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COURSE NOTES 7

DISTRIBUTED SCIENTIFIC VISUALIZATION ON HIGH PERFORMANCE NETWORKS

Co-Organizers

Jeffrey A. Terstriep
National Center for Supercomputing Applications

Charles E. Catlett
National Center for Supercomputing Applications

Lecturers

Bill Hibbard
University of Wisconsin

Patrick J. Moran
National Center for Supercomputing Applications

Michael L. Norman
University of Illinois at Urbana-Champaign

Abstract

This course provides an overview of distributed scientific visualization. The course begins with the motivation for distributed visualization from the scientist's perspective. This is followed by a description of the enabling technologies: networks and distributed computing software. The basic concepts of networking are introduced, with a discussion of existing wide-area networks and emerging technologies. A description of distributed computing is also presented, with a comparison of software tools available for creating distributed applications.

The course concludes with case studies examining several of the demonstrations being presented in the SIGGRAPH'92 Showcase. Showcase presenters will provide a detailed description of their applications, will examine the benefits and problems of their implementation, and will discuss the performance issues surrounding their solutions.

Speakers

Charles E. Catlett, Associate Director of Computers and Communication, NCSA

Mr. Catlett is principal investigator for NCSA's work developing applications and programming environments for the BLANCA gigabit/second network testbed, one of five such testbeds being coordinated by the Corporation for National Research Initiatives with funding from industry, the National Science Foundation, and the Defense Advanced Research Projects Agency. Mr. Catlett received a B.S. in Computer Engineering from the University of Illinois at Urbana-Champaign in 1983.

Jeffrey A. Terstriep, Project Leader, NCSA

Mr. Terstriep is the project leader in the Software Development Group at the National Center for Supercomputing Applications. Presently, he is leading the effort to develop distributed applications on the BLANCA testbed. He also teaches two courses at the community college: Beginning Computer Graphics and Scientific Visualization. He holds a B.S. in Electrical Engineering from the University of Illinois at Urbana-Champaign.

Michael L. Norman, NCSA and Department of Astronomy, University of Illinois at Urbana-Champaign

Mr. Norman has 15 years experience in computational astrophysics and supercomputing, and has previously held positions at the Lawrence Livermore National Lab, Los Alamos National Lab, and Max Planck Institute for Astrophysics. He is currently Associate Professor of Astronomy and NCSA Application Team Leader in Astronomy and Astrophysics, where he supervises a research group which develops numerical algorithms and community codes for problems in astrophysical fluid dynamics. Norman is an associate editor for the Journal of Computational Physics and Computer Physics Communications.

Speakers

William L. Hibbard, Space Science and Engineering Center

Mr. Hibbard received a B.A. in Mathematics in 1970 and an M.S. in Computer Sciences in 1974 from the University of Wisconsin-Madison. He has been at the Space Science and Engineering Center since 1978, working with real-time data acquisition, image processing and visualization. Mr. Hibbard has been the principal investigator for the development of the 4-D McIDAS and VIS-5D systems for managing and visualizing large earth science data sets, and of the VIS-AD system for developing and visualizing scientific algorithms. VIS-5D and VIS-AD are being extended to a distributed environment as part of the BLANCA Testbed of the Gigabit Testbed project.

Patrick J. Moran, NCSA

Mr. Moran is a Graduate Research Assistant with the National Center for Supercomputing Applications (NCSA) and is currently pursuing a Ph.D. degree in Computer Science at the University of Illinois at Urbana-Champaign. His research interests include computer graphics, scientific visualization and biomedical applications. Mr. Moran has a B.S. degree in Electrical Engineering from the University of Santa Clara and an M.S. degree in Computer Science from the University of Illinois, and was previously a development engineer with Hewlett-Packard Company.

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Course Schedule

Duration	Speaker, Title, Pages
0:15	Jeff Terstriep, "Welcome and Introductions"
0:45	Mike Norman, "Distributed Visualization - A Scientist's Perspective"
1:00	Charlie Catlett, "Networking Technologies", notes 2.1 - 2.19
0:15	break
1:00	Jeff Terstriep, "Software Tools for Distributed Applications", notes 3.1 - 3.11
1:30	lunch
1:00	Bill Hibbard, "BLANCA Applications at UWM - SSEC", notes 4.10 - 4.15
1:00	Pat Moran, "Showcase Projects of the Biomedical Imaging Group", notes 5.1 - 5.13
0:15	break
1:00	Jeff Terstriep, "Research on the BLANCA Gigabit Testbed", notes 6.1 - 6.15