

COMPUTER AIDED MELODIC ANALYSIS OF MUSIC SCORES USING SUFFIX TREE*

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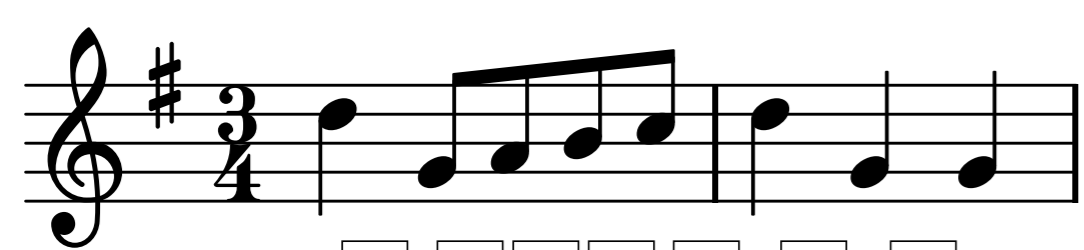
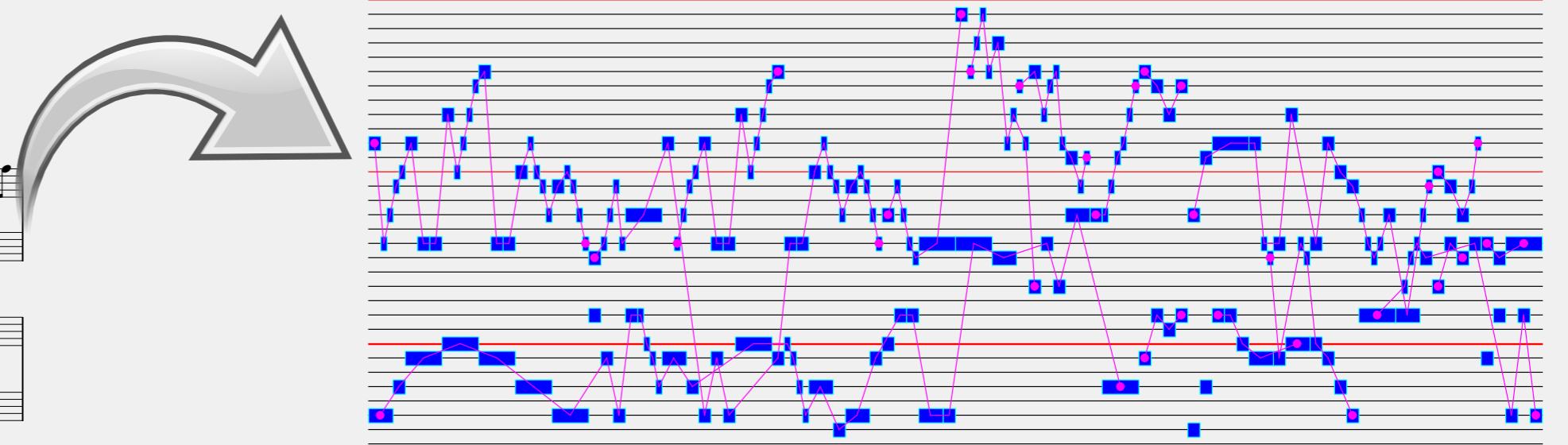
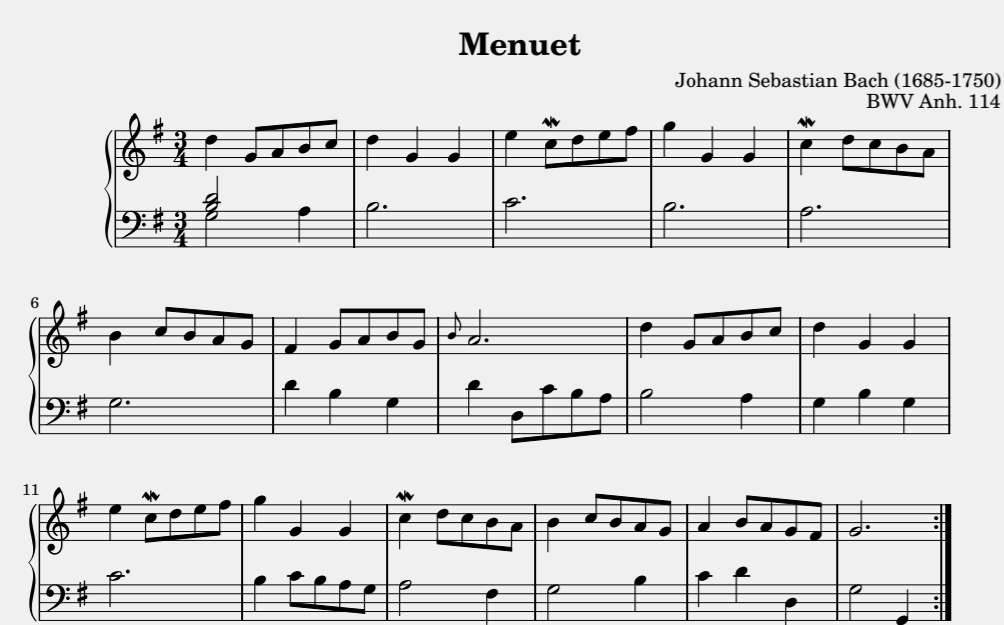
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Quality melodic analysis is one of the most significant, but also awkward and time consuming musicological tasks. We propose a computer aided melodic analysis based on suffix tree. Our data structure represents hierarchically combined melodic patterns for a given score. The potential interestingness of melodic patterns to the musicologist is then estimated from their diversity, length and frequency. We tested the proposed method on 48 fugues from J. S. Bach's Well-Tempered Clavier opus. All our approaches were integrated into the free musicological application *Harmonia*, which allows musicologists to explore the most common theme, its submelodies, common motifs and other melody-based score features. The analysis process consists of the following steps:

