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Evaluation of Predicted Listening Effort for Active Noise Cancelling Headsets

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Comparing and benchmarking different active noise cancellation (ANC) headsets objectively is a challenging task. No standardized testing methods for such devices are available so far and measurements derived from other fields of communication may not fit the domain of ANC.

While the pure noise reduction capability of an ANC device may be assessed with simple metrics, the usage in communication scenarios (receiving direction or external talker) still is cumbersome; on the one hand, speech quality and intelligibility of the desired talker has to be preserved while reaching utmost noise cancellation performance at the same time. Recently, the auditory and instrumental assessment of Listening Effort (LE) became more popular for such applications.

This contribution introduces a preliminary model for the prediction of LE, which is suitable for binaural recordings. Four commercially available ANC headsets were evaluated in typical applications. The analysis is based on speech signals, realistic noise conditions and binaural recordings obtained with a head and torso simulator (HATS). Results of the prediction model on this measurement series are presented and discussed.

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