Combining Audio Similarity Measures using Generalizations of Logical Connectives

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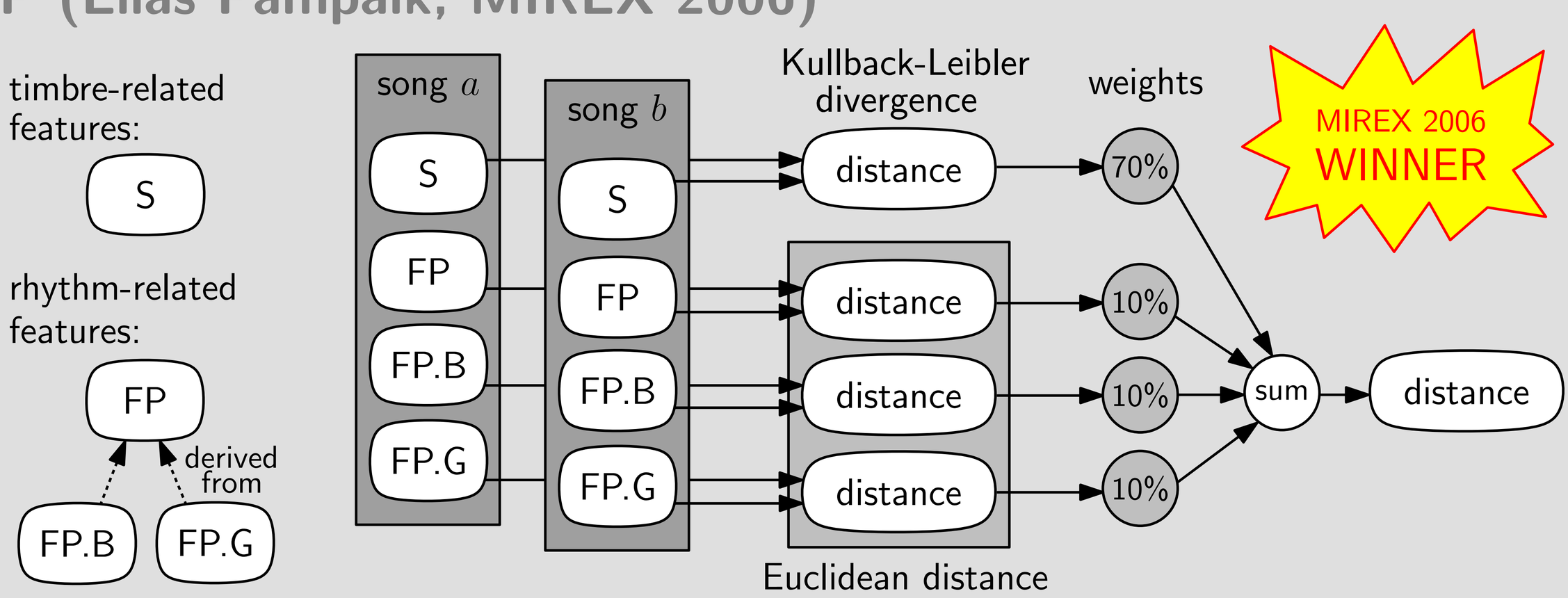
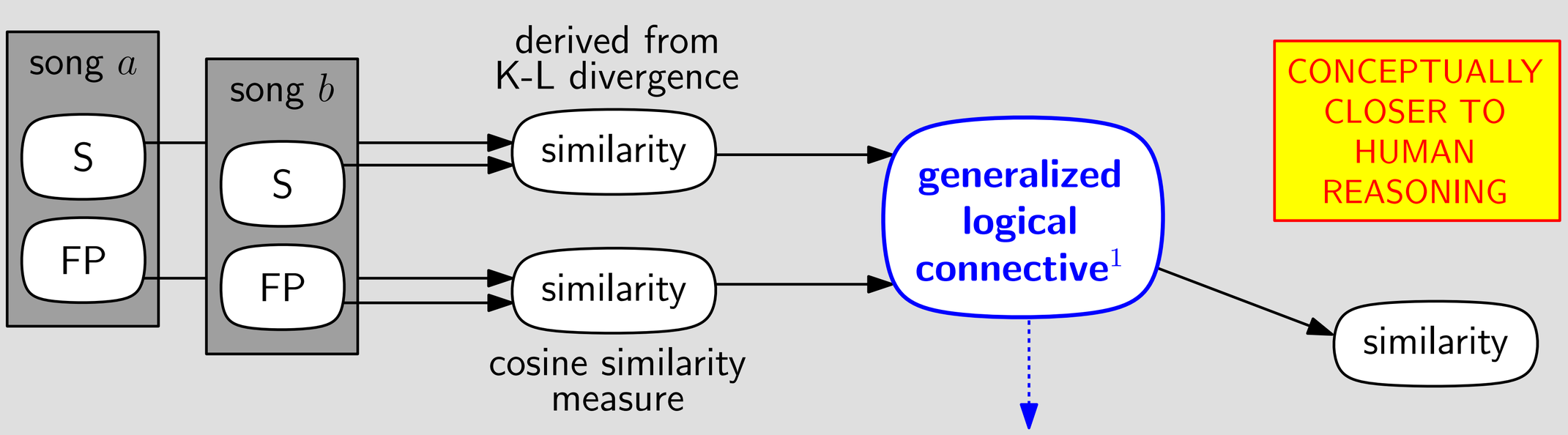
EP (Elias Pampalk, MIREX 2006)