1. Linearisation of the music score in MIDI format.



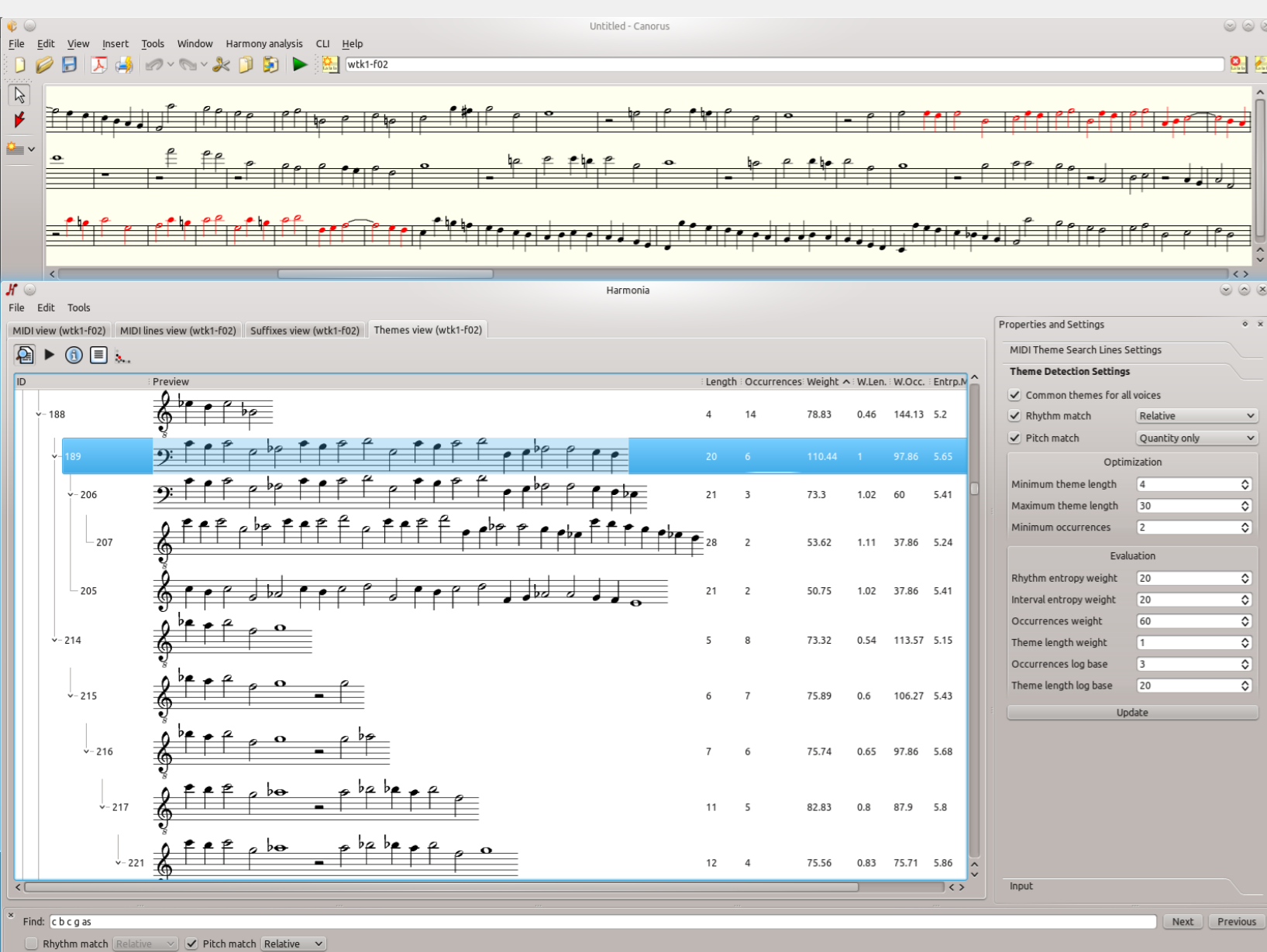
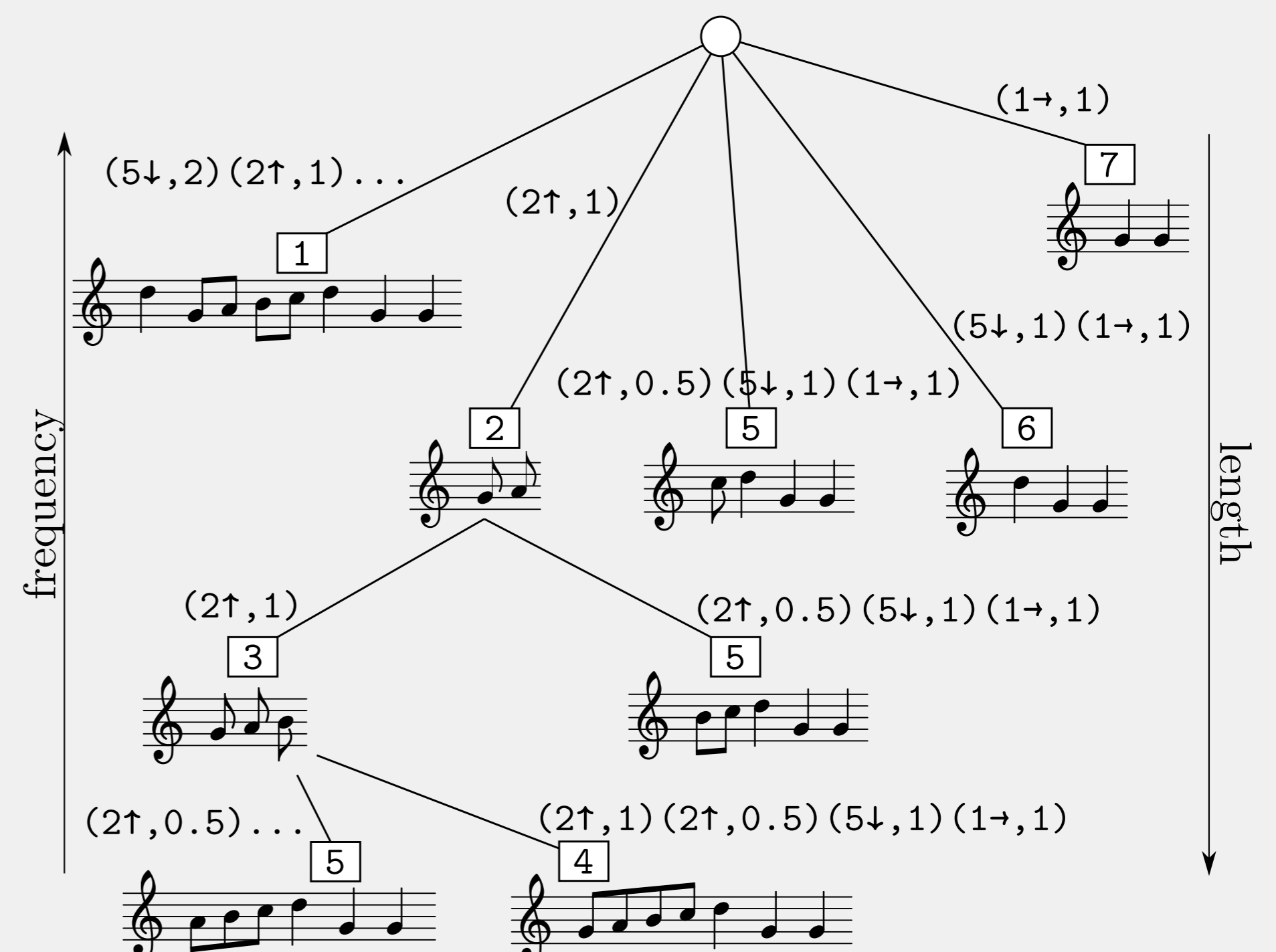
1 2 3 4 5 6 7

(5↓, 2) (2↑, 1) (2↑, 1) (2↑, 1) (2↑, 0.5) (5↓, 1) (1→, 1)

2. String representation of voices.

3. Generation of the *melody suffix tree*.

4. Automatic evaluation based on submelody length, frequency and diversity.



5. Representation to musicologist using *Harmonia suite*.

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