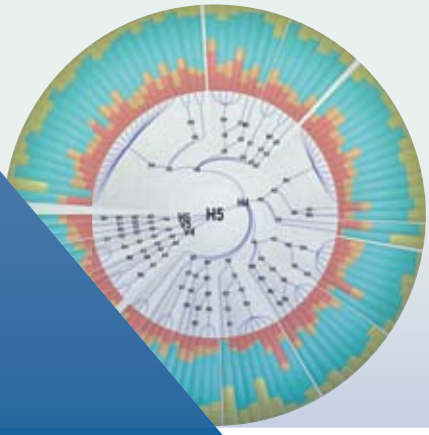


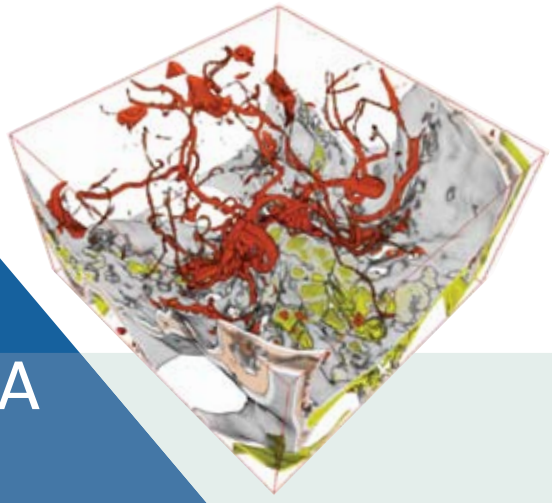
vis.computer.org/vis2006

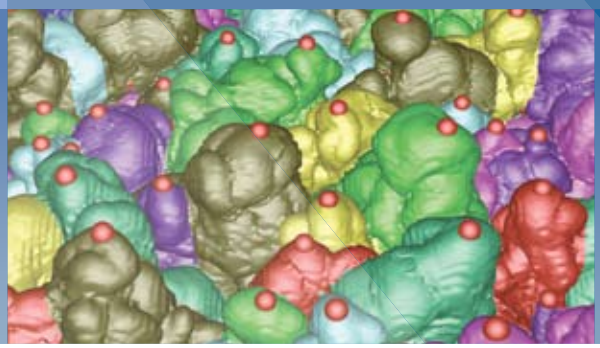
IEEE VISUALIZATION 2006 PROGRAM

October 29 - November 3, 2006

VIS 2006

BALTIMORE·MARYLAND·USA





IEEE vgtc

Sponsored by the IEEE Computer Society
Visualization and Graphics Technical Committee (VGTC)
in Cooperation with ACM SIGGRAPH

IEEE

IEEE COMPUTER SOCIETY

WELCOME

Welcome to IEEE Visualization 2006, the 17th International conference on visualization innovations and their applications!

You have an exciting selection of technical forums at the IEEE Visualization conference, the symposium on Information Visualization, and the newly established symposium on Visual Analytics Science and Technology (VAST).

This year we reflect upon our rich 17 year history and look forward to issues of relevance in the future. The visualization field has become a recognized technology impacting all avenues of life. Our invited speakers offer perspectives to guide your research, applications, and commercial opportunities.

This year the technical community offers workshops and tutorials for dedicated learning. The papers provide an integrated selection of outstanding research contributions and creative application papers. The panels discuss some of the most pressing current topics. The posters allow for very current results to be presented in informal interactive sessions. The Visualization Contest fosters comparison of novel and established techniques and provides benchmarks for the community. The Scientific Animation Theater premieres this year with an exciting collection of film clips highlighting the best in scientific visualization. These venues, combined with our exhibitors, Interactive Demonstrations Laboratory, and Birds-of-a-Feather sessions deliver a powerful Visualization 2006 experience in the heart of Baltimore's Inner Harbor district.

Two receptions and numerous breaks have been scheduled throughout this week to allow time for you to interact with peers and colleagues. This is the place where government, academic, industrial, and venture communities come together to meet and learn from each other and have fun!

Thank you for coming, and enjoy the conference!

Amitabh Varshney, *University of Maryland*
Baoquan Chen, *University of Minnesota at Twin Cities*
IEEE Visualization 2006 Conference Chairs

ABOUT BALTIMORE

Visualization 2006 is located in the heart of Baltimore's Inner Harbor district, one of the oldest seaports in the United States tracing its beginnings to the 1700s. Over the last decade it has experienced a resurgence as the cultural center of the City. Some attractions in the immediate vicinity of the conference hotel include the National Aquarium in Baltimore, the Maryland Science Center, the Fort McHenry National Monument, and the Baltimore Maritime Museum. An extensive array of shopping and dining options are available at the Harborplace and the Power Plant. The Harborplace includes two glass enclosed pavilions with 30 informal eateries and over a dozen restaurants, accessible via a direct skyway from the hotel.

Other points of interest in Baltimore include Port Discovery, the Baltimore Museum of Art, the Baltimore and Ohio Railroad Museum, and the Baltimore Civil War Museum.

For further details about the rich and vibrant history and happenings in Baltimore visit www.baltimore.org and refer to the comprehensive guide of attractions.

TABLE OF CONTENTS

How to Order Proceedings

Additional copies of the Vis 2006 and InfoVis 2006 proceedings can be ordered from:

IEEE Computer Society
By mail: 10662 Los Vaqueros Circle, Los Alamitos, CA 90720
By phone: +1-800-CS-BOOKS, +1-714-821-8380 (direct)
By fax: +1-714-821-4641
By email: csbooks@computer.org
By web: http://computer.org/cspress
TVCG from the IEEE CS: IEEE Catalog Number: DVCG06

Additional copies of the VAST 2006 proceedings can be ordered from:

IEEE Service Center
By mail:
445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331
By phone: +1-800-678-IEEE, +1-732-981-0060 (direct)
By fax: +1-732-981-9667
By email: customer-service@ieee.org
By web: http://shop.ieee.org
VAST 2006: IEEE Catalog Number: 06EX1507

