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02-18-2004

ISE599 – PAPER REVIEW HOMEWORK

Pitch Spelling Algorithms by David Meredith

This article focuses on the problem of constructing a reliable pitch spelling algorithm that produces the correct pitch spellings of the notes in a musical notation form when on-set time, MIDI note number, and possibly the duration of each note are given.

The author introduces a new pitch spelling algorithm, ps13, which is kind of the most robust algorithm ever. He compares the performance of his algorithm with some other pitch spelling algorithms that have different approaches, but have similarities. The algorithm of Longuet-Higgins and Temperley depends on the “line-of-fifth” model. But Temperley introduces some new rules in his algorithm. On the other hand, Cambouropoulos uses pitch classes to choose the correct pitch according to the frequency of occurrence of pitch intervals within the major-minor tonal scale framework. His approach processes the musical piece a window at a time. This window shifts while some part of the window overlapping with the preceding window that is computed before (to find the correct note for that window). A penalty value is introduced for each window. A given interval in a particular window spelling is penalized more heavily if it is an interval that occurs less frequently in the major & minor scales.

First of all, the proposed algorithm computes a pitch letter name for each note and pitch class pair assuming the pitch class is the tonic at the point in the piece where the note occurs. This algorithm introduces another window technique that computes the number of times that the related pitch class occurs within a context surrounding a particular note in a certain window size. This technique is kind of the combination of the pitch spelling algorithms. I think that the windowing technique is inspired from Cambouropoulos work and the pitch classes approach coming from the other researchers’ approaches.

It is seen that ps13 got the best results when the same test set is used. But the important point is the window size of this algorithm effects the results. The author says that window size can be adjusted to get better results. But for each musical piece these values should be adjusted differently for getting good results. So this algorithm gets the best results for this particular test set, but for another piece, without adjusting the window size, its performance could decrease.