MODELING MUSICAL SOUNDS WITH AN INTERPOLATING STATE MODEL (ThuAmPO2)

Author(s) :

Anssi Klapuri (Tampere University of Technology, Finland)
Tuomas Virtanen (Tampere University of Technology, Finland)
Marko Helén (Tampere University of Technology, Finland)

Abstract :

A computationally efficient algorithm is proposed for modeling and coding the time−varying spectra of musical sounds. The aim is to encode individual data sets and not the statistical properties of the sounds. A given sequence of acoustic feature vectors is modeled by finding such a set of "states" (anchor points in the feature space) that the input data can be efficiently represented by interpolating between them. The achieved modeling accuracy for a database of musical sounds was approximately two times better than that of a conventional "vector quantization" model where the input data was k−means clustered and the input data vectors were then replaced by their corresponding cluster centroids. The computational complexity of the proposed algorithm as a function of the input sequence length T is O(TlogT).

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