

NOVEM 2025 (8th conference) 6 - 8 May 2025

Place:

Garmisch-Partenkirchen, Germany

Title:

Psychoacoustic future begins

Author:

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Abstract / Keynote:

The psychoacoustic future is upon us, and it will revolutionize the way we understand our perceptions of sound. The Sottek Hearing Model provides a comprehensive framework for understanding the nuances of sound perception, including such aspects as loudness, tonality, roughness, fluctuation strength, sharpness, and impulsiveness.

These psychoacoustic indicators are typically employed to construct sound quality metrics for the analysis of complex sound scenarios, such as those encountered in soundscape applications. Furthermore, sound quality can influence the health and well-being of individuals within a specific environment. It is therefore of the utmost importance that the definition of good sound quality in a given context is as precise as possible.

The lecture provides an overview of the various psychoacoustic indicators based on the Sottek Hearing Model. The principal model was first published more than three decades ago as part of a doctoral thesis. Over the past few decades, the model has been refined and recently standardized in the international standard ECMA 418-2. This standard addresses several psychoacoustic parameters, including a new approach to time-varying loudness based on a nonlinear combination of partial tonal and noise loudness. This is the preferable approach because the loudness of tonal components (i.e., tonal loudness) may have a more pronounced impact on loudness perception than the loudness caused by other components (i.e., noise loudness). Other standardized parameters include tonality and psychoacoustic modulation analyses. These comprise roughness, which is employed to evaluate rapidly modulated sounds (standardized in ECMA 418-2), and fluctuation strength, which is an adapted model for slowly modulated sounds (planned for standardization in December 2024). Moreover, an outlook is provided on additional parameters that are currently under consideration for future standards, including sharpness and impulsiveness.

Furthermore, the presentation will offer insights into the significance of psychoacoustic parameter values in the development of sound quality metrics for various applications.

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