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Title:

Fast Calculation of the Psychoacoustic Metric Tonality Using a Surrogate Neural Network Model.

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Abstract:

Psychoacoustic metrics are extremely helpful for the optimization of sounds, in which a sound can be refined to achieve ideal metric values, leading to its perception as high-quality. However, such an optimization process can be time-consuming if the metrics themselves are slow to compute, potentially hampering the workflow's efficiency. One solution is to replace the metric calculation with a surrogate model, like a neural network, to accelerate the process. In this work, we explore the feasibility of creating a surrogate model for the Tonality metric described in ECMA 418-2, using a neural network. We focus on investigating if it is possible to achieve significant speed-ups in calculation without appreciably compromising accuracy, both in the metric prediction as well as in reproducing previous listening test results.

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