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A Probabilistic Model of Hierarchical Music Analysis

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Abstract

Schenkerian music theory supposes that Western tonal compositions can be viewed as hierarchies of musical objects. The process of Schenkerian analysis reveals this hierarchy by identifying connections between notes or chords of a composition that illustrate both the small- and large-scale construction of the music. We present a new probabilistic model of this variety of music analysis, details of how the parameters of the model can be learned from a corpus, an algorithm for deriving the most probable analysis for a given piece of music, and both quantitative and human-based evaluations of the algorithm's performance. In addition, we describe the creation of the corpus, the first publicly available data set to contain both musical excerpts and corresponding computer-readable Schenkerian analyses. Combining this corpus with the probabilistic model gives us the first completely data-driven computational approach to hierarchical music analysis.

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