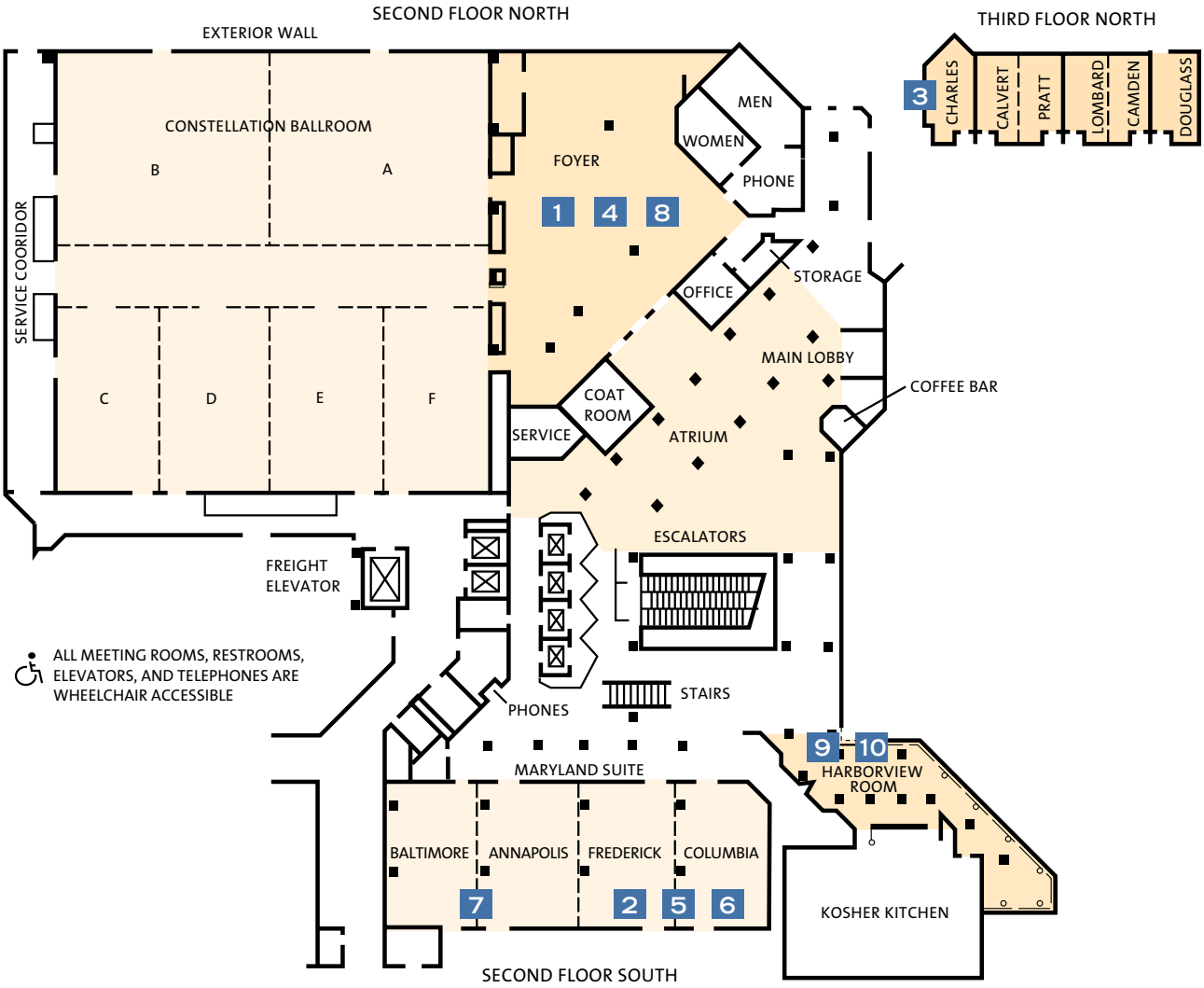
IEEE Computer Society

To become a member visit http://computer.org/join

IEEE Visualization and Graphics Technical Committee

For information on awards, national initiatives, conferences and symposia, and a comprehensive membership directory, please visit http://tab.computer.org/vgtc.

MAP OF THE HYATT REGENCY BALTIMORE



1 Conference Registration
Located in the Foyer
Sunday-Thursday 7:30 a.m. – 5:00 p.m.
Friday 7:30 a.m. – 1:30 p.m.

2 Internet Access
Located in Frederick and Columbia of the Maryland Suite
Sunday 3 p.m. – 7 p.m.
Monday-Thursday 7:30 a.m. – 7 p.m.
Friday 7:30 a.m. – 1:30 p.m.

3 Speaker Preparation
Located in the Charles Room
Sunday-Thursday 7:30 a.m. – 5 p.m.
Friday 7:30 a.m. – 10:30 a.m.

4 Birds-of-a-Feather (BOF) Board
Check the board for times and locations.
All conference attendees are welcome.

5 Interactive Demonstrations Lab
Located in Frederick and Columbia of the Maryland Suite
Monday 7 p.m. - 9 p.m.
Tuesday-Thursday, 3 p.m.-4 p.m.

6 Scientific Animation Theater
Located in Frederick and Columbia of the Maryland Suite
Monday 7 p.m. – 9 p.m.
Tuesday-Thursday 7:30 a.m. – 7 p.m.
Friday 7:30 a.m. – 1:30 p.m.

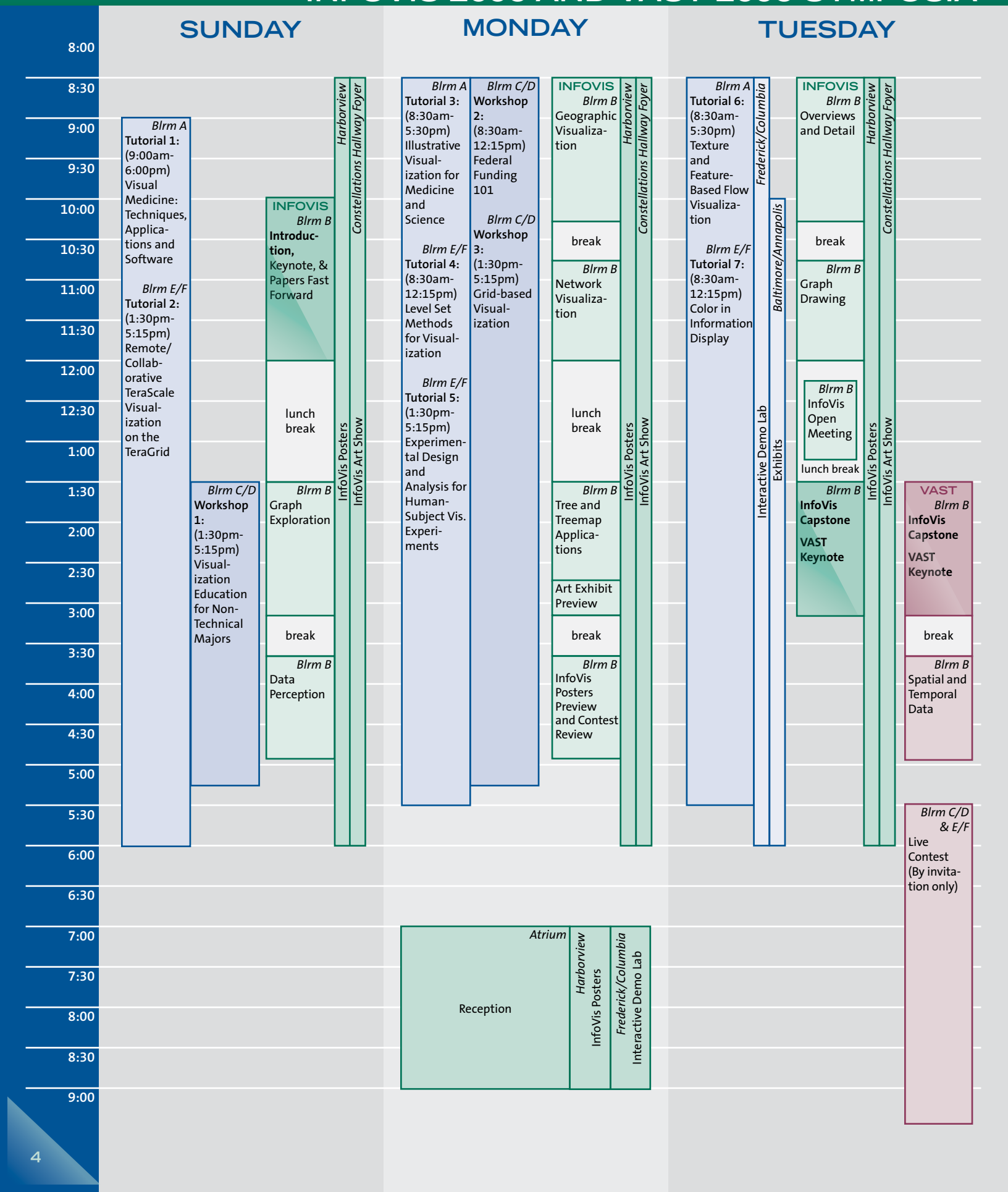
7 Exhibition
Located in Baltimore & Annapolis of the Maryland Suite
Tuesday 10 a.m. – 6 p.m.
Wednesday 10 a.m. – 6:30 p.m.
Thursday 10 a.m. – 1:30 p.m.

8 InfoVis Art Show
Located in the Foyer
Sunday-Tuesday 8:30 a.m. – 6 p.m.

9 InfoVis Posters
Located in the Harborview Room
Sunday 8:30 a.m. – 6 p.m.
Monday 8:30 a.m. – 6 p.m , 7 p.m. – 9 p.m.
Tuesday 8:30 a.m. – 6 p.m.

10 Vis Posters
Located in the Harborview Room
Wednesday 8:30 a.m. – 6 p.m., 7 p.m. – 9 p.m.
Thursday-Friday 8:30 a.m. – 6 p.m.