BK1 and BK2 (Bosteels and Kerre, MIREX 2007)



BK1: song a and song b are similar when they are timbrally **and** rhythmically similar

BK2: song a and song b are similar when they are timbrally **or** rhythmically similar

Results

Which generalized logical connective is preferable?

→ The generalized conjunction (**and**), since it performs significantly better than the generalized disjunction (**or**).

Would it be worthwhile to further investigate the usage of generalized logical connectives for combining audio similarity measures?

→ Yes, because only 3 submissions perform significantly better than BK1, which is a very simple combined measure that can still be enhanced and optimized in many ways.

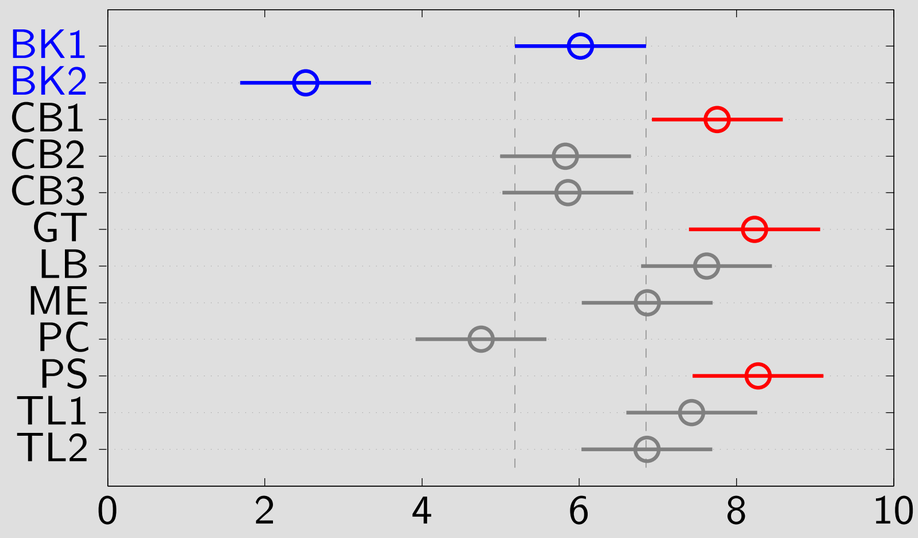


Figure: Result of applying the Friedman test to the mean fine scores. The circles mark the mean ranks, and the lines represent the significance boundaries.

[1]We rely on *fuzzy set theory* for defining the generalized logical connectives. More precisely, we use the *product operator* to implement the generalized conjunction, and the *probabilistic sum* for the generalized disjunction. These operators both belong to the extensively studied class of *triangular operators*.