses classified files to produce musical sequences arranged in song patterns.

First stage starts with the segmentation of MIDI files and proceeds to the extraction of features from the obtained segments. Classifiers for each emotional dimension use these features to label the segments, which are then stored in a music base.

In the second stage, EDME starts by selecting the segments with emotional characteristics closer to the user-defined emotion. The software then uses a pattern-based approach to arrange selected segments into song-like structures. Segments are adapted, through transformations and sequencing, in order to match the tempo and pitch characteristics of given song patterns. Each pattern defines song structure and harmonic relations between the parts of each structure.

The user interface of the application offers three ways to define emotions: selection of discrete emotions from lists of emotions; graphical selection in a valence-arousal bi-dimensional space; or direct definition of valence-arousal values. While playing, EDME responds to input changes by quickly adapting the music to a new user-defined emotion.

The user may also customize the music and pattern base. We intend to explore this possibility by challenging attendees to bring their own MIDI files and experiment the system. With this, we intend to allow a better understanding of the potential of EDME as a composition aid tool and get useful insights about further developments.

References

1. EDME, http://sites.google.com/site/apspoliveira/home