INFOVIS 2006 AND VAST 2006 SYMPOSIA



VIS 2006 CONFERENCE AT-A-GLANCE

WEDNESDAY

Blrm A/B
Keynote:
Failures of Visual Awareness
Daniel Simons
University of Illinois at Urbana-Champaign

break

Blrm A/B
Papers Preview

lunch break

Blrm A Visualization in Medicine
Blrm B Information and Multivariate Visualization
Blrm E/F Best Posters Presentations

break

Blrm A Panel: The Vis/InfoVis schism
Blrm B Illustrative Visualization I
Blrm E/F Flow Visualization

Blrm E/F Posters Preview/Contest Results

VAST
Blrm C/D Contest Results

lunch break

Blrm C/D Complex Information Spaces

break

Blrm C/D Graph and Network Data

Frederick/Columbia Interactive Demo Lab
Harborview Vis Posters
Baltimore/Annapolis Exhibits

Maryland Science Center
Reception
and
Vis Posters

THURSDAY

Blrm F
Tutorial 8: (8:30am-5:30pm) Modern Parallel Coordinates: Relational Information

Blrm A Visualization Systems
Blrm B User Interfaces
Blrm E Vis in Physical Sciences, Life Sciences and Engineering I

break

Blrm A Panel: Visualization Careers
Blrm B Illustrative Visualization II
Blrm E Video Systems & Time-Varying Data

Blrm A
Vis Open Meeting

lunch break

Blrm A PhD Colloquium Paper Sessions (see p.16 for details)
Blrm B Perception
Blrm E Viz in Physical Sciences, Life Sciences & Engineering II

break

Blrm A Panel: Publishing Your Research
Blrm B Vector/Tensor Visualization I
Blrm E Isosurfaces & Polygonal Meshes I

VAST
Blrm C/D PhD Colloquium (see p.16 for details)

break

Blrm C/D Panel: Visual Analytics Education

lunch break

Blrm C/D Evaluation and Collaborative Aspects

break

Blrm C/D Multidimensional Multivariate Data

Closing remarks

Frederick/Columbia Interactive Demo Lab
Harborview Vis Posters
Baltimore/Annapolis Exhibits

FRIDAY

Blrm A Panel: Is there Science in Visualization?
Blrm B Large Data Set Visualization
Blrm E/F Isosurfaces and Polygonal Meshes II

break

Blrm A Volume rendering of extremely large datasets
Blrm B Vector/Tensor Visualization II
Blrm E/F Volume Modeling and Rendering

lunch break

Blrm C/D/E/F
Capstone:
Designing Visualizations to Enable Molecular Insights
Jane Richardson
Duke University

Closing Remarks
Best Of Awards

Frederick/Columbia Interactive Demo Lab
Harborview Vis Posters

8:00
8:30
9:00
9:30
10:00
10:30
11:00
11:30
12:00
12:30
1:00
1:30
2:00
2:30
3:00
3:30
4:00
4:30
5:00
5:30
6:00
6:30
7:00
7:30
8:00
8:30
9:00

VIS 2006 COMMITTEE MEMBERS

VIS 2006 CONFERENCE COMMITTEE

Conference Chairs
Amitabh Varshney, *University of Maryland*
Baoquan Chen, *University of Minnesota at Twin Cities*

Program Chairs
Rachael Brady, *Duke University*
Ken Joy, *University of California, Davis*

Papers Chairs
Alex Pang, *University of California, Santa Cruz*
Eduard Gröller, *Vienna University of Technology*
Cláudio Silva, *University of Utah*

Panels Chairs
Michael Meissner, *Vital Images*
Lisa Avila, *Kitware*
Jinah Park, *Information and Communications University*

Posters Chairs
Gordon Kindlmann, *Harvard Medical School*
Daniel Weiskopf, *Simon Fraser University*

Workshops Chairs
Jihad El-Sana, *Ben Gurion University of The Negev*
Gerik Scheuermann, *Universität Leipzig*
Terry Yoo, *National Institutes of Health*

Tutorials Chairs
Dirk Bartz, *University of Tübingen*
Klaus Mueller, *Stony Brook University*
Susan Havre, *Pacific Northwest National Lab*

Interactive Demos Chairs
Rhonda Vickery, *Mississippi State University*
Alex Aceves, *Washington State University*
Jörg Meyer, *University of California*

Exhibition Chairs
Ramani Duraiswami, *University of Maryland*
Raghu Machiraju, *The Ohio State University*

Birds of a Feather Chair
Jian Huang, *University of Tennessee*

Publications Chairs
Torsten Möller, *Simon Fraser University*
Chris North, *Virginia Tech*

Student Volunteer Chairs
Udeepta Bordoloi, *Siemens Medical*
Guo-Shi Li, *University of Utah*
Ming Jiang, *Lawrence Livermore National Lab*

Finance Chair
Loretta Auvil, *National Center for Supercomputing Applications*

Publicity Chairs
Lisa Avila, *Kitware*
Elke Moritz, *Mercury Computer Systems*
Dirk Bartz, *University of Tübingen*

Visualization Contest Chairs
Russell Taylor II, *University of North Carolina*
T.J. Jankun-Kelly, *Mississippi State University*

IEEE InfoVis Symposium Liaison
Matt Ward, *Worcester Polytechnic Institute*

IEEE VAST Symposium Liaison
Pak Chung Wong, *Pacific Northwest National Lab*

IEEE Liaison
Ramani Duraiswami, *University of Maryland*

Graphic Design
Melissa Kingman, *Elevation Design*
Twig Gallemore, *Elevation Design*

Conference Web Master
Steve Lamont, *University of California, San Diego*

Steering Committee
Tom Ertl, *University of Stuttgart*
Arie Kaufman, *Stony Brook University*
Robert Moorhead, *Mississippi State University*
Greg Nielson, *Arizona State University*
Hanspeter Pfister, *Mitsubishi Electric Research Lab*
Bill Ribarsky, *University of North Carolina*

Program Committee
Maneesh Agrawala, *University of California, Berkeley*
James Ahrens, *Los Alamos National Laboratory*
Marc Alexa, *TU Berlin*
Martin Bertram, *TU Kaiserslautern*
Wes Bethel, *Lawrence Berkeley National Laboratory*
Rachael Brady, *Duke University*
David Breen, *Drexel University*
Min Chen, *University of Wales Swansea, UK*
Paolo Cignoni, *I.S.T.I. - C.N.R*
Jonathan Cohen, *Lawrence Livermore National Laboratory*
João Comba, *Universidade Federal do Rio Grande do Sul*
Wagner Correa, *IBM T.J. Watson Research Center*
Wim de Leeuw, *CWI*
David Ebert, *Purdue University*
Jihad El-Sana, *Ben Gurion University of The Negev*
Sarah Frisken, *Tufts University*
Issei Fujishiro, *Tohoku University*
Kelly Gaither, *Texas Advanced Computing Center*
Michael Garland, *University of Illinois*
Markus Gross, *ETH Zürich*
Baining Guo, *Microsoft Research Asia*
Peter Hastreiter, *Erlangen University*
Helwig Hauser, *VRVis Research Center*
Christopher Healey, *North Carolina State University*
Hans-Christian Hege, *Zuse Institute Berlin*
David Kao, *NASA Ames Research Center*
Gordon Kindlmann, *Harvard Medical School*
James Klosowski, *IBM T.J. Watson Research Center*
Martin Kraus, *University of Stuttgart*
Ming Lin, *University of North Carolina*
Suresh Lodha, *University of California, Santa Cruz*
David Luebke, *University of Virginia*
Kwan-Liu Ma, *University of California, Davis*
Raghu Machiraju, *The Ohio State University*
Michael Meissner, *Vital Images*
Patrick Moran, *NASA Ames Research Center*
Kenneth Moreland, *Sandia National Labs*
Klaus Mueller, *Stony Brook University*
Ken Museth, *Linköping Institute of Technology*
Renato Pajarola, *University of Zürich*
Valerio Pascucci, *Lawrence Livermore National Laboratory*
Ronald Peikert, *ETH Zürich*
Bernhard Preim, *University Magdeburg*
Hong Qin, *State University of New York*
William Ribarsky, *UNC Charlotte*
Jos Roerdink, *University Groningen*
Holly Rushmeier, *Yale University*
Gerik Scheuermann, *Universität Leipzig*
Roberto Scopigno, *ISTI - CNR*
Han-Wei Shen, *The Ohio State University*
Deborah Silver, *Rutgers*
Milos Sramek, *Austrian Academy of Sciences*
Shigeo Takahashi, *University of Tokyo*
Alexandru Telea, *Eindhoven University of Technology*
Matthias Teschner, *University of Freiburg*
Holger Theisel, *Max Planck Institute Saarbrücken*
Xavier Tricoche, *University of Utah*
Anna Vilanova, *Eindhoven University of Technology*
Daniel Weiskopf, *Simon Fraser University*
Rüdiger Westermann, *Technical University Munich*
Terry Yoo, *National Institutes of Health*
Leonid Zhukov, *Yahoo! Research Labs*

INFOVIS 2006 SYMPOSIUM COMMITTEE

General Symposium Chair
Pak Chung Wong, *Pacific Northwest National Laboratory*

Program Chair and Vis06 Liaison
Matt Ward, *Worcester Polytechnic Institute*

Papers Chairs
John Stasko, *Georgia Tech*
Jarke van Wijk, *Eindhoven University of Technology*

