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Music perception understanding is a prerequisite to implementing computer aided musical analyses

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Background
Music theorists have long dreamed of applying the speed and computational powers of computers to complex analyses of music. Currently available tools such as HUMDRUM have demonstrated the potential benefits of a flexible, malleable tool to assist with tedious analytical tasks. Even if sizeable technical hurdles for implementing advanced music analysis systems are overcome, it remains unclear whether accurate analyses based on music theory rules are possible without accounting for the role of the perceptual system in music listening.
Aims
To demonstrate the schism between a programmed set of music theory rules and actual music perception.
Method
By replicating several standard analyses using automated software designed for general purpose analytical tasks, it is possible to view the role of the perceptual system by juxtaposing the results of rigid, rule-based search schemas with sensible human-performed analyses.
Results
There are many similarities between human and computer analyses, confirming generally accepted rules for analysis contain much merit. However, in several cases anticipated patterns represent but a fraction of the total patterns located through musically reasonable rules.
Conclusions
The automation of any non-trivial analytical tasks cannot be carried out via blind adherence to traditional music theory rules. While there are tremendous future possibilities for computer assistance in the process of music analysis, progress in such a complex task can only proceed with a more sophisticated understanding of the role of the perceptual system in musical communication.

Key words: Computer aided analysis, Music theory, Post-tonal music

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