

Automatic Genre Classification of Latin Music Using Ensemble of Classifiers

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Abstract. This paper presents a novel approach to the task of automatic music genre classification which is based on ensemble learning. Feature vectors are extracted from three 30-second music segments from the beginning, middle and end of each music piece. Individual classifiers are trained to account for each music segment. During classification, the output provided by each classifier is combined with the aim of improving music genre classification accuracy. Experiments carried out on a dataset containing 600 music samples from two Latin genres (Tango and Salsa) have shown that for the task of automatic music genre classification, the features extracted from the middle and end music segments provide better results than using the beginning music segment. Furthermore, the proposed ensemble method provides better accuracy than using single classifiers and any individual segment.

1. Introduction

With the continuous expansion of the Internet, a huge quantity of data from different sources has been become available on-line. An study from the UC Berkeley shows that in 2002 there were about 5 million terabytes of new information produced in films, printed media or magnetic/optic storage media [Lyman and Varian 2003]. In the Web alone, more than 170 terabytes of information is available. However it is very difficult to use in an efficient manner such a huge amount of information. Many important problems such as search for information sources, retrieval/extraction of information, automatic summarization of information, etc. have been the subject of intensive research in the last years. Automatic music genre classification is also the underlying technology to construct digital libraries that intend to preserve a relevant socio-cultural aspect.

In this context, a research area that has been growing in the past few years is the multimedia information retrieval which aims at building tools to effectively organize and manage the huge amount of available multimedia information [Fingerhut 1999] [Pampalk et al. 2002]. The current practice for indexing multimedia data is based on textual meta-data information, which is the case of the ID3 tags in MP3 music files. Although ID3 tags are very useful for indexing, searching, and retrieval, usually, such tags are manually generated and associated with the multimedia data.

One of the most important type of multimedia data distributed over the Web is the digital music in MP3 format. There are many studies and methods related to the analysis of the music audio signal [Aucouturier and Pachet 2003], [Guo and Li 2003], [Li et al. 2003], [Pampalk et al. 2002], [Zhang and Kuo 2001]. One important component for a content-based music information retrieval system is a module for the automatic

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