Graphics Group
Department of Computer Science,
University of Bristol,
Bristol, BS8 1UB, U.K.
℡ +44-117-954 5150 or 5112
℡ +44-117-954 5208
✉ alan.chalmers@bris.ac.uk,
🌐 www.cs.bris.ac.uk/Research/Graphics

Core Competence
High Fidelity Rendering, High Dynamic Range,
Global Illumination, Visual Perception,
Psychophysics, Parallel Rendering, Archaeological
Site Reconstructions, Virtual and Augmented Reality
Environments, Acoustic Rendering

History
The group started in 1989 looking predominantly at
parallel rendering. In 1992 we started investigating
high fidelity reconstructions of archaeological sites
and have now worked on sites in the UK, France,
Malta, Czech Republic, India and South Africa. In
2000 our animation considering whether prehistoric
people in France 25,000 years ago were making
"animations" was shown at the SIGGRAPH
Electronic Theatre. The Graphics Group at Bristol
has hosted the Eurographics Rendering Workshop in
1992, Eurographics Parallel Graphics &
Visualisation Workshop in 1996 and the ACM
SIGGRAPH-Eurographics Workshop on Computer
Graphics Education in 2002. In 2001 ArchLight
(www.archlight.co.uk) was established to develop
very realistic archaeological reconstructions for
museums. Computer Graphics has been taught in
Bristol since 1989. Seven PhD students have
completed their studies with the group, six are
currently registered and four more are due to start in
October 2002.

Staff
1 Reader: Alan Chalmers
2 Research assistants: Patrick Ledda, Peter
Longhurst
4 PhD students: Kirsten Cater, Kate Devlin, Roger
Lo, Ioannis Roussos

Rooms and Locations
The group occupies one research room and has a
separate psychophysics lab

Financing
The University of Bristol funds the space and staff.
The research assistants are funded by a European
project, ARIS and the PhD students by a number of
funding agencies. Travel funding has come from the
British Council and the Bristol-Bordeaux Twinning
Association.

Current Structure and Important Partners
The Computer Graphics group is part of the Digital
Media research group in the
Department of Computer Science,
which also includes computer vision
and speech processing. The Graphics
Group group also works closely with
the Departments of Psychology, Archaeology and History of Art within the University of Bristol, and a number of archaeologists around the world.

**Current Research**

Current research is focussing on (Perceptual) Realism in Real-Time. This work incorporates psychophysical experiments to quantify the perception of objects in the real world and the same objects in the virtual reconstruction of the real scene. A framework has been developed from which the "realism" of a synthetic image can be compared with the real scene it is intended to portray. Furthermore, identifying those areas of an image which are perceptually important to the human user, and those which are not, computational effort can be directed efficiently resulting in perceptually similar images in significantly reduced computational time. Visual perception and parallel processing together offer the possibility of achieving high fidelity images for virtual environments in reasonable (and perhaps even real) times. We are using the results of this research to help archaeologists develop computer based approaches to enable the investigation of complex hypotheses concerning the archaeological record in safe, non-destructive and controlled environments.

**Important Recent Project Participations**

- ARIS: EU-IST project: aris-ist.intranet.gr/
- INSITE: British Council funded projects to Malta, South Africa, France, India and Czech Republic

**Important Recent Industrial Partner**

ArchLight

**Future of the Lab**

The Bristol Computer Graphics group will continue to investigate the synthesis of highly realistic images and parallel rendering, working towards the "holy grail" of Realism in Real-Time. We will also consider multi-sensory virtual environments and how these may affect the perception of archaeological and heritage sites.