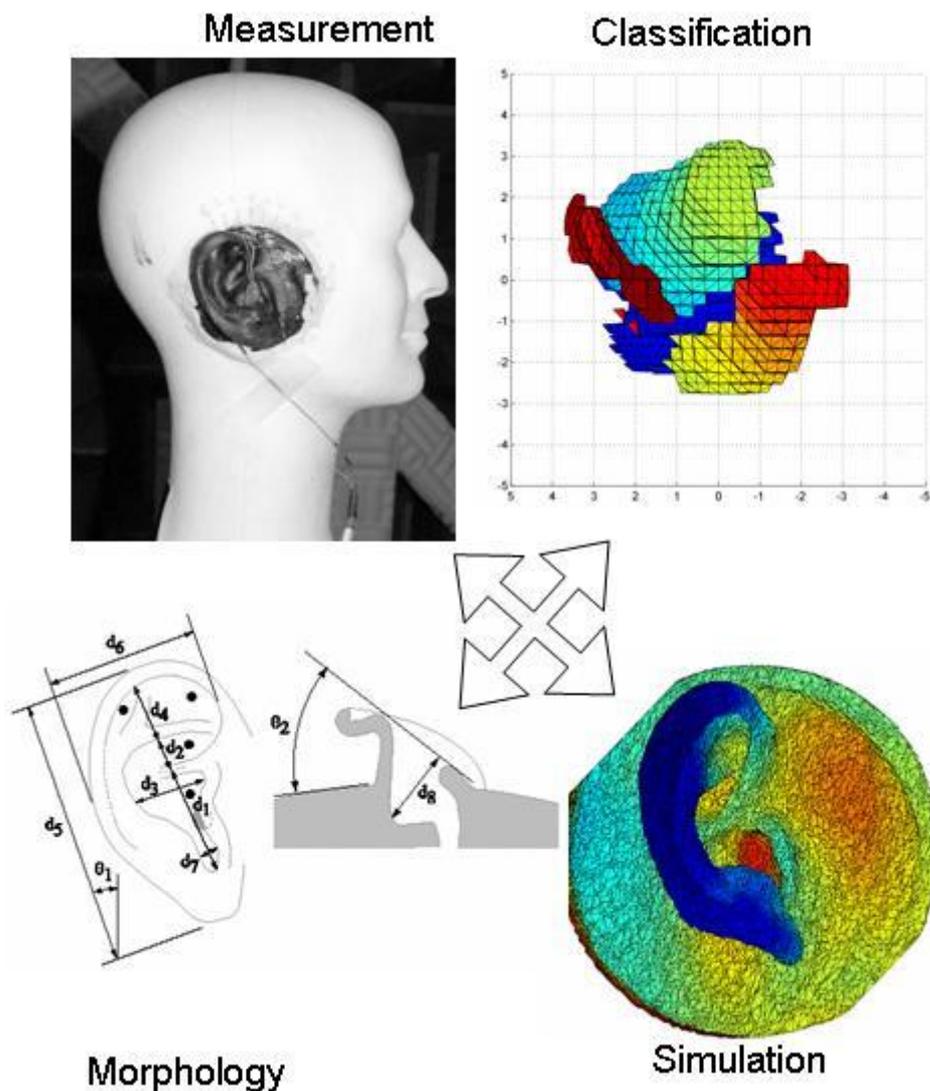


Spatial Hearing research fields

HRTF analysis

Understand of human’s ability to spatially locate sound sources and to quantify spatial attributes of the acoustic environment are inherently linked to the Head-related Transfer Function (HRTF). One of the more basic components of the HRTF is the Inter-aural Time Difference (ITD). Virtual audio applications rely on use of the HRTF to present 3D audio over headphones. Studies regarding the HRTF and ITD have focused on the following concepts:

- Relationship to individual specific morphology
- Inter- and Intra-subject variability
- Estimation and prediction methods
- Boundary Element Method simulation

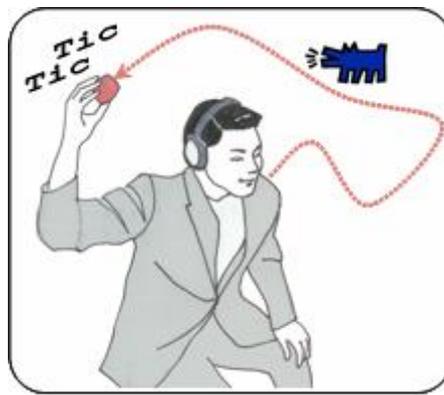


Perceptual classification of HRTFs

Using several collections of measured HRTFs, we are interested in understanding why some HRTFs work for some people and not others. Studies underway include comparisons of signal and morphological data on numerous subjects.

Plasticity of spatial hearing

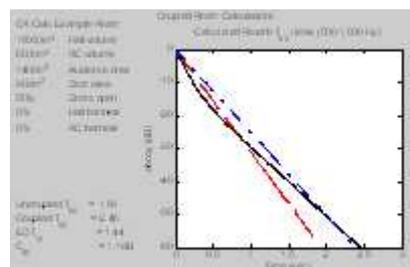
In contrast to studies involving the HRTF, and its adaptation for the optimization of spatial rendering, this project is concerned by the capacity of the human system to adapt to foreign HRTFs. A protocol has been devised for rapid adaptation. It remains to be verified for a large number of subjects.

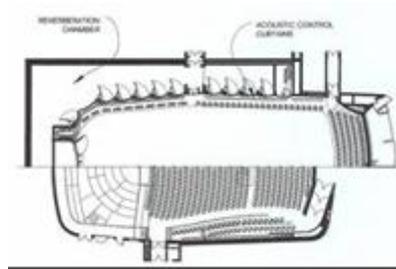


Room acoustics

Coupled volumes acoustics

The use of coupled volumes, or reverberation chambers, in concert halls has been a slowly emerging approach for several years. However it is only in recent years that this type of architectural systems are built efficiently to provide a real acoustical effect. Though reverberation chambers are extreme cases for coupled volumes, there are also aspects of coupled volume with stage house in theaters and transepts of churches. Directions of research are concerned with the improvement of prediction algorithms, assistance in design, qualification and quantification of the coupled response (creating a descriptor for the coupled volume), and perceptual aspects of a coupled response in a musical context.





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