Graphics Research in Tübingen

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The main areas of graphics research in Tübingen are the following:

Graphics hardware

Logic-embedded memory is an emerging technology that combines high transfer rates and computing power. We exploit these capabilities in a family of graphics chips which allow to remove the bottlenecks of known architectures. Performance improvements of two orders of magnitude seem to be possible.

High speed Volume Rendering is another topic for hardware activities. Two approaches for realtime solutions fitting in a PC or desktop workstation will be presented in the talk.

Geometric modeling

Since 1991 a class hierarchy OBMS (Object Based Modeling System) for curve and surface modeling is under development. In the past two years we concentrated on conversion algorithms between free form surfaces and piecewise linear approximations. A mesh generator having superior characteristics with respect to performance and error control has been implemented in OBMS.

Global illumination

RayVis and Radiolab are two object-oriented implementations with the goal of highperformance, versatility and flexibility. A virtual visit of Castel del Monte in Apulia demonstrates the capabilities of the system.

Scientific Visualization

The work here is trigged by the needs of a large project in computational physics. First results are the visualization of SPH (smoothed particle hydrodynamics) simulation data and Relativistic flights. Both will be shown in short video sequence.

Other activities concentrate on the visualization of knitwear and the simulation of the draping of textiles. Examples for the progress made so far will be given in the talk.

MEDStation

The medstation project integrates the results of the other activities. We developed a PACS Workstation with an integrated CASE-Tool consisting of four major parts:

A ready-to-use workstation provides user interface, base functionality and applications for a broad community of clinical users. Together with the *development interface,* it serves as a common framework for application development. A *development toolbox* and a sophisticated *object class library* allow for efficient implementation of research ideas and consistent integration of new applications into the PACS workstation.

For more information visit

http://www.gris.informatik.uni-tuebingen.de