Journal of Acoustical Engineering Society of Iran, Vol. 4, No. 1, 2016

Query-by-example music retrieval using genre recognition to speed up the performance

N. Borjian*[1], E. Kabir[1], S. Seyedin[2], E. Masehian[3]

1. Department of Electrical and Computer Engineering, Tarbiat Modares Univ.
2. Department of Electrical Engineering, Amirkabir University of Technology
3. Faculty of Engineering, Tarbiat Modares Univ.

Abstract

The goal of a query-by-example music information retrieval system is retrieval of the target song corresponding to user-provided example from a particular dataset. The example can be a few second piece recorded from any music source such as TV or even a noisy environment e.g. gym. In this paper, a query-by-example system for music retrieval using genre recognition is proposed whose goal is to show the effect of genre recognition to achieve the accurate and rapid performance in such systems even in presence the background noise. This system includes two basic blocks: genre recognition and matching-retrieval. A binary decision tree performs the genre recognition and matching-retrieval uses two Euclidean and Kullback-Leibler (KL) distances along with a score level based decision fusion. The proposed system is evaluated on the well-known GTZAN dataset (prepared by George Tzanetakis) and by two random groups of pure and noisy queries. The results show the accuracy of 97% and 86% for two pure and noisy query groups, respectively, in retrieval time of 525 ms with Euclidean distance. These values are 97% and 82% in retrieval time of 380 ms with KL distance.

Keywords: Music information retrieval, Query by example, Genre recognition, Decision fusion, Noise.

pp. 1-20 (In Persian)

* Corresponding author E-mail: nastaran.borjian@modares.ir

[DOR: 20.1001.1.23455748.1395.4.1.2.9]