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Metadata and jMusicMetaManager

Introduction

Metadata is “data about data”, and it is widely used when managing music libraries. jMusicMetamanager is a JAVA application that identifies potential inconsistencies in music collections.

Metadata in Music

Metada is most often used in music files to store information related to a work’s composer, performer, release date, etc., although it can also be used to store information related to the audio contents of musical works. The most popular implementation of audio metadata is the ID3 tagging that appear in MP3 files. Corthaut et al. have suggested a division of metadata along semantical lines, in 21 clusters that exist in different metadata formats. An interesting concept is that of meta-metadata: data about metadata, for instance information about the user responsible for the metadata.

The main issue with metadata is its inconsistency. The fact that it is stored in databases containing thousands, if not millions (MusicBrainz 2005), of entries, often means that the data is supplied by several people who may have different approaches. Spelling mistakes may go unnoticed for a long time, and information such as an artist’s name might be validly spelled in different ways. Additionally, several metadata labels – most notably genre – are highly subjective.

Copyright laws in various jurisdictions make it illegal to share information that can be used to reconstruct audio, which poses a problem in Music Information Retrieval (MIR) research. The On-Demand Metadata Extraction Network (OMEN) is an attempt at overcoming such restrictions by allowing only certain audio features to be transmitted. It can be combined with the Codaich database, which provides a standard library for MIR researchers to validate their algorithms.

The Business Value of Metadata

Scheirer argues that metadata is a means to an end, in that proper management of it can provide advantages such as increased navigability in a music library. He encourages MIR researchers to offer this value-added in their products, seeing the individual consumer through the lens of a low-attention, entertainment-based economy. A major issue facing metadata-based products is the high cost of switching. Lai et al. identify libraries as another potential consumer for systems that manage metadata.

The traditional method of managing metadata is time-consuming and requires highly knowledgeable users. The users’ knowledge, although potentially wide, is very often limited by cultural considerations.

jMusicMetaManager

jMusicMetaManager is a software solution for identifying inconsistencies and redundancies in music libraries. It was designed at McGill University, Montreal, Canada, and was implemented in JAVA.

The application computes Levenshtein distances between pairs of ID3 tags in order to identify elements that should be the same. Data is taken from an iTunes XML file or from a folder containing MP3 files, and it is recommended to run the software recursively in order to use the changes of early iterations to solidify the data in later iterations. Processing and reporting options can be modified, and the results of running jMusicMetaManager are displayed in an HTML report.

This software can be used with personal music databases, or it can be integrated with OMEN in order to clean up information before it is sent from the Library Nodes to the Master Node.

The strong points of jMusicMetaManager are its easy deployment using the NetBeans integrated development environment, an intuitive graphical user interface (GUI) and detailed

reports. Like all metadata managers, the application may however identify false positives, although it is clearly specified that the software was designed to output as many potential errors as it can find, leaving the responsibility of confirmation to the user. Some MP3 files cannot be read, and the software doesn't support certain alphabets. Possible improvements to the software include the support of different languages in abstracting certain features (e.g., removing instances of "the" in tags), making the reports more easy to browse (particularly for large databases), the possibility to apply the suggested changes or perform other modifications to the metadata directly, and connectivity to certain metadata interfaces to fetch information (e.g., MusicBrainz).

Conclusion

Metadata is information that can be useful when organizing music libraries, although it has inherent inconsistencies. The number of issues observed in metadata for a particular music database can be minimized through the careful adjustment of parameters in a metadata manager such as jMusicMetaManager. The convenience of having a GUI should not be overlooked, and the integration of this particular application into media players would certainly increase its use by the general public.

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Links

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