

# Speeding Up Music Similarity

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## MIREX'05 Tasks

- (audio-based) genre classification
- (audio-based) artist identification

## Input

- 22kHz mono wav
- analyze 2 minutes from the center

## Features

- cluster models of MFCC spectra ( $\leq 30 + 30 \times 19 \times 2 + 1$  float values)
- fluctuation patterns (720 float values)
- Gravity and Focus (2 float values)

## Classifier

- nearest neighbor

## Computation Time

Matlab 7, Centrino 1.3GHz

	Features (per song)	Distance (per pair)
2004	60 seconds	500 milliseconds
2005	3 seconds	3 milliseconds

## MFCCs (Preprocessing)

- 19 coefficients (after ignoring 0th)
- FFT window size 1024
- no overlap (hop size 1024)

## Combined Similarity [1]

- 65% spectral similarity
- 15% fluctuation patterns
- 5% Focus
- 15% Gravity

## Differences to [1]

- fast spectral similarity:** adaptive k-means ( $\leq 30$  clusters), centers of the clusters are used as sample [2], likelihood of sample is computed as suggested in [3], with the modification that samples are weighted according to their priors
- Mel spectrogram (before DCT) used for fluctuation patterns
- 12 instead of 20 frequency bands used for the fluctuation patterns
- magnitudes faster and classification accuracy slightly reduced

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## References

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