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Title:

Measuring Motion-to-Sound Latency with Motorized HATS

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Abstract:

In binaural spatial audio reproduction, improved quality of experience can be achieved by adapting the rendering to the head orientation. When the user turns their head, the acoustic scene appears fixed in space, which improves perceived externalization and immersion. A crucial system design criterion is a low latency between head movement and adapted sound at the ears. To evaluate the performance of a head-tracked rendering system, it is therefore necessary to measure motion-to-sound (M2S) latency.

This paper proposes and evaluates a method for measuring M2S latency using a motorized head and torso simulator (HATS). Interaural features of the ear signals are evaluated to identify the relation between physical reality and perceived sound field. The method can be applied to any given head-tracked spatial audio system in a black-box manner without requiring a priori information or modification of the rendering algorithm.

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