Interactive Posters and Videos Chairs
Sheelagh Carpendale, *University of Calgary*
Ed Chi, *PARC*
Kwan-Liu Ma, *University of California, Davis*

Contest Chairs
Marjan Trutschl, *Louisiana State University*
Urska Cvek, *Louisiana State University*
Martin Wattenberg, *IBM Research*

Art Exhibit Chairs
Fernanda Viégas, *IBM Research*
Martin Wattenberg, *IBM Research*
Andrew Vande Moere, *University of Sydney*

Publications Chairs
Torsten Möller, *Simon Fraser University*
Chris North, *Virginia Tech*

Publicity Chair
Fernanda Viégas, *IBM Research*

Webmaster
Steve Lamont, *University of California, San Diego*

Best Paper Chairs
Daniel Keim, *University of Konstanz*
Tamara Munzner, *University of British Columbia*
Pak Chung Wong, *Pacific Northwest National Laboratory*

Program Committee
Ravin Balakrishnan, *University of Toronto*
Stuart Card, *PARC*
Sheelagh Carpendale, *University of Calgary*
Chaomei Chen, *Drexel University*
Ed Chi, *PARC*
Jason Dykes, *City University London*
Steve Eick, *SSS Research, Inc. and University of Illinois at Chicago*
Jean-Daniel Fekete, *INRIA*
Pat Hanrahan, *Stanford University*
Helwig Hauser, *VRVis Research Center*
Christopher Healey, *North Carolina State University*
Beth Hetzler, *Pacific Northwest National Laboratory*
Daniel Keim, *University of Konstanz*
Alfred Kobsa, *University of California Irvine*
Yehuda Koren, *AT&T Research*
Robert Kosara, *University of North Carolina Charlotte*
Kwan-Liu Ma, *University of California, Davis*
Guy Melancon, *LIRMM*
Tamara Munzner, *University of British Columbia*
Chris North, *Virginia Tech*
Stephen North, *AT&T Research*
Penny Rheingans, *University of Maryland Baltimore County*
Jonathan Roberts, *University of Kent*
George Robertson, *Microsoft Research*
Melanie Tory, *University of British Columbia*
Frank van Ham, *IBM Cambridge*
Fernanda Viégas, *IBM Cambridge*
Matt Ward, *Worcester Polytechnic Institute*
Ben Watson, *North Carolina State University*
Martin Wattenberg, *IBM Cambridge*
Chris Weaver, *Pennsylvania State University*
Leland Wilkinson, *SPSS*
William Wright, *Oculus Info Inc.*
Jing Yang, *University of North Carolina Charlotte*
Michelle Zhou, *IBM T. J. Watson*

Steering Committee
Stuart Card, *PARC*
John Dill, *Simon Fraser University*
Steve Eick, *SSS Research, Inc. and University of Illinois at Chicago*
Nahum Gershon, *MITRE Corp.*
Daniel Keim, *University of Konstanz*
George Robertson, *Microsoft Research*
John Stasko, *Georgia Tech*

VAST 2006 SYMPOSIUM COMMITTEE

Symposium and Papers Chairs
Pak Chung Wong, *Pacific Northwest National Laboratory*
Daniel Keim, *University of Konstanz*

Symposium Advisor
Jim Thomas, *Pacific Northwest National Laboratory*

Contest Chairs
Georges Grinstein, *University of Massachusetts Lowell*
Sharon Laskowski, *National Bureau of Standards and Technology*
Theresa O'Connell, *National Bureau of Standards and Technology*
Catherine Plaisant, *University of Maryland*
Jean Scholtz, *Pacific Northwest National Laboratory*
Mark Whiting, *Pacific Northwest National Laboratory*

Doctoral Colloquium Chairs
Richard May, *Pacific Northwest National Laboratory*
Bill Pike, *Pacific Northwest National Laboratory*

Publicity Chair
David Ebert, *Purdue University*

IEEE CS Liaison
Ramani Duraiswami, *University of Maryland*

Contingency Planning Chair
Penny Rheingans, *University of Maryland, Baltimore County*

Finances Chair
Loretta Auvil, *National Center for Supercomputing Applications*

Publications Chairs
Torsten Möller, *Simon Fraser University*
Wanda Mar, *Pacific Northwest National Laboratory*

Webmaster
Steve Lamont, *University of California, San Diego*

AREA CHAIRS:

Information Analytics
Pat Hanrahan, *Stanford University*

Scientific Analytics
Bill Ribarsky, *University of North Carolina, Charlotte*

Interaction
Jim Foley, *Georgia Institute of Technology*

Cognitive and Perceptual Science
Brian Fisher, *Simon Fraser University*

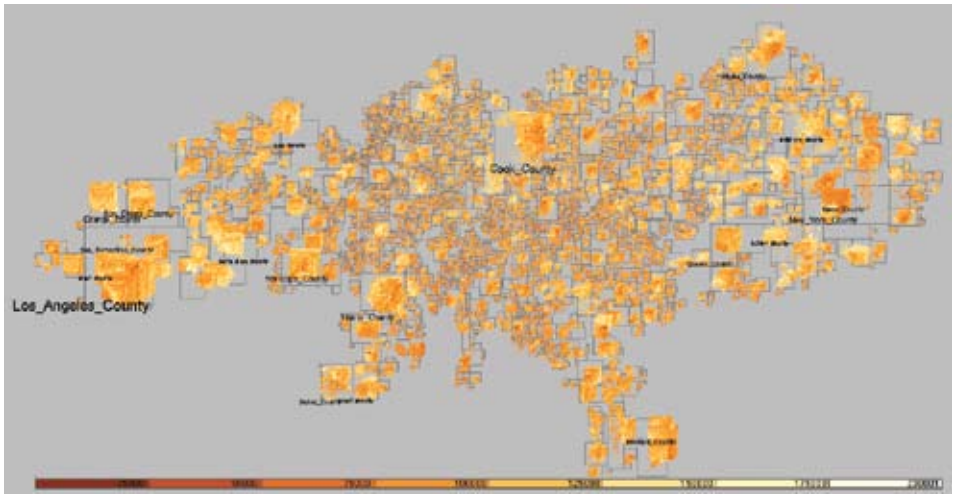
Data Management and Knowledge Representation
Nick Koudas, *University of Toronto*

Knowledge Discovery
Daniel Keim, *University of Konstanz*

Statistical Analytics Graphics
Leland Wilkinson, *SPSS*

Geospatial Analytics
Don Jones, *National Geospatial-Intelligence Agency*

Presentation, Production, and Dissimilation
Nancy Chinchor, *US Government*



SUNDAY, OCTOBER 29

9:00 a.m. – 6:00 p.m.

Blrm A

Tutorial 1: Visual Medicine: Techniques, Applications and Software

Organizer: Steffen Oeltze, *University of Magdeburg*
Additional Speakers: Gordon Kindlmann, *Brigham and Women's Hospital,* Florian Link, *MeVis,* Klaus Mueller, *Stony Brook University,* Bernhard Preim, *University of Magdeburg,* Markus Wacker, *University of Applied Sciences Dresden,* Dirk Bartz, *University of Tübingen*

In this tutorial, we will first give an introduction into medical imaging methods - such as data acquisition, data analysis, segmentation, registration and rendering - both in 2D and 3D. Based on this foundation, the course will further explore a variety of advanced topics of visual medicine. In particular, we will discuss visualization of vascular structures, visual analysis of perfusion data, diffusion tensor imaging, OR-fit mixed reality methods for surgery, and soft-tissue simulation - some of the most actively researched fields in visual medicine.

1:30 p.m. – 5:15 p.m.

Blrm E/F

Tutorial 2: Remote/Collaborative TeraScale Visualization on the TeraGrid

Organizer: Kelly Gaither, *The University of Texas at Austin*
Additional Speakers: Michael E. Papka, *University of Chicago /Argonne National Laboratory,* David Ebert, *Purdue University*

This tutorial will provide an overview of remote and collaborative visualization tools in the context of the National Science Foundation TeraGrid project. The TeraGrid is an open scientific discovery infrastructure combining leadership-class resources at partner sites to create an integrated, persistent computational resource. We will provide an overview of the visualization hardware resources available on the TeraGrid, describe the visualization services that are currently available from each of the TeraGrid resource partners, and present our vision for a more integrated TeraGrid visualization environment moving forward.

1:30 p.m. – 5:15 p.m.

