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Title:

Progress in Tonality Calculation

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Abstract:

The perception of tonal sounds is one of the most important psychoacoustic sensations for product sound quality and environmental noise. In the past, a lot of work has been carried out to automatically quantify tonal sound events. This work resulted in several methods for quantifying tonalities, such as Tone-to-Noise Ratio, Prominence Ratio or the Psychoacoustic Tonality, which was standardized in the 15th Edition of the ECMA-74 standard. The Psychoacoustic Tonality is based on a hearing model which emulates the processing of human hearing. Thus, it is able to predict human perception better than other methods which are only partly based on psychoacoustics.

Since the publication of the Psychoacoustic Tonality, the algorithm is constantly being improved. In this paper, the latest progress in the calculation of the Psychoacoustic Tonality is presented. The new developments include improvements for low frequencies, identification of tonal components and a higher frequency resolution of the detected tonalities.

These improvements will likely be included in future editions of the ECMA-74 standard.

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