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TECHNISCHE UNIVERSITÄT WIEN
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AUSTRIAN COMPUTER SOCIETY

laden gemeinsam zum

GASTVORTRAG

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"Quantitative and Qualitative Visibility"

Abstract:

Visibility determination has been a central problem in computer graphics since the very beginning of the field. It is required for many aspects such as the detection of visible and occluded surfaces to speed up image generation, computing shading and shadowing from light sources, the simulation of global illumination, and even in acoustics simulation.

This talk focuses on visibility determination in interactive rendering applications.

First, an alternative to the hardware occlusion query mechanism of GPUs for quickly computing quantitative visibility is presented. This technique is more flexible and allows determining fine-granular visibility, i.e. for image regions, primitives, and geometry instances.

The second part of the talk addresses the question how this visibility information can be used beyond the culling of occluded geometry. A novel method for classifying "visibility configurations", takes the distribution, or structure, of visibility across surfaces into account. The possibility to identify and differentiate between these configurations provides valuable information for many algorithms relying on visibility determination. This method can be combined with findings from perceptual rendering methods and initial results demonstrate promising applications in real-time and off-line rendering.

Biography:

Carsten Dachsbacher is an Assistant Professor at the Visualization Research Center of the University Stuttgart, Germany. Before he received his diploma in computer science and his PhD in computer graphics, both from the University Erlangen-Nuremberg, Germany. He was researcher at INRIA Sophia Antipolis, France, within a Marie-Curie Fellowship. His research focuses on real-time computer graphics, interactive global illumination, and perceptual rendering, on which he published several articles at various conferences and journals including SIGGRAPH, I3D, EG, EGSR. He has been a tutorial speaker at Eurographics and the Game Developers Conference and reviewer for various conferences and journals.

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