Blrm C/D

Workshop 1: Visualization Education for Non-Technical Majors

Organizer: Holly Rushmeier, *Yale University*

Visualization is used in essentially every discipline, ranging from biology to history. People use visualizations of data to make both personal and professional decisions. A student with a general education should be able to judge the validity of a visual representation and should be able to produce meaningful visual representations of data and concepts. This workshop will examine the need for visualization education for students who major in disciplines outside of science and engineering. The questions to be answered are, "What should non-technical students know about visualization?" and "Are new visualization courses or resources needed for students in non-technical majors?"

INFOVIS SYMPOSIUM

8:30 a.m. – 6:00 p.m.

Harborview

InfoVis Posters

8:30 a.m. – 6:00 p.m.

Constellations Hallway Foyer

InfoVis Art Show

10:00 a.m. – 12:00 p.m.

Blrm B

Keynote/Papers Fast Forward

Chair: John Stasko, *Georgia Tech*, Jarke van Wijk, *Eindhoven University of Technology*

Algorithmics for Network Visualization
Peter Eades, *University of Sydney*

Good Information Visualization is a multi-disciplinary effort, with support from a wide variety of research areas. These include perceptual psychology, graphic art, computer graphics, and information retrieval. In particular, some of the contributions to Information Visualization have come from classical algorithmics. Further, Information Visualization inspires scientific questions in algorithmics. In this talk we examine the connections between algorithmics and Information Visualization.

Peter Eades is Professor of Software Technology, University of Sydney, and holds a position at National ICT Australia (NICTA).

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 3:10 p.m.

Blrm B

Graph Exploration

Chair: George Robertson, *Microsoft Research*

ASK-GraphView: A Large Scale Graph Visualization System, James Abello, Frank van Ham, Neeraj Krishnan

MatrixExplorer: a Dual-Representation System to Explore Social Networks, Nathalie Henry, Jean-Daniel Fekete

Visual Analysis of Multivariate State Transition Graphs, A. Johannes Pretorius, Jarke J. van Wijk

Balancing Systematic and Flexible Exploration of Networks, Adam Perer, Ben Shneiderman

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 4:55 p.m.

Blrm B

Data Perception

Chair: Pat Hanrahan, *Stanford University*

Multi-Scale Banking to 45 Degrees, Jeffrey Heer, Maneesh Agrawala

Measuring Data Abstraction Quality in Multiresolution Visualization, Qingguang Cui, Matthew Ward, Elke Rundensteiner, Jing Yang

Enabling Automatic Clutter Reduction in Parallel Coordinate Plots, Geoffrey Ellis, Alan Dix

MONDAY, OCTOBER 30

8:30 a.m. – 5:30 p.m.

Blrm A

Tutorial 3: Illustrative Visualization for Medicine and Science

Organizers: David S. Ebert, *Purdue University,* Mario Costa Sousa, *University of Calgary,* Stefan Bruckner, *Vienna University of Technology,* Ivan Viola, *Vienna University of Technology*

Additional Speakers: Don Stredney, *Ohio Supercomputer Center,* Bill Andrews, *Medical College of Georgia,* Nikolai Svakhine, *Purdue University,* Christian Tietjen, *University of Magdeburg,* Bruce Gooch, *Northwestern University*

This tutorial presents recent research and developments from academia in illustrative visualization focusing on its use for medical/science subjects. The presentation of the topics is balanced between descriptions of traditional methods and practices, practical implementation motivated approaches and evaluation, and detailed descriptions and analysis of illustrative techniques and algorithms. The tutorial includes a trained medical illustrator discussing the principles/caveats/issues in using illustration techniques in real-world medical applications. This lecture will also describe an evaluation, from an illustrator's point of view, of the use and quality of the techniques presented throughout the day.

8:30 a.m. – 12:15 p.m.

Blrm C/D

Workshop 2: Federal Funding 101

Organizer: Terry Yoo, *National Library of Medicine, NIH*

Do you have questions about how Federal agencies make awards? What is the procedure for reviewing grant proposals at NSF? How does it differ at NIH? What about other Federal agencies Where can you find information about federal programs? This seminar is an overview and introduction to Federal programs and the agencies that sponsor them. The purpose of this workshop is to both inform attendees of the granting process as well as promote feedback from the Visualization community to government representatives. The workshop agenda includes a session where attendees can interact in one-on-one sessions with the government panelists.

8:30 a.m. – 12:15 p.m.

Blrm E/F

Tutorial 4: Level Set Methods for Visualization

Organizer: David Breen, *Drexel University*

Additional Speaker: Ken Museth, *Linkoeping University*

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. This course is targeted for researchers interested in learning about level set methods, and their application to visualization. The course material will be presented by two recognized experts in the field, and will include introductory concepts, practical considerations and extensive details on a variety of level set applications. The course will introduces the concept of using deformable implicit models to solve problems in visualization, and will describe the numerical methods, algorithms and data structures needed to accomplish this. A number of level set visualization applications will be discussed including volume dataset segmentation, 3D morphing, and surface reconstruction from contours and point clouds.

1:30 p.m. – 5:15 p.m.

Blrm E/F

Tutorial 5: Experimental Design and Analysis for Human-Subject Visualization Experiments

Organizer: J. Edward Swan II, *Mississippi State University*

The proposed tutorial is for researchers and engineers, working in the field of visualization, who wish to either conduct visualization evaluation experiments with human subjects, and/or gain a better understanding of the basic terminology of experimental design and analysis. To illustrate the discussed principles and techniques, the tutorial includes illustrative case studies of actual human-subject experiments. This tutorial introduces the basics of experimental design and analysis, and focuses on the fundamental logic behind topics such as hypothesis testing and analysis of variance, while avoiding the complexities that come from considering individual statistical tests. Topics include: generating empirically testable hypotheses, experimental validity, standard statistical designs, independent and dependent variables, experimental design and counterbalancing, statistical tests, gathering and describing data, inferential statistics, hypothesis testing, power and effect size analysis, analysis of variance (ANOVA), and reporting statistical results.

1:30 p.m. – 5:15 p.m.

Blrm C/D

Workshop 3: Grid-based Visualization

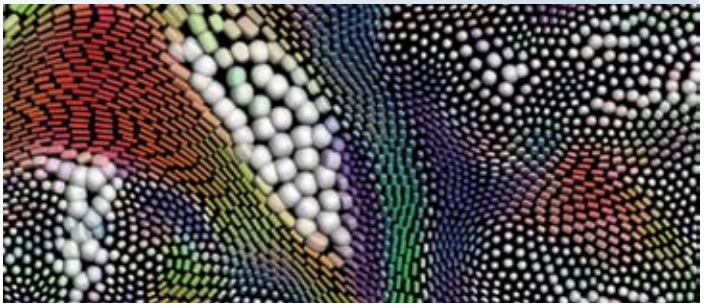
Organizers: Ken Brodlie, *University of Leeds,* Juliana Freire, *University of Utah,* Cláudio Silva, *University of Utah*

Grid computing and service-oriented architectures have become important influences in computing, and should affect our future thinking on how to develop the next-generation visualization systems. The workshop will examine a number of key issues such as: how to develop visualization web services; can we achieve autonomic visualization services; what kind of provenance should be maintained; what can visualization learn from related areas such as workflow, databases, Grid computing - and what can visualization offer them? The workshop format will be a mix of talks and discussion sessions, with a target of generating a state of the art report on the area.

7:00 p.m. – 9:00 p.m.

Frederick/Columbia

Interactive Demo Lab



INFOVIS SYMPOSIUM

8:30 a.m. – 6:00 p.m.

Harborview

InfoVis Posters

8:30 a.m. – 6:00 p.m.

Constellations Hallway Foyer

InfoVis Art Show

8:30 a.m. – 10:15 a.m.

Blrm B

Geographic Visualization

Chair: Jason Dykes, *City University London*

Visualization of Geo-spatial Point Sets via Global Shape Transformation and Local Pixel Placement, Mike Sips, Christian Panse, Daniel A. Keim, Stephen C. North

Worldmapper: the world as you've never seen it before, Daniel Dorling, Anna Barford, Mark Newman

Spatial Analysis of News Sources, Andrew Mehler, Yunfan Bao, Xin Li, Yue Wang, Steven Skiena

Dynamic Map Labeling, Ken Been, Eli Daiches, Chee Yap

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm B

Network Visualization

Chair: Jean-Daniel Fekete, *INRIA*

Topographic Visualization of Prefix Propagation in the Internet, Pier Francesco Cortese, Giuseppe Di Battista, Antonello Moneta, Maurizio Patrignani, Maurizio Pizzonia

Network Visualization by Semantic Substrates, Ben Shneiderman, Aleks Aris

INFOVIS 2006 BEST PAPER
Hierarchical Edge Bundles: Visualization of Adjacency Relations in Hierarchical Data, Danny Holten

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 2:40 p.m.

