

AL/AMAS ABS

SonoHaptics

without relying on visual feedback.

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An Audio-Haptic Cursor for Gaze-based Object Selection in XR

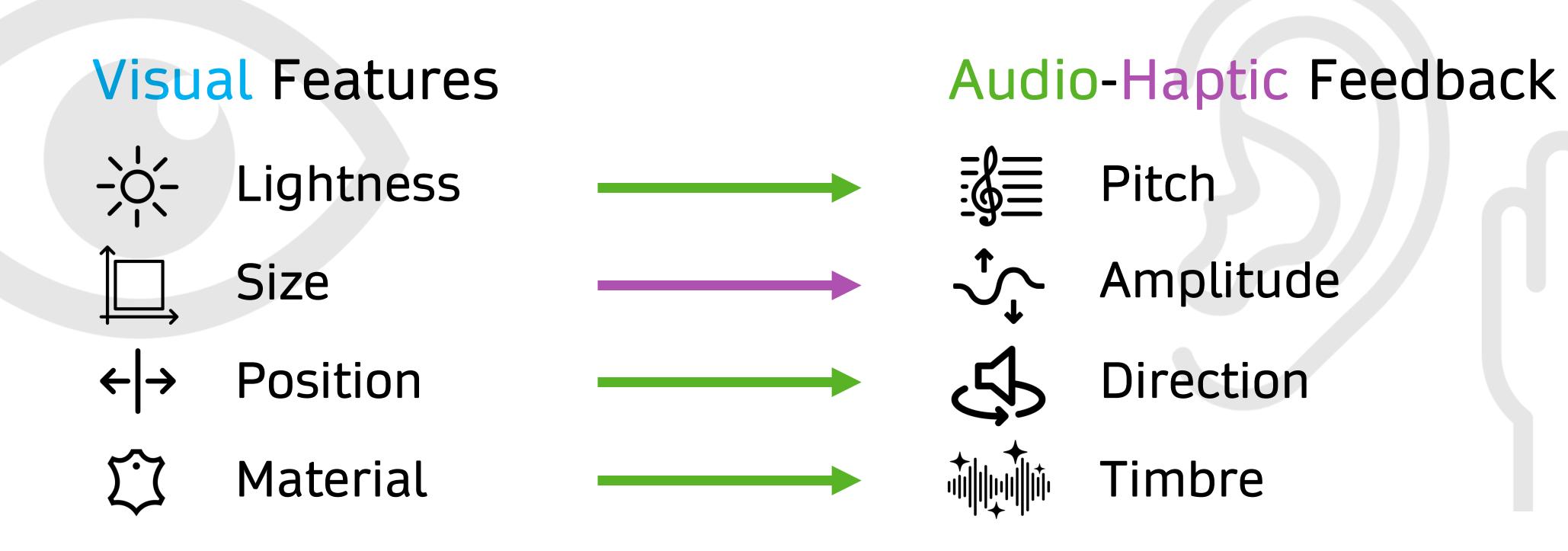
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We present a computational approach to generate **audio-haptic feedback** for accurate gaze-based object selection, even in cluttered and occluded environments with small objects,

Our perception study shows that people associate lighter object color to higher audio pitch and larger size to stronger vibration amplitude, exhibiting cross-modal correspondences.



SonoHaptics automatically generates distinct audio-haptic feedback for each object in a scene. We developed **regression models** to map lightness to audio pitch and size to vibration amplitude. We also use **directional audio** and **material-based timbre** for naturalistic mappings.

SonoHaptics provides **local amplification** to emphasize differences between nearby objects, improving selection accuracy for small objects compared to no feedback or static feedback. It showed no statistically significant difference from text-to-speech in accuracy and selection time, while significantly reducing selection time for highly similar objects.