TECHNISCHE UNIVERSITÄT WIEN
Institut für Computergraphik und Algorithmen
Arbeitsbereich für Computergraphik

zentrum für virtual reality und visualisierung forschungs-gmbh

OESTERREICHISCHE COMPUTER GESELLSCHAFT
AUSTRIAN COMPUTER SOCIETY

laden gemeinsam zum

GASTVORTRAG

Nicholas Waldin

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“Color and Perception of transparent surfaces and modifications to opacity in Paraview’s volume rendering”

Abstract:

There are two parts to this talk. The first gives an overview of my Master’s thesis, which is about visualizing stream surfaces. The second is about modifications and additions to Paraview that I did as part of my internship at the Swiss National Supercomputing Center.

Stream surfaces are used to visualize snapshots in time of fluid flow. However, as useful as they are, they also have significant problems. In particular, humans have a difficult time understanding these surfaces and often make errors.

The thesis investigated the hypothesis that artificial coloring can help viewers perceive stream surfaces. I present three algorithms for deciding on and placing colors based on a surface’s curvature or the use of simulated viewpoints. I will also discuss a user study that I designed and carried out that tested how users perceive images of surfaces that were created with these algorithms.

My work with Paraview involved improving the control of opacity in volume rendering. When using transfer functions to determine opacity in volume rendering, it can be difficult to get a good visualization with just one transfer function. Therefore, it can be useful to use two different transfer functions based on different aspects of the data, such as scalar and gradient values. I will describe and demonstrate a modification to Paraview’s GUI interface that allows users to use two different transfer functions and a new feature in Paraview that allows users to specify a two dimensional transfer function.

Biography:

Nicholas Waldin studied visual computing at the ETH Zurich, with a background in numerical computing and machine learning. His Master’s thesis is on illustrative rendering of transparent surfaces. Afterwards he completed an internship at the Swiss National Supercomputing Center, where he worked on modifying Paraview.

Datum: 25. April 2014, 10:30 Uhr s.t.
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