

The goal of this project is to use Hidden Markov Models (HMM) for the automatic recognition of melodic themes by composer [1]. Several HMM toolboxes are available for MATLAB, one of which will be implemented here.

The training data set will consist of melodic information extracted from MIDI files. The model would then be presented with unknown melodies from each composer which would attempt to classify. An analysis of the recognition results would follow.

The first goal is to train the model using pitch information garnered from a small number of themes chosen from a small selection of composers of different styles. Upon confirming the model's recognition abilities, the data set could be augmented to include a wider range of melodic material, including composers of comparable style. Furthermore, rhythmic and dynamic information could also be included. Thus, the effects of larger data sets and the inclusion of other kinds of symbolic information could be measured in terms of the performance of the model. In addition, pre-filtering of the data set, such as limiting the melodic range, may result in improved recognition.

Bibliography:

[1] Pollastri, E., Simoncelli, G. 2001. Classification of Melodies by Composer with Hidden Markov Models. *Proceeding of the First International Conference on WEB Delivering of Music.*