ETH Zürich

ETH Zürich
Computer Graphics Laboratory
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Core Competence

Point based graphics,Collaborative virtual reality, 3D Video processing, Physically based modeling and animation, Scientific Visualization, Entertainment technology

Head of the Institute
Markus Gross

History

The Computer Graphics Laboratory (CGL) was founded in 1994 by Markus Gross and has continuously widened its scope and activities since then. After years of growth, Bernt Schiele joined ETH in 1999 and established the Perceptual Computing and Computer Vision Group (PCCV). The two research units form a center of excellence in Visual Computing within the Computer Science Department at ETH. Both groups currently belong to the Institute of Scientific Computing, one of the 4 major research units of the CS Department.

Staff

2 Professors
1 Senior research fellow
3 Senior research associates
18 Scientific assistants
1 Administrative assistant

Rooms and Locations

The CGL and PCCV are located in the heart of Zurich, close to Zurich central station and ETH main building. They hold about 400 square meters of office and lab space.

Financing

Most of the lab's infrastructure is being financed by ETH. In addition, the CGL holds grants from the ETH Research Commission, the Swiss National Science Foundation, the Swiss Government, Mitsubishi Electric Research Laboratories (MERL), Schlumberger Cambridge Research, and others.

Current Structure and Important Partners

The Department of Computer Science is currently in the process of reorganization including the creation of new research units and facilities. Specifically, we are forming an Institute of Visual Computing. The new Institute will accommodate the CGL, the PCCV, as well as other research units in Virtual Reality and Human Computer Interaction. The CGL is structured into several small research clusters focused on point based graphics, scientific visualization, virtual reality, physics-based modeling, and medical graphics. Besides our national and international industrial partners, we are collaborating with various research groups at ETH, within Switzerland, and world wide. Partners include the Computer Vision and Image Processing Groups at ETH, the Center for

Product Development, the Computer Aided Architectural Design Group, the University Hospital in Zurich, the Institute of Computer Graphics at TU-Vienna, the Graphics Group at RWTH-Aachen, and others. In addition, the Computer Graphics Laboratory has spun off two startup companies:

- Cyfex is specialized in software development for medical and industrial applications: www.cyfex.com
- Novodex is designing middleware for game development and entertainment technology: www.novodex.com

Current Research

The research of the CGL is devoted to the design of methods and systems in the fields of computer graphics, collaborative virtual reality and scientific visualization. One of our core activities includes the investigation of algorithms for point based computer graphics. The lab has been pioneering and internationally leading in the development of techniques for rendering, processing, modeling, and editing of point sampled geometry. In addition, we are focused on real time virtual reality and 3D video systems. We are designing methods for real time 3D video recording, compression, editing, and visual effects. Further core topics comprise real time physically based modeling of deformations, collision and fracture for animation and entertainment technology. Traditionally, the CGL has also put a strong emphasis on medical applications. Our participating in the National Center of Excellence in Computer Aided and Image Guided Medical Interventions (CO-ME). Overall, the CGL is very researchers are investigating FEM and other methods for surgical planning and simulation and are well connected and engaged in numerous international scientific collaborations. The lab currently hosts and directs the blue-c project focused on collaborative virtual environments - the largest internally funded project of ETH having more than 20 researchers from 4 different departments involved.
For a survey of current activities, see: graphics.ethz.ch

Important Recent Project Participations

- CO-ME: National Center of Excellence in Computer Aided and Image Guided Medical Interventions with partners from various Swiss universities and research institutions, www.co-me.ch
- blue-c: An immersive, collaborative virtual reality system with partners from ETH, blue-c.ethz.ch
- FACE: Facial surgery simulation and planning with partners from the University Hospital in Zurich
- Pointshop3D: Open source project to promote the development of methods for point based computer graphics, www.pointshop3D.com

Important Recent Industrial Partners

MERL, Schlumberger, UBS, ABB, HP, Sulzer, Cyfex, Novodex