

Keynote: Extracting meaningful auditory objects from music signals: methods and applications

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Abstract. Music signals are highly structured data items where different elements combine at various levels of abstraction to create the desired result. This structure is not appropriately taken into account in conventional signal analysis methods, where the overall signal is characterized by calculating straightforward statistical measures in successive time frames. This talk introduces methods for breaking up a complex music signal into its constituent musical elements that have more well-defined "semantic" roles than the entire mixture signal. Methods are discussed for analyzing the vocals and lyrics of music pieces, extracting the melody, the bass line, and chords from music, recognizing musical instruments in complex music, and analyzing the rhythm and sectional form of music. Particular emphasis is placed on novel end-user applications that are enabled by these advanced signal analysis approaches. The applications include new interfaces and techniques for music information retrieval, intelligent music processing tools, and informative music playback interfaces where links to other music pieces are shown at localized segments of the played piece. Techniques for implementing these applications are discussed.