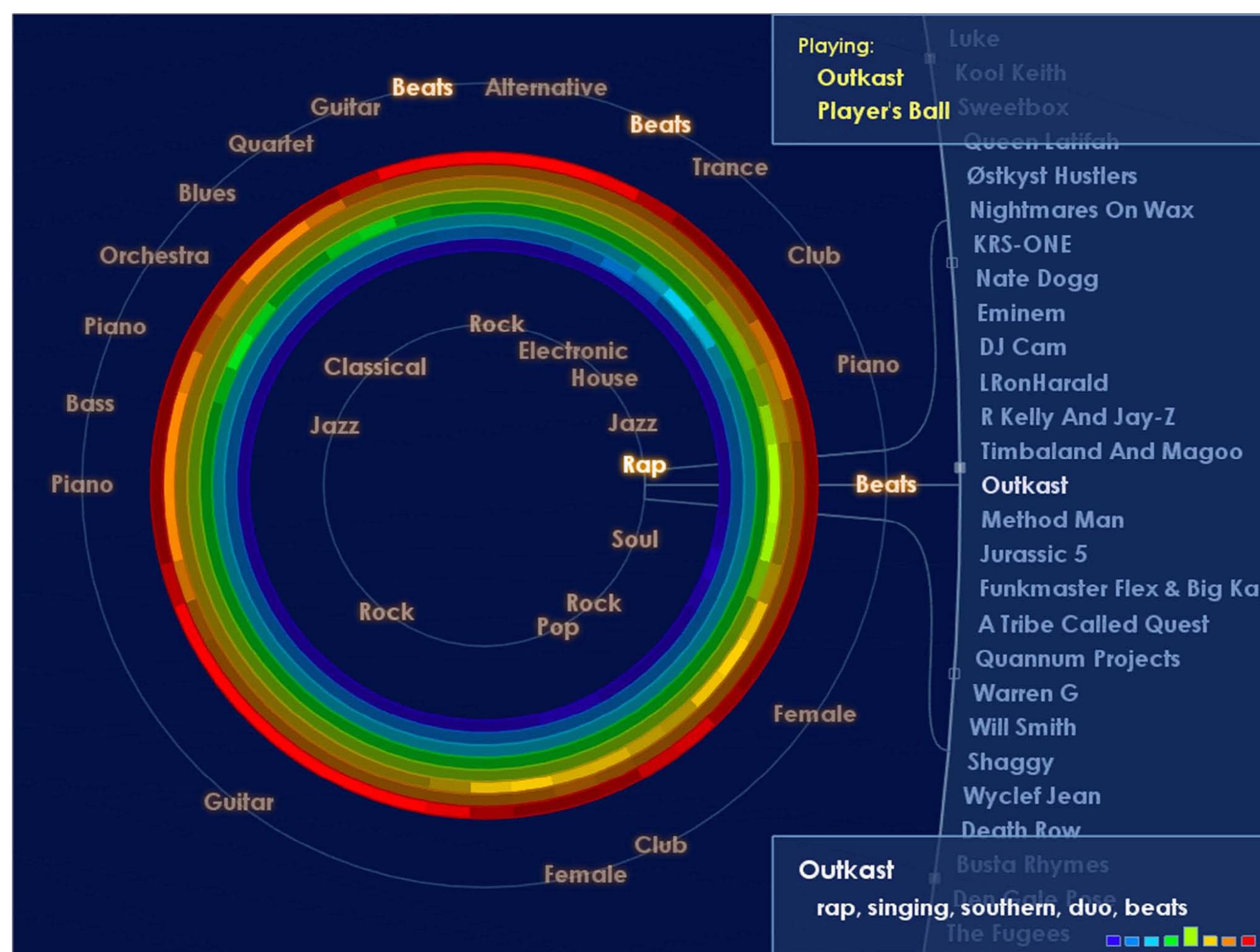


Music Rainbow: A New User Interface to Discover Artists

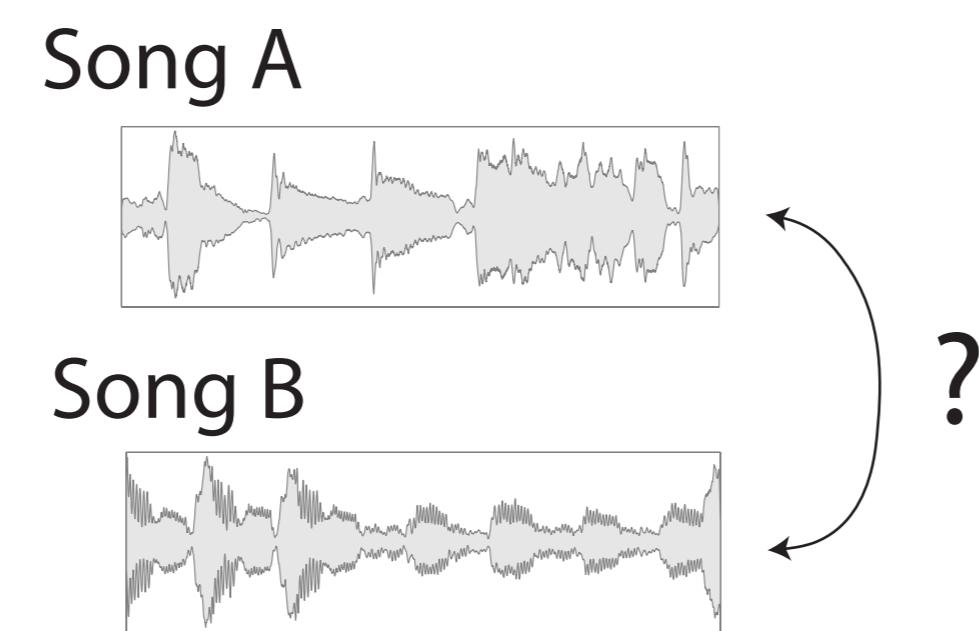
Elias Pampalk and Masataka Goto (AIST)



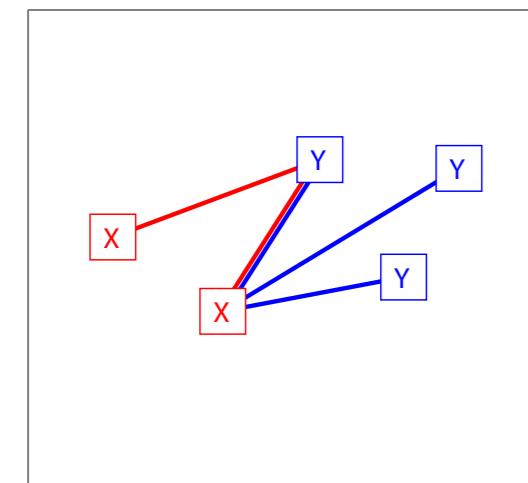
MusicRainbow is a simple user interface for browsing a music collection. The colors of the rainbow encode different styles of music. Similar artists are located near each other on the circular rainbow. Labels are extracted from web pages to summarize the contents. The user controls the interface with a knob which can be turned and pushed.

Technique

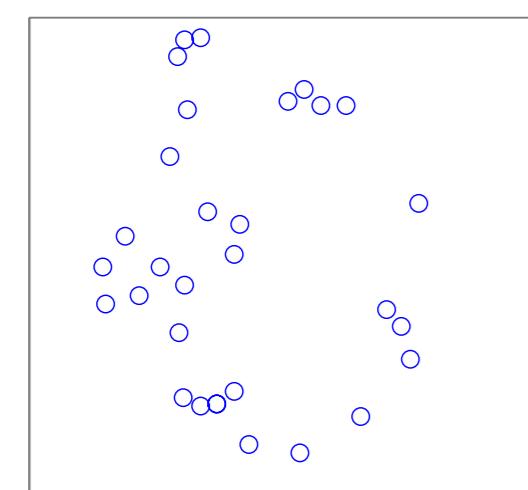
To compute the similarity of artists we compare their songs using audio-based techniques which analyze loudness fluctuations and spectral shapes.



