U.K. Leeds

University of Leeds

Visualization Research Group
School of Computing, University of Leeds,
Leeds LS2 9JT, U.K.
☏ +44-113-343 54309
🖷 +44-113-343 5468
✉ kwb@comp.leeds.ac.uk
www.visualization.leeds.ac.uk

Core Competence
Scientific Visualization

Head of the Institute
Ken Brodlie

History
The School has been involved in the development of visualization algorithms and systems over the past 25 years. Much of the work has been done in collaboration with NAG Ltd, beginning with the creation of the NAG Graphical Library in 1978 - software which continues to be widely used today. More recently the group have joined with NAG in forming the University of Leeds IRIS Explorer Centre of Excellence, which carries out research and development in visualization, making the work available through the IRIS Explorer visualization system. In addition to undergraduate courses on graphics, masters level courses in visualization are delivered. Ten PhD students have completed their research since 1990.

Staff
Professor: Ken Brodlie
Research fellow: Dr Jason Wood

Rooms and Locations
The group shares labs with the Scientific Computation and Informatics Research Groups, within the School of Computing on the main campus.

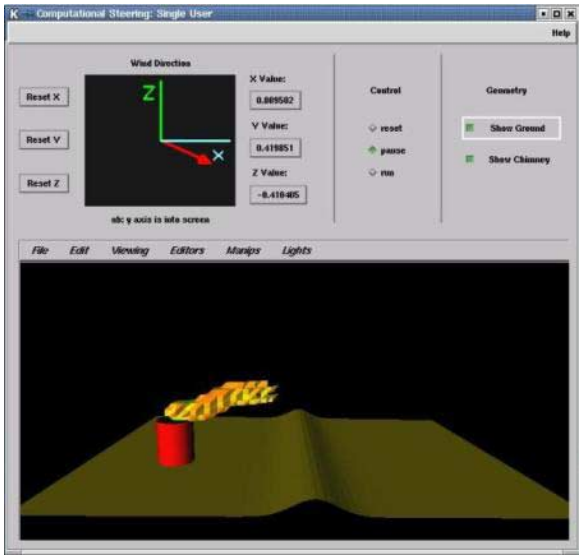
Financing
The work is funded by the University, by national research programmes and by industry.

Current Structure and Important Partners
The visualization group is a small core but plays a part in two major research groups in the School: Scientific Computation and Visualization Group (Prof Martin Berzins; Dr Peter Jimack, Dr Matthew Hubbard; Dr Mark Walkley, Dr Chris Goodyer) - www.comp.leeds.ac.uk/research/scv//index.shtml;
and the Informatics Group (Prof Peter Dew; Dr Roy Ruddle; Dr John Maxfield, Martin Thompson) - www.comp.leeds.ac.uk/research/inf/index.shtml and plays a supporting role in the emerging White Rose Computational Grid - www.whiterose.ac.uk/HPDGrid.cfm

Important Recent Project Participations
- "IRIS" Explorer Centre of Excellence
- "COVISA", UK EPSRC project
- "DIVA", UK EPSRC project
- Grid-based Collaborative Visualization, UK e-Science Demonstrator
- Visualization Middleware for e-Science, UK e-Science Core Programme

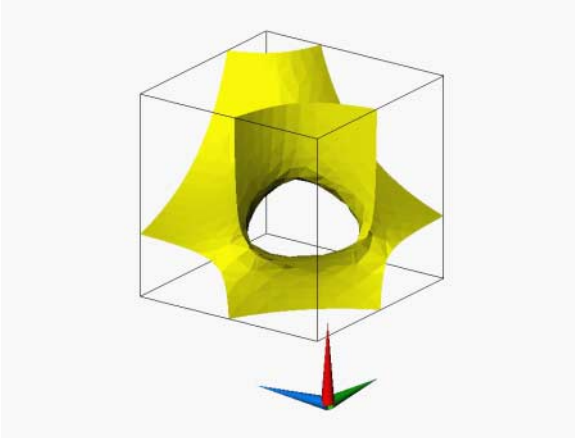
Important Recent Industrial Partner

NAG Ltd



Current Research

The group is involved in a number of research projects,covering both visualization algorithms and systems. A major interest is collaborative visualization, where we have worked on extending the popular dataflow visualization systems from single- to multi-user, to support research groups which are geographically distributed. This has resulted in the first commercially available collaborative visualization system, IRIS Explorer release 5. The group continues to look at collaborative visualization, particularly to support Grid computing and e-science. Recently we have completed an e-science demonstrator of collaborative visualization and computational steering, with a simulation connected remotely. In addition, we are interested in access to visualization services over the Web. In the area of visualization algorithms, we have developed a robust and accurate isosurfacing algorithm which preserves the correct topology of a piecewise trilinear isosurface to gridded data, and are looking at novel algorithms for the visualization of multidimensional data. A long-standing interest is constrained visualization where we are looking at interpolants that satisfy constraints such as positivity. A further research area is visualization of deformable surfaces, with application to virtual environments for surgical training. In particular, we are looking at extensions of the 3D ChainMail algorithm.



Future of the Lab

The group is about to embark on a major new research project on 'Visualization Middleware for e-Science'. This project is funded by the e-Science Core Programme, and will have two main aims: in the short-term, to 'grid-enable' two existing visualization systems (IRIS Explorer and pV3) so they can act as desktop visual interfaces to Grid computing (making use of emerging Grid services); in the longer term, to develop an XML-based visualization language to describe the datatypes which occur in visualization and the connection of processes in a dataflow network. The project is in collaboration with Oxford Brookes University (Prof David Duce); University of Oxford (Prof Mike Giles; Dr David Gavaghan); CLRC/Rutherford Appleton Lab (Julian Gallop); NAG Ltd, IBM Ltd and Streamline Computing Ltd.