Classifying the works in the Josquin Research Project dataset by modelling the transitions in their symbolic chromagrams

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Abstract

In this work, we present a collection of methods to represent and compare works in a dataset of Renaissance music. The methods create a compact representation of any musical work, and can be used to perform genre and artist identification in a wide range of musical corpora. We will focus on applying the techniques to music in a symbolic representation, although the methods can also be applied to raw audio, after a preprocessing step. The methods we present, are based around modeling how the activity of the twelve pitch classes (chromae) changes from one beat to the next. If we construct a *chromagram* by summing the activity of voices in every pitch class *per beat*, and then model how this chromagram *changes* from beat to beat, we create a rough representation of the temporal harmony of the work. There are several methods to perform such a modelling, which transform a matrix of T beats by 12 pitch classes into a single vector of constant size - a meaningful, numeric representation of the song. This vector representation of every work is then used by a machine learning model to classify works by genre or composer. We combine different chromagram modelling techniques with different machine learning models, and analyze their performance when applied to the works in the Josquin Research Project dataset [2]. We compare our results with feature extraction methods in the jSymbolic suite [1]. Based on the best model we create, we suggest composers for works that were previously unattributed, and explore the works in the dataset that are unsecurely attributed. Lastly, we identify distinctions between genres and composers in the dataset, by interpreting the internals of the models we created.

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References

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[2] Jesse Rodin. *The Josquin Research Project*. Stanford University, 2010.