Blrm B

Tree and Treemap Applications

Chair: Frank van Ham, *IBM Cambridge*

Visualization of Barrier Tree Sequences, Christian Heine, Gerik Scheuermann, Christoph Flamm, Ivo L. Hofacker, Peter F. Stadler

Visualizing Business Data with Generalized Treemaps, Roel Vliegen, Jarke J. van Wijk, Erik-Jan van der Linden

FacetMap: A Scalable Search and Browse Visualization, Greg Smith, Mary Czerwinski, Brian Meyers, Daniel Robbins, George Robertson, Desney Tan

2:40 p.m. – 3:10 p.m.

Blrm B

Art Exhibit Preview

Chairs: Fernanda Viégas, *IBM Research,* Martin Wattenberg, *IBM Research,* Andrew Vande Moere, *University of Sydney*

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 4:55 p.m.

Blrm B

InfoVis Posters Preview and Contest Review

7:00 p.m. – 9:00 p.m.

Atrium

Reception

VIS 2007 CALL FOR PARTICIPATION

SACRAMENTO, CALIFORNIA USA • OCTOBER 28 - NOVEMBER 2, 2007

Vis 2007 is the premier forum for visualization advances in science and engineering for academia, government, and industry. This event brings together researchers and practitioners with a shared interest in tools, techniques, and technology. The conference will include an exciting and informative collection of workshops, tutorials, papers, panels, demonstrations, posters, and exhibitions. We invite you to participate by sharing your research, insights, experience, and enthusiasm in Sacramento, California.

Co-located with Vis 2007 are the following Symposia:

InfoVis 2007: IEEE Symposium on Information Visualization

VAST 2007: IEEE Symposium on Visual Analytics Science and Technology

Conference Chairs:
Kenneth Joy, *University of California, Davis*
Amitabh Varshney, *University of Maryland*

More information at
http://vis.computer.org/vis2007

For questions, email info@vis.computer.org

Sponsored by: IEEE Computer Society Visualization and Graphics Technical Committee

TUESDAY, OCTOBER 31

8:30 a.m. – 5:30 p.m.

Blrm A

Tutorial 6: Texture and Feature-Based Flow Visualization

Organizer: Robert S. Laramee, *University of Wales Swansea*

Additional Speakers: Gordon Erlebacher, *Florida State University,* Christoph Garth, *University of Kaiserslautern,* Holger Theisel, *Max-Planck-Institut für Informatik,* Xavier Tricoche, *University of Utah,* Tino Weinkauf, *Konrad-Zuse-Zentrum für Informationstechnik Berlin,* Daniel Weiskopf, *Simon Fraser University*

The computer graphics and scientific visualization communities have recently witnessed a strong trend toward growth and progress in the topics of texture and feature-based flow visualization methodologies. These complementary approaches offer powerful means to display the qualitative and quantitative properties of large, time-dependent vector fields. This tutorial brings together both the fundamentals and the latest results of the corresponding research in the form of presentations, demonstrations, literature, and supplementary material.

8:30 a.m. – 12:15 p.m.

Blrm E/F

Tutorial 7: Color in Information Display

Organizer: Maureen C. Stone, *StoneSoup Consulting*

Color is a key component of information display that is easy to use badly. While inspired color design is an art, the principles that underlie good color design have their roots in human perception and a deep understanding of the color properties of different media. This course is designed to introduce the technical community to the visual principles that inform good design, and the advances in color science, color technology, and color appearance modeling that can be applied to the problem of using color effectively in information display.

8:30 a.m. – 6:00 p.m.

Frederick/Columbia

Interactive Demo Lab

10:00 a.m. – 6:00 p.m.

Frederick/Columbia

Exhibits

INFOVIS SYMPOSIUM

8:30 a.m. – 6:00 p.m.

Harborview

InfoVis Posters

8:30 a.m. – 6:00 p.m.

Constellations Hallway Foyer

InfoVis Art Show

8:30 a.m. – 10:15 a.m.

Blrm B

Overviews and Detail

Chair: Chris Weaver, *Penn State University*

User Interaction with Scatterplots on Small Screens - A Comparative Evaluation of Geometric-Semantic Zoom and Fisheye Distortion, Thorsten Buering, Jens Gerken, Harald Reiterer

The Perceptual Scalability of Visualization, Beth Yost, Chris North

Complex Logarithmic Views for Small Details in Large Contexts, Joachim Böttger, Michael Balzer, Oliver Deussen

Software Design Patterns for Information Visualization, Jeffrey Heer, Maneesh Agrawala

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm B

Graph Drawing

Chair: Stephen North, *AT&T Research*

Visual Exploration of Complex Time-Varying Graphs, Gautam Kumar, Michael Garland

Smashing Peacocks Further: Drawing Quasi-Trees from Biconnected Components, Daniel Archambault, Tamara Munzner, David Auber

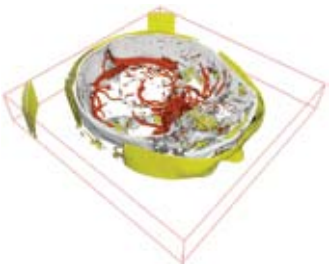
IPSep-CoLa: An Incremental Procedure for Separation Constraint Layout of Graphs, Tim Dwyer, Yehuda Koren, Kim Marriott

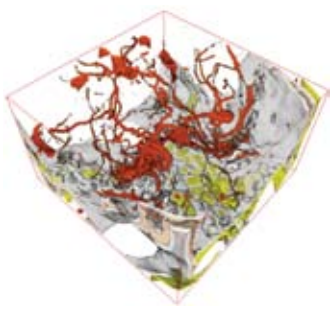
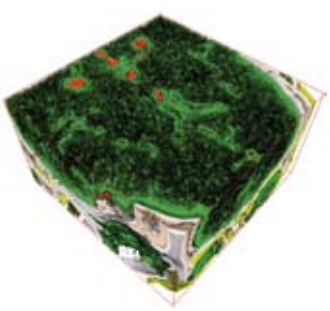
LUNCH BREAK 12:00 p.m. – 1:30 p.m.

12:15 p.m. –1:15 p.m.

Blrm B

InfoVis Open Meeting



VAST SYMPOSIUM

1:30 p.m. – 3:10 p.m.

Blrm B

InfoVis Capstone and Closing/ VAST Keynote

InfoVis Chair: Matt Ward, *Worcester Polytechnic Institute*

VAST Chairs: Pak Chung Wong, *Pacific Northwest National Laboratory,* Daniel Keim, *University of Konstanz*

Designer Information - Why Visualization and Analytics Technologies Should Help Us Focus Our Minds and Not Our Senses, Joseph Kielman, *Science Advisor, Science and Technology Directorate, Department of Homeland Security*

The current metaphors used to justify visualization research involve the specters of massive information flows and analyst overload and such demands as "connecting the dots" and searching for "nuggets". Knowledge discovery becomes the challenge, and presenting the greatest amount of information to the bewildered user, or viewer in this case, the goal. Throughout history, however, visual metaphors have first and foremost helped humans organize and digest information. Irrelevant information or conceptions have been ignored or discarded. Customized or tailored interpretations have been put forward. What do I need to know? has been more crucial than What do I need to see? Designer information, just like "designer drugs" or designer "genes", is the watchword for visualization and analytics in this 21st Century. And one of its most rigorous applications is homeland security.

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 4:55 p.m.

Blrm B

Spatial and Temporal Data

Chair: Bill Ribarsky, *University of North Carolina Charlotte*

TimeTree: Exploring Time Changing Hierarchies, Stuart Card, Bongwon Suh, Bryan Pendleton, Jeffrey Heer, John Bodnar

Visual Exploration of Spatio-temporal Relationships for Scientific Data, Sameep Mehta, Srinivasan Parthasarathy, Raghu Machiraju

Visual Analytics of Paleoceanographic Conditions, Roberto Theron, Roberto Theron

Avian Flu Case Study with nSpace and GeoTime, Pascale Proulx, Sumeet Tandon, Adam Bodnar, David Schroh, Robert Harper, William Wright

Visual Analysis of Historic Hotel Visitation Patterns, Chris Weaver, David Fyfe, Anthony Robinson, Deryck Holdsworth, Donna Peuquet, Alan MacEachren

5:30 p.m. – 9:30 p.m.

