

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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Table of Contents Automatic Music Genre Classification Using Ensemble Of

1. Understanding the eBook Automatic Music Genre Classification Using Ensemble Of
 - The Rise of Digital Reading Automatic Music Genre Classification Using Ensemble Of
 - Advantages of eBooks Over Traditional Books
2. Identifying Automatic Music Genre Classification Using Ensemble Of
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Automatic Music Genre Classification Using Ensemble Of
 - User-Friendly Interface
4. Exploring eBook Recommendations from Automatic Music Genre Classification Using Ensemble Of
 - Personalized Recommendations

- Automatic Music Genre Classification Using Ensemble Of User Reviews and Ratings
- Automatic Music Genre Classification Using Ensemble Of and Bestseller Lists
- 5. Accessing Automatic Music Genre Classification Using Ensemble Of Free and Paid eBooks
 - Automatic Music Genre Classification Using Ensemble Of Public Domain eBooks
 - Automatic Music Genre Classification Using Ensemble Of eBook Subscription Services
 - Automatic Music Genre Classification Using Ensemble Of Budget-Friendly Options
- 6. Navigating Automatic Music Genre Classification Using Ensemble Of eBook Formats
 - ePub, PDF, MOBI, and More
 - Automatic Music Genre Classification Using Ensemble Of Compatibility with Devices
 - Automatic Music Genre Classification Using Ensemble Of Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Automatic Music Genre Classification Using Ensemble Of
 - Highlighting and Note-Taking Automatic Music Genre Classification Using Ensemble Of
 - Interactive Elements Automatic Music Genre Classification Using Ensemble Of
- 8. Staying Engaged with Automatic Music Genre Classification Using Ensemble Of
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Automatic Music Genre Classification Using Ensemble Of
- 9. Balancing eBooks and Physical Books Automatic Music Genre Classification Using Ensemble Of
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Automatic Music Genre Classification Using Ensemble Of
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Automatic Music Genre Classification Using Ensemble Of
 - Setting Reading Goals Automatic Music Genre Classification Using Ensemble Of
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Automatic Music Genre Classification Using Ensemble Of
 - Fact-Checking eBook Content of Automatic Music Genre Classification Using Ensemble Of

- Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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