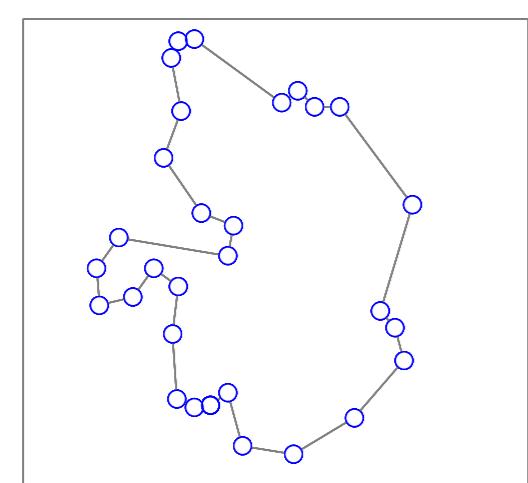
The distance between artists X and Y is computed by finding the closest song to each song (red & blue lines), computing the mean of the red and the mean of the blue lines, and taking the maximum of the two values.



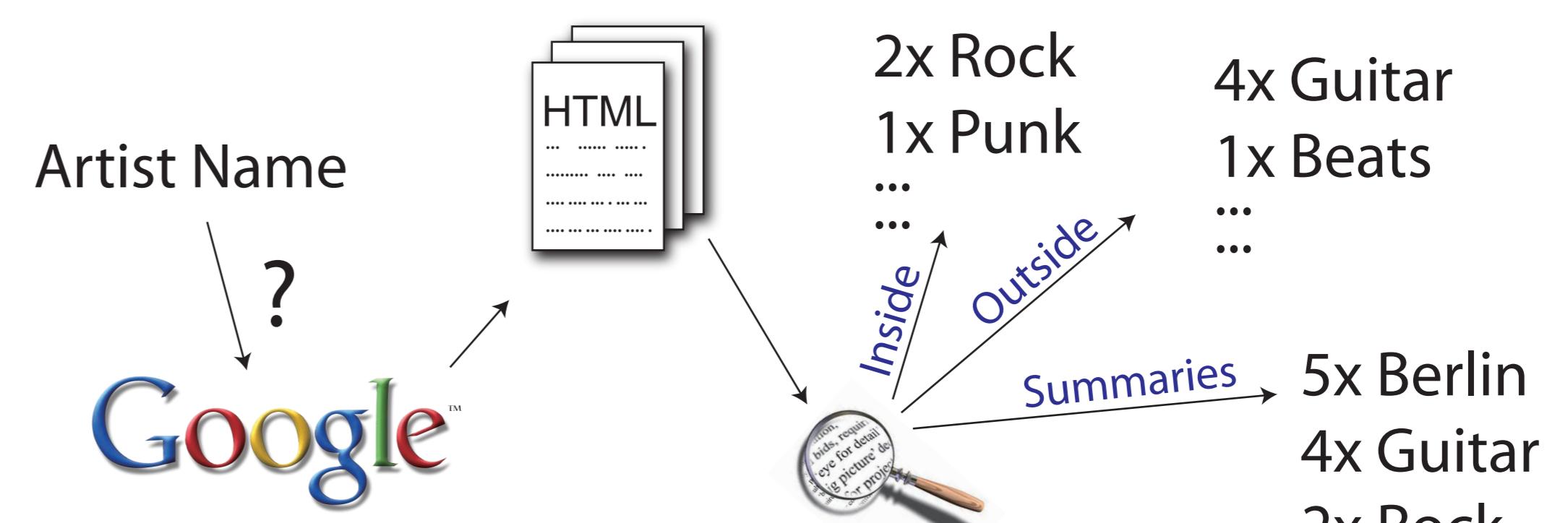
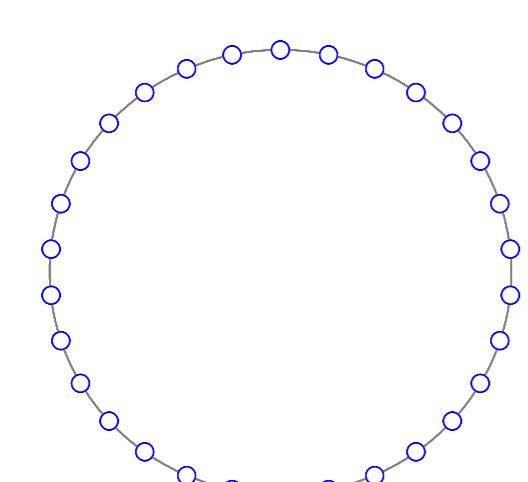
The distances between artists define a similarity space. For our demonstration we use a collection consisting of 558 artists.



