Classifying Songs by Genre Using Lyrics

Anonymous ACL-IJCNLP submission

Abstract

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1 Related Work

The question that this project stemmed from is not a novel idea. There has been plenty of work done with similar ideas of classifying music into genres. The largest variety in the studies on this topic comes from the models that are trained as well as the number of genres that the songs were classified into.

Even just looking at a few of the recent studies in regards to this question you can see many different models and approaches. Hu et al. (2009) looked into classifying 5,585 songs into 18 different mood categories using the songs lyrical text using Support Vector Machines and determined that Bag of Words were the most successful type. This problem was addressed again by Hu et al. (2017) when they looked at whether or not using a multimodal system made a significant difference in music mood classification.

In the study by Leszczynski and Boonyanit (2021), a LSTM model was trained using GloVe embeddings of the song lyrics, reaching a peak success rate of 68%. Meenakshi et al. (2020) uses a Bag of Words method for tf-idf calculations and was able to acieve a 63% accuracy. In a 2020 study, DeMasi (2020) ran this problem on twenty-four different models and found the most success using a Deep Neural Network trained on a tf-idf feature set.

Canicatti (2016) discusses the importance of choosing a proper set of genres to be classified into. For a classifier to have a high accuracy, you need genres to be general enough for each genre's lyrics can be accurately classified but specific enough for each genre to have a unique set of lyrics. A set of 5 distinct genres were established for this study.

A similar study was done on Filipino Music by Abisado et al. (2021), in which a Naive Bayes classifier was trained using the scikit-learn library to analyze and classify the moods of more than 200 songs into a binary mood of happy or sad.

A 2017 study by Dammann and Haugh (2017) looked at not only the lyrics of a song on Spotify, but also the song preview and the album artwork when attempt to classify the genre of a song. A Naive-Bayes classifier was used specifically for the lyrics. When combining all three types of data, an accuracy of 91.75% was achieved. Using two more recent language models, BERT and DistilBERT, Akalp et al. (2021) were able to achieve accuracies of 77.63% and 71.29%. A BERT model uses the contextual relationship between words to generate predictions.

Despite there being a wide variety of approaches and training models to this problem. They all follow the same rough pattern. Every study gets a large dataset consisting of songs across all genres. This data is then tokenized and used to train a model. A new set of songs is then given to the model as test data, and the accuracy is recorded. The largest differences in the various studies comes from the number of genres that the songs were

sorted into and the models that were trained. Some variance came from the different ways that the text could be tokenized.

2 Methods

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Acknowledgements

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