

## 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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for the implementation of advanced telecommunication systems communication with people with special needs emotion modulation by computer contents advanced sensors for tracking changes in real life and automatic systems as well as the development of advanced human computer interfaces The book does not focus on solving a particular problem but instead describes the results of research that has positive effects in different fields and applications

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**Computational Science - ICCS 2022** Derek Groen, Clélia de Mulatier, Maciej Paszynski, Valeria V. Krzhizhanovskaya, Jack J. Dongarra, Peter M. A. Sloot, 2022-06-21 The four volume set LNCS 13350 13351 13352 and 13353 constitutes the proceedings of the 22nd International Conference on Computational Science ICCS 2022 held in London UK in June 2022 The total of 175 full papers and 78 short papers presented in this book set were carefully reviewed and selected from 474 submissions 169 full and 36 short papers were accepted to the main track 120 full and 42 short papers were accepted to the workshops thematic tracks The conference was held in a hybrid format

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**Digital Hearing Healthcare** Qinglin Meng, Jing Chen, Changxin Zhang, Dennis L. Barbour, Fan-Gang Zeng, 2022-12-05 We would like to acknowledge VCCA2020 Organizer Jan Willem Wasmann who has acted as coordinator and has contributed to the preparation of the proposal for this Research Topic Dr Qinglin Meng is working on an audio project for Huawei Technologies Co Ltd Dr Jing Chen is working on

research projects with Sonova AG Dr Fan Gang Zeng owns stock in Axonics Nurotron Syntiant Velox and Xsense Dr Dennis Barbour founded and owns equity in Bonauria All other Topic Editor declare no conflicts of interest *Proceedings of ... ACM/IEEE-CS Joint Conference on Digital Libraries* ,2005 *Proceedings of the ... ACM SIGMM International Workshop on Multimedia Information Retrieval* ,2004 *Proceedings of the ... International Computer Music Conference* ,2005 *ISMIR 2007* Simon Dixon,David Bainbridge,Rainer Typke,2007 **MIR '04** Michael S. Lew,Nicu Sebe,Chabane Djeraba,2004 **AES**; ,2003 **Proceedings of the ... International Conference on Information and Knowledge Management** ,2004 **CIKM 2004** David A. Evans,2004 *The Journal of the Acoustical Society of America* Acoustical Society of America,2005 **Automatic Music Genre Classification** Ritesh Ajoodha,2014 *Characterizing and Classifying Music Genres and Subgenres Via Association Analysis* Adam T. Lefavre,2019 In this thesis we investigate the problem of automatic music genre classification in the field of Music Information Retrieval MIR MIR seeks to apply convenient automated solutions to many music related tasks that are too tedious to perform by hand These tasks often deal with vast quantities of music data An effective automatic music genre classification approach may be useful for other tasks in MIR as well Association analysis is a technique used to explore the inherent relationships among data objects in a problem domain We present two novel approaches which capture genre characteristics through the use of association analysis on large music datasets The first approach extracts the characteristic features of genres and uses these features to perform classification The second approach attempts to improve on the first one by utilizing a pairwise dichotomy like strategy We then consider applying the second approach to the problem of automatic subgenre classification

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