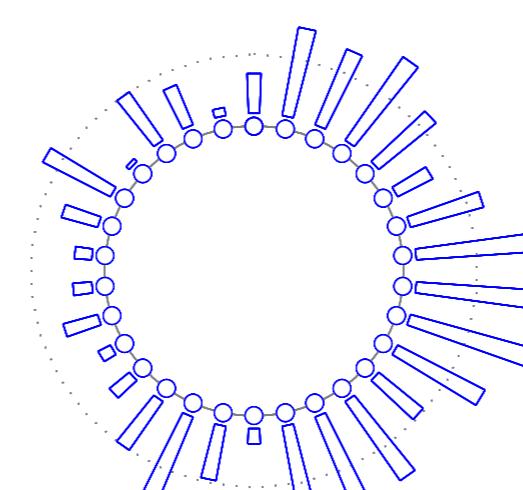
The shortest path which connects all artists is found using a travelling salesman algorithm.



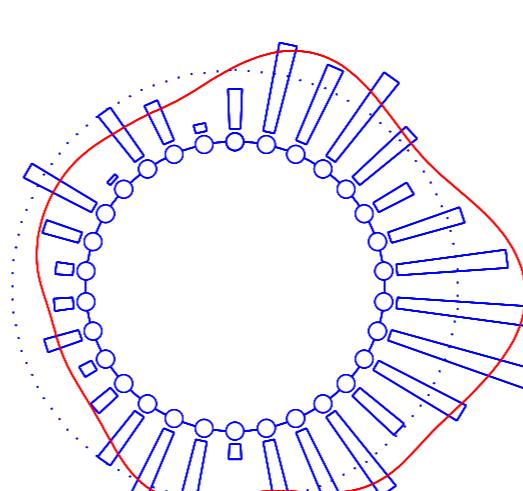
The path in the high-dimensional similarity space is projected onto a circle. Each artist is assigned one position on the circle. Similar artists are located close to each other.



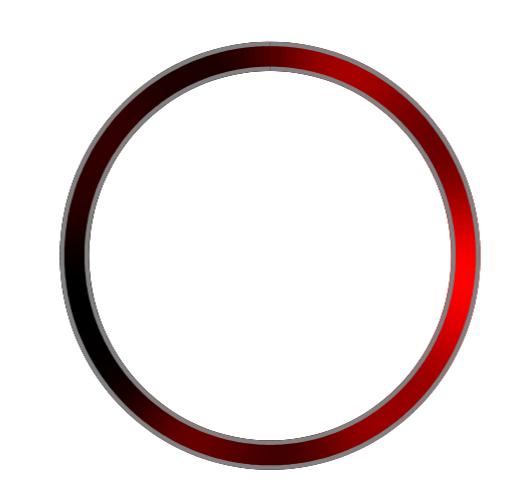
For each artist we retrieve related pages using Google. The pages are parsed for words listed in one of three vocabularies and word occurrences are counted. Each vocabulary covers a different hierarchical level.



For each pair of artist and word, we compute a relevance weight on the basis of the word occurrences in the webpages.



The weights are smoothed. This helps identify labels which are useful to describe not only a single artist but a region on the rainbow. The peaks are used by a heuristic to decide where to place the labels.



The smoothed weights of the labels placed inside the rainbow define the color intensities. Red corresponds to the most frequent term, purple to the least frequent.