

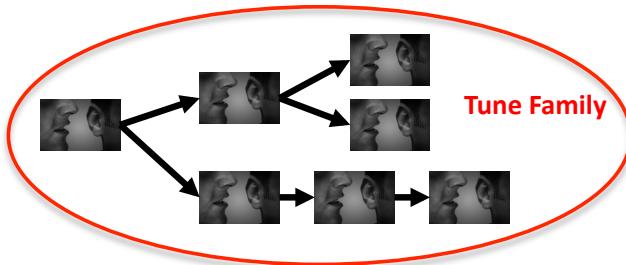
A Computational Approach to the Modeling and Employment of Cognitive Units of Folk Song Melodies using Audio Recordings

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Folk song tunes & Oral variation



Problem: Identify unknown tune

1. Pitch Extraction

YIN pitch extraction algorithm, with post-processing median filter.

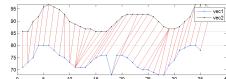
2. Segmentation

Segmentation A: Insert segment boundaries at pitch-less regions (breathing and pausing).

Segmentation B: Insert segment boundary every 4.2s (the average length of the segments according to segmentation A).

A Distance measure for audio segments

Dynamic time warping variant



Robust variant

Local Matching :



Pitch Band :



Octave Invariant :



Transposition invariant :

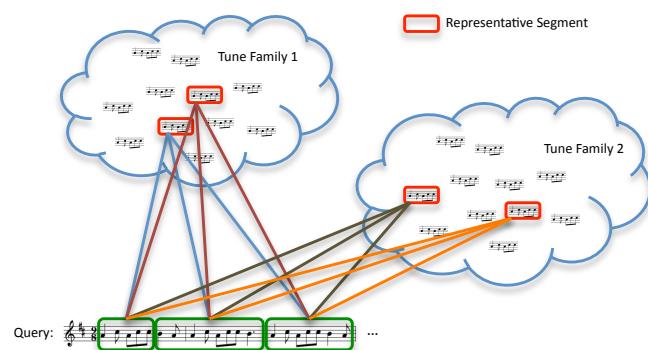


Data: 228 recordings in 20 tune families

3. Select representative segments

Representative segments: those segments that have most segments from the same tune family among the most similar segments.

4. Identify query song



Choose the tune family with the best matching representative segments

Retrieval results

Segmentation A: 92 / 199 (0.462) correct
Segmentation B: 62 / 191 (0.325) correct

For recognition, musically meaningful units are more suitable than fixed-length units.



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