Blrm C/D/E/F

Live Contest (By invitation only)

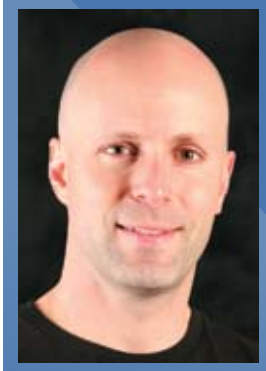
Chairs: Georges Grinstein, *University of Massachusetts Lowell,* Sharon Laskowski, *National Bureau of Standards and Technology,* Theresa O'Connell, *National Bureau of Standards and Technology,* Catherine Plaisant, *University of Maryland*, Jean Scholtz, *Pacific Northwest National Laboratory*, Mark Whiting, *Pacific Northwest National Laboratory*

WEDNESDAY, NOVEMBER 1

8:30 a.m. – 10:15 a.m.

Blrm A/B

Keynote: Failures of Visual Awareness



Daniel Simons, *University of Illinois at Urbana-Champaign*

How much of our visual world do we really see? Recent studies of how people perceive and remember the visual world have revealed striking failures of visual awareness. For example, people often fail to notice large changes to visual scenes when those changes occur during a brief disruption or distraction. Such failures of awareness suggest that we perceive far less of our surroundings than we might otherwise think. And, this disparity between what we see and what we think we see can have striking real-world consequences. This talk will give numerous examples of such failures of awareness, illustrating how the mechanisms and limitations of visual attention constrain what we see. It will also discuss the positive functional role of attention in performance, noting how failures of awareness are a necessary (albeit unfortunate) by product of human visual perception.

8:30 a.m. – 6:00 p.m.

Frederick/Columbia

Interactive Demo Lab

8:30 a.m. – 6:00 p.m.

Harborview

Vis Posters

10:00 a.m. – 6:30 p.m.

Baltimore/Annapolis

Exhibits

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm A/B

Papers Preview

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. –3:10 p.m.

Blrm A

Visualization in Medicine

Chair: Terry Yoo, *National Institutes of Health*

A Pipeline for Computer Aided Polyp Detection, Wei Hong, Feng Qiu, Arie Kaufman

Full Body Virtual Autopsies using a State-of-the-art Volume Rendering Pipeline, Patric Ljung, Calle Winskog, Anders Persson, Claes Lundström, Anders Ynnerman

Real-Time Illustration of Vascular Structures, Felix Ritter, Christian Hansen, Volker Dicken, Olaf Konrad, Bernhard Preim, Heinz-Otto Peitgen

Lines of Curvature for Polyp Detection in Virtual Colonoscopy, Lingxiao Zhao, Charl P. Botha, Javier O. Bescos, Roel Truyen, Frans M. Vos, Frits H. Post

Blrm B

Information and MultiVariate Visualization

Chair: Matt Ward, *Worcester Polytechnic Institute*

Outlier-Preserving Focus+Context Visualization in Parallel Coordinates, Matej Novotny, Helwig Hauser

Composite Rectilinear Deformation for Stretch and Squish Navigation, James Slack, Tamara Munzner

Multi-variate, Time Varying, and Comparative Visualization with Contextual Cues, Jonathan Woodring, Han-Wei Shen

Multifield-Graphs: An Approach to Visualizing Correlations in Multifield Scalar Data, Natascha Sauber, Holger Theisel, Hans-Peter Seidel

Blrm E/F

Best Posters Presentations (1:30-2:20)

Chair: Daniel Weiskopf, *Simon Fraser University*

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 4:55 p.m.

Blrm A

Panel: The Vis / InfoVis schism: Why are we two different communities?

Moderator: Helwig Hauser, *VRVis Research Center*

Panelists: Daniel Weiskopf, *Simon Fraser University,* Kwan-Liu Ma, *UC Davis,* Jarke J. vanWijk, *Techn. Univ. Eindhoven,* Robert Kosara, *UNC Charlotte*

Scientific Visualization (SciVis) and Information Visualization (InfoVis) are well-established and often used terms in the research field of visualization. But instead of intuitively illustrating two research fields with disjunctive goals, challenges, and approaches, which they are not, this terminology of SciVis vs. InfoVis rather represents a manifested community divide. In this panel, we boil up a discussion about the pros and cons of this community divide, we identify the good reasons for staying apart from each other as well as the good reasons for getting together a bit more.

Blrm B

Illustrative Visualization I

Chair: Cláudio Silva, *University of Utah*

Saliency-guided Enhancement for Volume Visualization, Youngmin Kim, Amitabh Varshney

Importance-Driven Focus of Attention, Ivan Viola, Miguel Feixas, Mateu Sbert, Eduard Gröller

ClearView: An Interactive Context Preserving Hotspot Visualization Technique, Jens Krüger, Jens Schneider, Rüdiger Westermann

Blrm E/F

Flow Visualization

Chair: Eduard Gröller, *Vienna University of Technology*

Visualization Tools for Vorticity Transport Analysis in Incompressible Flow, Filip Sadlo, Ronald Peikert, Mirjam Sick

Vortex Visualization for Practical Engineering Applications, Monika Jankun-Kelly, Ming Jiang, David Thompson, Raghu Machiraju

An Advanced Evenly-Spaced Streamline Placement Algorithm, Zhanping Liu, Robert J. Moorhead II, Joe Groner

5:00 p.m. –5:45 p.m.

BlrmE/F

Posters Preview

Chair: Gordon Kindlmann, *Harvard Medical School*

5:45 p.m. –6:15 p.m.

BlrmE/F

Contest Results

Chair: Russell Taylor II, *University of North Carolina*

7:00 p.m. –9:30 p.m.

Maryland Science Center

Conference Reception and Vis Posters

The reception will be in the spectacular three-story atrium of the nearby Maryland Science Center, featuring magnificent views of Baltimore's Inner Harbor. Come socialize with us in the midst of full-sized dinosaurs and an interactive multimedia exhibit celebrating the art of Norman Rockwell, one of America's most beloved artists.

VAST SYMPOSIUM

10:45 a.m. – 12:00 p.m.

Blrm C/D

Contest Results

Georges Grinstein, *University of Massachusetts Lowell,* Sharon Laskowski, *National Bureau of Standards and Technology,* Theresa O'Connell, *National Bureau of Standards and Technology,* Catherine Plaisant, *University of Maryland,* Jean Scholtz, *Pacific Northwest National Laboratory,* Mark Whiting, *Pacific Northwest National Laboratory*

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 3:10 p.m.

Blrm C/D

Complex Information Spaces

Chair: Stuart Card, *Palo Alto Research Center*

D-Dupe: An Interactive Tool for Entity Resolution in Social Networks, Mustafa Bilgic, Louis Licamele, Lise Getoor, Ben Shneiderman

Interactive Visual Synthesis of Analytic Knowledge, David Gotz, Michelle X. Zhou, Vikram Aggarwal

Visual Analysis of Conflicting Opinions, Chaomei Chen, Fidelia Ibekwe-SanJuan, Eric SanJuan, Chris Weaver

Have Green-A Visual Analytics Framework for Large Semantic Graphs, Pak Chung Wong, George Chin, Harlan Foote, Patrick Mackey, Jim Thomas

Exploring Large-Scale Video News via Interactive Visualization, Hangzai Luo, Jianping Fan, Jing Yang, William Ribarsky, Shin'ichi Satoh

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 5:40 p.m.

Blrm C/D

Graph and Network Data

Chair: George Robertson, *Microsoft Research*

Interactive Visualization and Analysis of Network and Sensor Data on a Mobile Device, Avin Pattath, Brian Bue, Yun Jang, David Ebert, Xuan Zhong, Aaron Ault, Edward Coyle

NetLens: Iterative Exploration of Content-Actor Network Data, Hyunmo Kang, Catherine Plaisant, Bongshin Lee, Benjamin B. Bederson

Interactive Wormhole Detection in Large Scale Wireless Networks, Weichao Wang, Aidong Lu

Enhancing Visual Analysis of Network Traffic Using Knowledge Representations, Ling Xiao, John Gerth, Pat Hanrahan

Accelerating Network Traffic Analysis Using Query-Driven Visualization, E. Wes Bethel, Scott Campbell, Eli Dart, Kurt Stockinger, Kesheng Wu

Monitoring Network Traffic with Radial Traffic Analyzer, Daniel A. Keim, Florian Mansmann, Jörn Schneidewind, Tobias Schreck

THURSDAY, NOVEMBER 2

8:30 a.m. – 5:30 p.m.

