CORRELATIONS BETWEEN TEXT TOPICS AND MUSIC DIMENSIONS IN METAL MUSIC USING LATENT DIRICHLET ALLOCATION AND HIGH-LEVEL AUDIO FEATURES

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EXTENDED ABSTRACT

As audio and text features provide complementary layers of information on songs, a combination of both data types has been shown to improve automatic classification of high-level attributes in music such as genre, mood and emotion (e.g. [6–8, 11]). Multi-modal approaches interlinking these features offer insights into possible relations between lyrical and musical information (see [9, 12, 16]).

Therefore, we examine the connection between audio features and the lyrical content of metal music by combining automated extraction of high-level music properties and quantitative text analysis on a large corpus of music from this genre. Sound dimensions like loudness, distortion and particularly "hardness"/"heaviness" play an essential role in defining the sound of metal music [5, 10, 14]. Topics typically ascribed to metal lyrics contain sadness, death, freedom, nature, occultism or unpleasant/disgusting objects and are often labeled as brutal, dystopian or satanistic [2, 13, 15].

By combining both audio feature and text analysis, we (1) offer a comprehensive overview of the lyrical topics present within the metal genre and (2) are able to address whether or not levels of "hardness" and other music dimensions are associated with the occurrence of brutal (and other) textual topics.

Methodically, our research builds on a previous examination [3, 4], in which ratings were obtained for 212 music stimuli by 40 raters each. Based on this music perception study, prediction models for the automatic extraction of high-level audio feature dimensions like "hardness" and "darkness" had been trained via machine learning methods.

Now, in our most recent complementary step, we programmed a web crawler to automatically retrieve metal music lyrics from www.darklyrics.com, resulting in a sample of 152.916 song texts. After cleaning procedures, our subsample included 124.288 texts. We applied latent Dirichlet allocation [1] on the remaining subsample to construct a probabilistic topic model. Log-perplexity and log UMass coherence were used as goodness-of-fit measures evaluating topic models ranging from 10 to 100 topics. We then examined the most salient and most typical words for each topic.

In our analyses, we find a significant connection between the music dimensions of "hardness" and "darkness" and specific identified textual topics: Among these are especially "Brutal Death", "Dystopia", "Archaisms", "Religion & Satanism" und "Battle", while an inverse correlation consists for the topics "Personal Life" as well as "Love & Romance". Furthermore, within the topic configuration, a latent dimension emerges where philosophical and brutal topics oppose texts with rather mundane and shallow content. We give an overview of the distribution of topics between different subgenres/bands, as well as over the course of the last decades.

Further results of this investigation for relations between high-level audio features and lyrical topics will be presented during the poster session and the topic models will be displayed to visitors for interactive exploration.

ISMIR Late-Breaking/Demo [Unrefereed]

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