EXAMENSARBETARE SÖKES!

THE DIRECTION OF SOUND

Vadstena klosterkyrka. Mittskeppet. Photo: Bernt Fransson

OBJECTIVE

The human auditory system is adapted to extract a lot of spatial information from a sound field, determining for example the location of a sound source or properties of the surrounding space. Many of the cues used for this information relate to the direction at which the sound waves impinge on the human head and ear. In order to produce accurate and immersive simulations of sound fields in complex environments, this spatial information must be preserved throughout the simulation process.

APPROACH

A ray-tracer for acoustical simulations has been developed at the Division of Acoustics, LTH. It accurately computes the sound level for a given source and listener configuration, but the spatial information is not currently retained. This Master's Thesis aims at extracting this data from the simulation.

APPLICATION

This project is part of a larger collaboration with researchers from universities around Sweden, which aims at producing a historically accurate and realistic VR simulation of Vadstena Abbey Church. Due to the architecture in the church, the directional aspects of the sound field is especially important and this thesis is a vital part in the project.

The results of this project could be used in a large number of applications, both in the field of immersive computer technology (such as Virtual Reality or computer games) and design.

STUDENT BACKGROUND

The student should feel confident in mathematics and programming. Some experience with CUDA is advantageous.

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TAxs09 (2018)