Aalto University
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Communication acoustics
Ch 18: Other audio applications
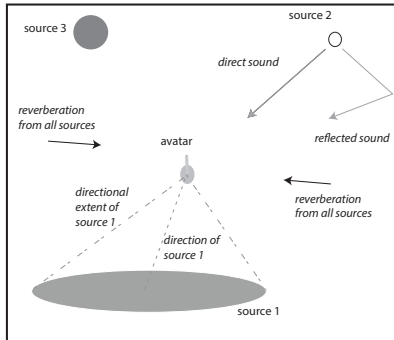
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Virtual reality and Game audio engines

- Perception of physical presence in locations elsewhere in the real world or in imaginary worlds is created for a subject

Virtual reality and Game audio engines

Tasks for audio engine

- Reproduction or synthesis of source signals (from memory or by models of physics)
- Synthesis of source directivity
- Simulation of the direct sound path
- Virtual source positioning
- Spatial extent of virtual sources
- Room effect simulation
- Distance rendering

Sonic interaction design

Methods that use sound to convey information, meaning, and aesthetic or emotional qualities in interactive contexts are exploited

- Perceptual, cognitive, and emotional study of sonic interactions
- Product sound design
- Sonification

Heavily related to product sound quality, though in this field also the product development is considered

Music information retrieval

Music information retrieval (MIR) is the area where the strategies for enabling access to music collections, both new and historical, are developed in order to keep up with the expectations of search and browse functionality.

- Analyze the structures in music as humans would do
- Use the information, or metadata in some applications
- Easy browsing of music libraries
- Professional use: Music performers, teachers, musicologists, copyright lawyers, and music producers

Miscellaneous applications

- Beamforming or spatial filtering
- Blind source separation
- Dereverberation
- Watermarking
- Audio forensics
- Auditory displays
- Semantic audio

References

These slides follow corresponding chapter in: Pulkki, V. and Karjalainen, M. Communication Acoustics: An Introduction to Speech, Audio and Psychoacoustics. John Wiley & Sons, 2015, *where also a more complete list of references can be found*.

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