MUSIC GENRE/MOOD/COMPOSER CLASSIFICATION: MIREX 2013 SUBMISSIONS

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ABSTRACT

In this submission system, novel spectro-temporal features are extracted and a support vector machine (SVM) is used as a classifier. The feature-selection algorithm such as an SVM ranker is applied to reduce the computational complexity.

1. INTRODUCTION

We propose the novel music genre/mood/composer classification system. This submission includes updated versions of the algorithms submitted to MIREX 2012 Audio Train/Test task. Firstly, timbral features are extracted from the audio signals, and the spectro-temporal features are extracted using the timbral features. Secondly, the feature-selection algorithm is applied for the spectro-temporal features to reduce the computational complexity. Lastly, genre/mood/composer modeling and classification are performed based on a support vector machine (SVM).

2. FEATURE EXTRACTION

2.1 Timbral features

Mel-frequency cepstral coefficients (MFCC), decorrelated filter banks (DFB), and octave-based spectral contrast (OSC) are extracted as timbral features using a hamming window of around 92 ms with 50 % overlap for a sampling frequency of 22.05 kHz.

2.2 Spectro-temporal features

As spectro-temporal features, statistical and modulation features are extracted using the timbral features. The statistical features such as mean, variance, min, and max are extracted from the timbral features for each texture window [1] of around 3s with 50% overlap. The modulation features include modulation spectral flatness/crest measures (MSFM/MSCM) [2], modulation spectral contrast/valley (MSC/MSV) [3], feature-based MSV/MSC [4], feature-based MSFM/MSCM [5], and feature-based autoregressive model features.

2.3 Feature selection

Each feature is normalized between 0 and 1. An SVM ranker is used as a feature-selection algorithm to increase the recognition performance and decrease the computational complexity. The selected feature sets are different for different tasks.

3. CLASSIFICATION

In the proposed systems, we use an SVM as a classifier [6]. Gaussian radial basis function (RBF) kernel and one versus one SVM method are used. Furthermore, C and γ parameters for each task are estimated using a grid search.

4. ACKNOWLEDGEMENTS

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5. REFERENCES

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