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# GASTVORTRAG

## Robert HERZOG

MPI Informatics, Saarbrücken



### “Exploiting Coherence in Lighting and Shading Computations“

#### Abstract:

Computing realistic lighting and shading in virtual scenes becomes increasingly attractive even for real-time applications nowadays. It delivers important cues in the perception of 3D virtual scenes, which is important for material and architectural design. While the computer simulation of realistic lighting is well-studied and often considered as solved, computing it efficiently is not.

In this talk I am going to present two methods for speeding up computationally expensive shading and lighting computations. In the first part I present an approach towards computing high-quality global illumination based on a combination of the lightcuts algorithm and radiance caching. And in the second part of the talk I introduce a method more suited for real-time rendering on the GPU, which exploits both spatial and temporal coherence of the pixel shading. More precisely, this algorithm combines adaptive motion-compensated filtering over time and geometry-aware upsampling in image space in a unified super-resolution framework. And finally, I will give a brief outlook at our current work, which extends the spatio-temporal upsampling framework to streaming with real-time compression in the context of remote rendering.

#### Biography:

Robert Herzog works currently as a post-doctoral researcher at the MPI Informatics in Saarbrücken, Germany. The main areas of his research are global illumination and perceptual rendering, with current focus on streaming and compression. He received his PhD in Computer Science at the MPI Informatics in Saarbrücken and studied at the University of Saarland where he obtained his Master of Science degree in 2006. He studied Computer Science at the TU Braunschweig, Germany, resulting in a Vordiplom in Computer Science, and continued at the University of Teesside, England, where he received his B.Sc. in 2003.

**Datum:** 22. Oktober 2010 10:30 Uhr s.t.

**Ort:** TU Wien, Favoritenstr. 9, Stiege 1, 5. Stock, Seminarraum E186

