Budapest University of Technology and Economics

Computer Graphics Group of the Department of Control Engineering & Information Technology
Budapest University of Technology & Economics
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Core Competence
Global Illumination, Medical Visualization, Process Visualization, Virtual Reality

Head of the Institute
László Szirmay-Kalos

History
The computer graphics group was formed 15 years ago to carry out research and development projects and also to teach computer graphics and object-oriented software development courses. At that time, the group focused on graphics hardware and API development, then it turned its attention towards geometric modeling, computational geometry and to rendering. In addition to rendering, we are opening new directions in medical +visualization, virtual reality and games. The group participated in the organization of the Eurographics 97 conference and local graphics conferences as well.

Rooms and Locations
The group occupies the B320 room and B409 lab of the Informatics Building and uses the general facilities of the department.

Financing
Professors and most of the Ph.D. students are paid by the Ministry of Education. Equipment, travelling and additional personal payments are provided by various research projects financed by the Hungarian National Research Fund (OTKA), ITKA-KÉPI. Companies, including +Intel, Alias|Wavefront, Hewlett-Packard, etc. also sponsor the research work. The group also carries out industrial contracting projects and some Ph.D. students work for companies in part time.
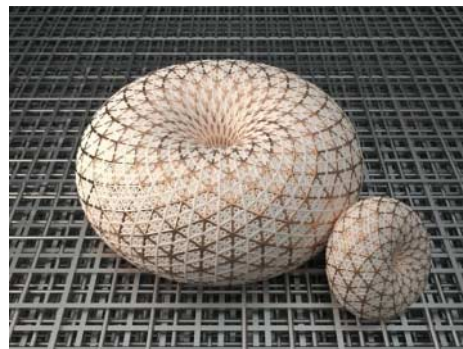
Current Research
Current research activities concentrate on the following topics: global illumination algorithms (interactive global illumination with ray-bundles, Metropolis light transport), physically plausible BRDF models, interactive rendering of volumetric data, visualization of industrial processes, computer graphics hardware, virtual reality for training.
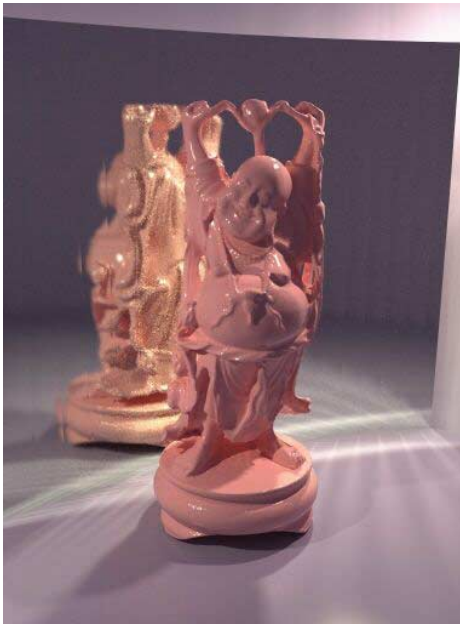
Staff

1 Professor: László Szirmay-Kalos
1 Adjunct professor: Tamás Horváth
1 Assistant professor: Balázs Csébfalvi
8-10 Assistants and Ph.D. students: György Antal, Ferenc Csonka, László Kovács, Ali Abbas Mohammed, László Szécsi, Balázs Benedek, Gábor Szijártó, József Koloszár, Barnabás Aszódi, Szabolcs Czuczor
*1-3 Contract researchers*: Csaba Kelemen

Important Recent Industrial Partners

Graphisoft R&D, Intel Co., Hungarian Railways, Hungarian Nuclear. Power Plant in Paks, Veranim Bt

Important Recent Project Participations

- Photo-realistic image synthesis in CAD systems (Graphisoft, www.iit.bme.hu/~szirmay/ikta)
- Performance analysis and hardware support for global illumination algorithms (Intel)
- Process visualization system for railway traffic control (Hungarian Railways)
- Interactive virtual colonoscopy (Radiology Institute, Budapest)
- Virtual reality training (Nuclear Power Plant in Paks)

Current Structure and Important Partners

The Computer Graphics Group is a unit in the Department of Control Engineering and Information Technology. In addition to the industrial partners, the group has built relations with the Computer Graphics Institute of the Vienna University of Technology, the Department of Informatics and Applied Mathematics of the University of Girona, and the University of Maribor.
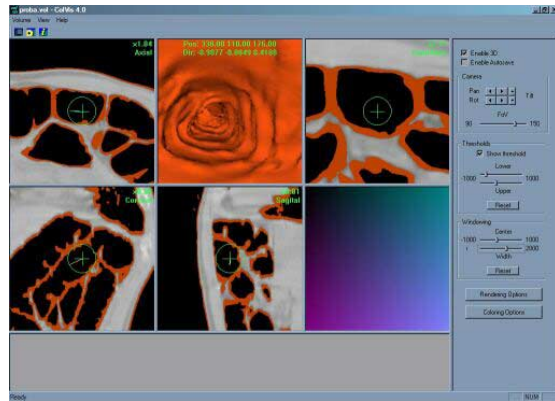
Future of the Lab

While the graphics group intends to continue its research activities in global illumination rendering, it will look for its possible applications in games, film-production and virtual reality.