

Visualization Seminar — three invited guests!!

Monday, May 5th, 2008, 2pm–4pm,

Auditorium 2142, Høyteknologisenteret i Bergen, Thormøhlensgate 55, data blokk, etasje 2



Holger Theisel

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Smoke Surfaces for Interactive Flow Visualization

Smoke rendering is a std. technique for flow visualization. Most approaches are based on a volumetric, particle-based, or image-based representation of the smoke. Here semi-transparent streak surfaces are introduced as alternative representation. In order to make streak surface integration fast, we avoid expensive adaptive re-triangulations by coupling the opacity of the triangles to their shapes. Thereby, the surface shows a smoke-like look even in rather turbulent areas. Furthermore, we show modifications of the approach to mimic smoke nozzles, wool tufts, and time surfaces. The technique is applied to a number of test data sets.

Height Ridge Computation and Filtering for Visualization

Motivated by the growing interest in the use of ridges in scientific visualization, we analyze two height ridge definitions. We propose a raw feature definition leading to a superset of the ridge points. The set of raw points has the correct dimensionality, and it can be narrowed down to both other forms by using Boolean filters which we formulate. While the straight-forward computation of height ridges requires explicit eigenvalue calculation, this can be avoided by using an equivalent definition of the raw feature set. As an alternative to the aforementioned filters, we propose a new criterion for filtering raw features based on the distance between contours.

Interactive Visual Steering – Our Experiences

Interactive steering with visualization has been a central goal of the international visualization research community for twenty years. Still, we rarely ever see it applied to real-world problems. Here we describe our recent experiences with a realization of a tightly coupled steering loop, integrating simulation and interactive visual analysis in a prototyping environment for automotive industry system design. Very positive feedback from domain experts proves the usefulness of the approach.