TECHNOLOGY OFFER

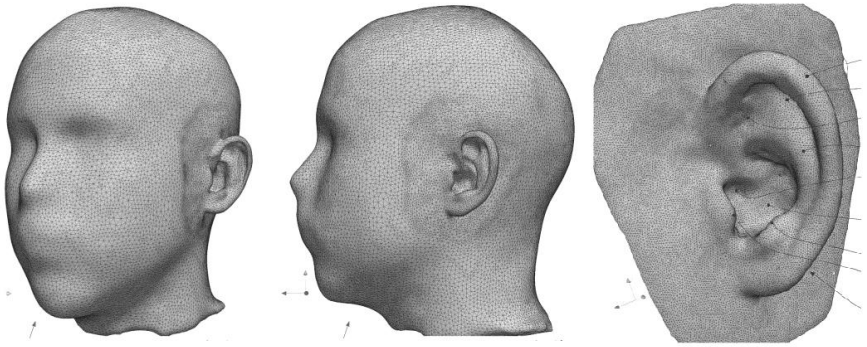
PERSONALIZED 3D SOUND

The invented method aims at providing personalized head-related transfer functions (HRTFs) for spatial sound reproduction via headphones. The method consists of three steps: creating a setup to visually capture listener's head and ears; calculating a 3D representations of the head and the ears, i.e., 3D meshes; merging the meshes to obtain a single 3D representation of the listener; and calculating the personal HRTFs based on the combined mesh.

BACKGROUND

When sound arrives at the ear drums of a listener, the sound is filtered by the head, ears, and torso of the listener's body. This filtering can be described by HRTFs, which relate the sound spectrum of the original sound to the sound spectrum of the sound arriving and perceived at the ear drums. Generally, HRTFs depend on the spatial position of a sound source and the listener's anatomy; in fact, HRTFs heavily depend on the particular geometry of the body parts, primarily the geometry of the auricles and the head, and thus they are strongly listener-specific.

HRTFs are used in filters to create spatial audio via headphones. The challenge of headphone-based sound reproduction, especially for realistic VR/AR applications, is the acquisition of accurate listener-specific HRTFs.



TECHNOLOGY

Our method combines numerical HRTF calculations with acquisition of visual information about the listener's geometry. The invention is based on the fact that the 3D listener's model has different requirements for the ears than the head geometry.

ADVANTAGES

- Basic technology for services to personalize audio
- Accurate HRTFs for realistic spatial sound

Further information:
https://www.vrvis.at/forschung/forschungsprojekte/fruehere-projekte/locaphoto

REFERENCE
M001/2017

APPLICATIONS
Virtual reality
Augmented reality
Binaural audio
Personalized headphones

DEVELOPMENT STATUS
Verified implementation
Proof of concept

KEYWORDS
Head-related transfer functions (HRTF)
Audio personalization
Spatial audio

IPR
EP, US & CN applications pending
Positive International Search Report available
WO 2019/179929 A1

OPTIONS
R&D - Cooperation
License Agreement, Sale

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