GERMANY Rostock

Rostock University

Institute of Computer Graphics
Rostock University
Albert-Einstein-Str. 21
D-18059 Rostock, Germany
☎ +49-381-498 3427
🖷 +49-381-498 3426
✉ schumann | dj@informatik.uni-rostock.de
wwwicg.informatik.uni-rostock.de

Core Competence

Scientific Visualization, Information Visualization, Physically based Animation.

Head of the Institute
Dietmar Jackèl

History

Computer Graphics activities started in 1969, when a small group of scientists and students from the "Mathematics Department" founded a "Digital Graphics" group. In 1973, the first 3D interactive graphics system, "DIGRA73", was presented. This system could already handle free-form surfaces and solids, and it offered its own graphics programming language. In 1978, the "Digital Graphics Group" became affiliated with the computer center of the University. At that time, the graphics group had about 30 members. These members formed the core of the 1984 founded "Computer Science Department". In 1990, during the restructuring of the university, the "Institute of Computer Graphics" was established as one of four institutes of the re-founded "Computer Science Department".

Rooms and Locations

The institute occupies some 280 square meters and is located in the third floor of the informatics department building. This includes four special labs

for visualization, computer animation, and multi-media.

Staff

3 Professors: Dietmar Jackèl, Heidrun Schumann, Bodo Urban (associated).
1 Assistant professor: Holger Theisel (currently Guest-Lecturer (DAAD), University of Havanna, Cuba),
9 Research assistants: Hermann Birkholz, Stefan Jeschke, Bernd Karstens, Thomas Nocke, Carlos Perez Risquet, René Rosenbaum, Randolf Schultz, Petra Schulze-Wollgast , Christian Tominski.

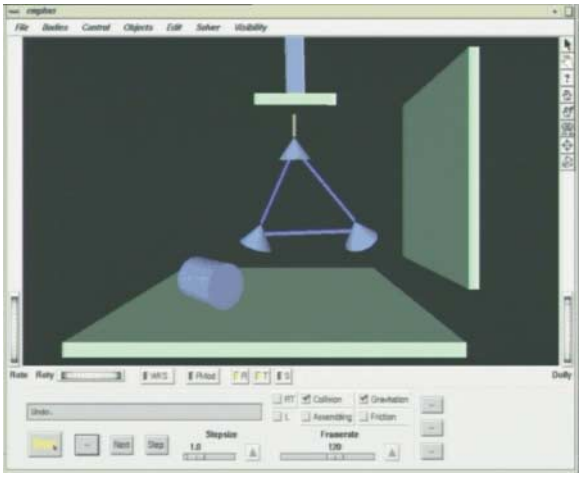
Financing

As institute of the Rostock University the basic staff, the rooms and other infrastructure are financed by the government of Mecklenburg-Vorpommern. Most of the research assistants and some additional staff, as well as most special equipment are paid from projects funded by the DFG, BMBF, industry, and the government department for education M/V.

Current Structure and Important Partners

The ICG consists of two research groups. Heidrun Schumann is head of the Computer Graphics Research Group and Dietmar Jackèl is responsible for the Interactive Graphics Systems Group. The ICG

closely cooperates with the "Fraunhofer Institute for Graphical Data Processing" (IGD) Rostock. The research and education activities of both institutes are focused on a wide range of computer graphics and visualization technology. Bodo Urban, who is associate professor of the ICG, is head of the IGD.



Current Research

The main research area of the Computer Graphics Research Group is the visualization of large data sets with temporal and spatial dependencies. Several innovative visualization methods have been developed. Furthermore, for several application scenarios prototypes have been realized. An example is the visualization of medical data by means of a Medical Teleconsulting System (TeCoMed). Furthermore, we develop special techniques for the visualization of climate data. Based on these works, concepts for problem-related visualization methods have been developed. Furthermore, a scalable framework for information visualization has been developed. Our system includes dynamic hierarchy computation and user-controlled refinement of those hierarchies used for structuring multi-dimensional information spaces and several new visualization techniques. Another subject is the image transmission for "mobile environments" using "regions of interest" and "levels of detail". A new demand-driven image transmission method, based on a novel wavelet decomposition scheme, was developed as well as a new "Focus & Context" technique image display and transmission. A research-topic is also the analysis of the correlation between the disciplines CAGD and Scientific Visualization. The objective of these research activities are investigations if elements and ideas of one discipline can be used for the other and vice versa. In addition to this, Ph.D. students are engaged in problems such as "Rendering with Imposters" and "Importance Driven Rendering". The development of physical-based computer animation methods is one of the research priorities of the "Interactive Computer Graphics Research Group". In the focus of the research interest is the forward simulation with constraints. As a result of this activities, a physical-based computer-animation system (EMPHAS) has been developed, that allows interactive modeling of animations by means of a "tool box" of modular control techniques, consisting of a set of holonomic constraints, velocity constraints, controller, force fields and event-based procedures.

Important Recent Project Participations

- "MoVi": Mobile Visualization (DFG-research group with TH Darmstadt, FhG-IGD Rostock, ZGDV Rostock, data base group of Rostock University, 1994-2000)
- **"**SInVIS**"**: Scalabla Information Visualization
- "Koan": Kontextual Information Visualization (Project with SIEMENS Munich, 1997- 2000)
- "VISIR": Visualisierung und Interaktion in strukturierten Informationsräumen (funded by state ministry of education M/V, 1998-2000)
- **"**TeCoMed**"**: – Teleconsulting system for monitoring the current health situation in the state MV (DFN Project funded by BMBF with Institute of Medical Informatics and Biometrics of Rostock University,1996-1998 and Project Cooperation in M/V, 2000-2001)
- **"**JUDIT**"** - JPEG2000 - User Defined Image Transmission (Project in Association with
- "SIEMENS" München, 2000 - 2001)
- **"**VISANA**"** - visual analysis of climate data (Project in Association with Potsdam Institute for Climate Impact Research, 2001-2002)

Important Recent Industrial Partners

Siemens München, ANOVA Rostock, Gecko Rostock, Philips Hamburg.

Future of the Lab

The close co-operations with our current partners will be continued. Moreover, we will continue our work in the field of visualization. In the context of the design of advanced multi-media user-interfaces, our future research activities will be extended for combining "voice mimic" with emotionally controlled "visual speech" approaches.