Blrm F

Tutorial 8: Modern Parallel Coordinates: Relational Information Clear Patterns

Organizer: Alfred Inselberg, *Tel Aviv University*

Additional Speakers: Helwig Hauser, *VRVis,* Matthew Ward, *Worcester Polytechnic Institute,* Li Yang, *Western Michigan University*

Parallel Coordinates are introduced and developed rigorously, using new didactic software, showing how multidimensional lines, hyperplanes, flats, curves and smooth hypersurfaces can be visualized unambiguously. The visualization of the family of close planes obtained by small rotations and translations of a given plane is posed as a challenge. The answer is presented as the construction of convex polygons representing families of close planes not only for 3-D but also for N-dimensions. The visualization of complex relations is illustrated with the representation of the winding helicoid, Moebius strip in 3-D and N-D and other surfaces.

8:30 a.m. – 6:00 p.m.

Frederick/Columbia

Interactive Demo Lab

8:30 a.m. – 6:00 p.m.

Harborview

Vis Posters

8:30 a.m. – 10:15 a.m.

Blrm A

Visualization Systems

Chair: Lisa Avila, *Kitware*

Fine-grained Visualization Pipelines and Lazy Functional Languages, David Duke, Malcolm Wallace, Rita Borgo, Colin Runciman

A Novel Visualization Model for Web Search Results, Tien N. Nguyen, Jin Zhang

A Trajectory-Preserving Synchronization Method for Collaborative Visualization, Lewis W.F. Li, Frederick W.B. Li, Rynson W.H. Lau

Concurrent Visualization in a Production Supercomputing Environment, David Ellsworth, Bryan Green, Chris Henze, Patrick Moran, Timothy Sandstrom

Blrm B

User Interfaces

Chair: T.J. Jankun-Kelly, *Mississippi State University*

Scalable WIM: Effective Exploration in Large-scale Astrophysical Environments, Yinggang Li, Chi-Wing Fu, Andrew J. Hanson

Using Visual Cues of Contact to Improve Interactive Manipulation of Virtual Objects in Industrial Assembly/Maintenance Simulations, Jean Sreng, Anatole Lécuyer, Christine Mégard, Claude Andriot

High-Level User Interfaces for Transfer Function Design with Semantics, Christof Rezk Salama, Maik Keller, Peter Kohlmann

LOD Map - A Visual Interface for Navigating Multiresolution Volume Visualization, Chaoli Wang, Han-Wei Shen

Blrm E

Visualization in Physical Sciences, Life Sciences & Engineering I

Chair: Klaus Mueller, *Stony Brook University*

Analyzing Complex FTMS Simulations: a Case Study in High-Level Visualization of Ion Motions, Wojciech Burakiewicz, Robert van Liere

Detection and Visualization of Defects in 3D Unstructured Models of Nematic Liquid Crystals, Ketan Mehta, T.J. Jankun-Kelly

Understanding the Structure of the Turbulent Mixing Layer in Hydrodynamic Instabilities, Daniel Laney, Peer-Timo Bremer, Ajith Macarenhas, Paul Miller, Valerio Pascucci

Hub-based Simulation and Graphics Hardware Accelerated Visualization for Nanotechnology Applications, Wei Qiao, Michael McLennan, Rick Kennell, David S. Ebert, Gerhard Klimeck

10:00 a.m. – 1:30 p.m.

Baltimore/Annapolis

Exhibits

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm B

Illustrative Visualization II

Chair: Jian Huang, *University of Tennessee*

Feature Aligned Volume Manipulation for Illustration and Visualization, Carlos D. Correa, Deborah Silver, Min Chen

Exploded Views for Volume Data, Stefan Bruckner, Eduard Gröller

Caricaturistic Visualization, Peter Rautek, Ivan Viola, Eduard Gröller

Blrm E

Video Systems and Time-Varying Data

Chair: Mark Duchaineau, *Lawrence Livermore National Laboratory*

Visual Signatures in Video Visualization, Min Chen, Ralf P. Botchen, Rudy R. Hashim, Daniel Weiskopf, Thomas Ertl, Ian M. Thornton

Asynchronous Distributed Calibration for Scalable and Reconfigurable Multi-Projector Displays, Ezekiel S. Bhasker, Pinaki Sinha, Aditi Majumder

Dynamic View Selection for Time-Varying Volumes, Guangfeng Ji, Han-Wei Shen

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

12:15 p.m. –1:15 p.m.

Blrm A

Vis Open Meeting

1:30 p.m. – 3:10 p.m.

Blrm B

Perception

Chair: Chris North, *Virginia Tech*

Enhancing Depth Perception in Translucent Volumes, Marta Kersten, James Stewart, Niko Troje, Randy Ellis

Texturing of Layered Surfaces for Optimal Viewing, Alethea S. Bair, Donald H. House, Colin Ware

Subjective Quantification of Perceptual Interactions Among Some 2D Scientific Visualization Methods, Daniel Acevedo, David H. Laidlaw

Occlusion-Free Animation of Driving Routes for Car Navigation Systems, Shigeo Takahashi, Kenichi Yoshida, Kenji Shimada, Tomoyuki Nishita

Blrm E

Visualization in Physical Sciences, Life Sciences & Engineering II

Chair: Russell Taylor II, *University of North Carolina*

Interactive Visualization of Intercluster Galaxy Structures in the Horologium-Reticulum Supercluster, Jameson Miller, Cory W. Quammen, Matthew C. Fleenor

An Atmospheric Visual Analysis and Exploration System, Yuyan Song, Jing Ye, Nikolai Svakhine, Sonia Lasher-Trapp, Mike Baldwin, David Ebert

Visualization of Fibrous and Thread-like Data, Zeki Melek, David Mayerich, Cem Yuksel, John Keyser

Comparative Visualization for Wave-based and Geometric Acoustics, Eduard Deines, Martin Bertram, Jan Mohring, Jevgenij Jegorovs, Frank Michel, Hans Hagen, Gregory M. Nielson

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. –4:55 p.m.

Blrm B

Vector/Tensor Visualization I

Chair: Gerik Scheuermann, *Universität Leipzig*

Hybrid Visualization for White Matter Tracts using Triangle Strips and Point Sprites, Dorit Merhof, Markus Sonntag, Frank Enders, Christopher Nimsky, Peter Hastreiter, Günther Greiner

Analyzing Vortex Breakdown Flow Structures by Assignment of Colors to Tensor Invariants, Markus Rütten, Min S. Chong

Superellipsoid-based, Real Symmetric Traceless Tensor Glyphs Motivated by Nematic Liquid Crystal Alignment Visualization, T.J. Jankun-Kelly, Ketan Mehta

Blrm E

Isosurfaces and Polygonal Meshes I

Chair: Dirk Bartz, *University of Tübingen*

High-Quality Extraction of Isosurfaces from Regular and Irregular Grids, John Schreiner, Carlos E. Scheidegger, Cláudio T. Silva

Mesh Layouts for Block-Based Caches, Sung-Eui Yoon, Peter Lindstrom

Out-of-Core Remeshing of Large Polygonal Meshes, Minsu Ahn, Igor Guskov, Seungyong Lee

VIS/VAST PHD COLLOQUIUM

8:30 a.m. – 10:15 a.m.

Blrm C/D

PhD Colloquium Morning Paper Session

Chairs: Richard May and Bill Pike, *Pacific Northwest National Laboratory*

Visualization of High-dimensional Data, Steven Bergner

Visual Inquiry of Spatio-Temporal Multivariate Patterns, Jin Chen

Visualization of Large Transition Systems, A. Johannes Pretorius

Visualization Diversity: A Cognitive-Based Training Method for Visualization Comprehension, Maria C. Velez

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm A

Panel: Visualization Careers

Moderator: Bill Lorensen, *GE Research*

Panelists: Chris Johnson, *University of Utah,* Bill Lorensen, *GE Research,* Tamara Munzner, *University of British Columbia,* Will Schroeder, *Kitware,* Terry Yoo, *National Library of Medicine*

Visualization is still a young and expanding discipline with plenty of exciting challenges and opportunities for innovation. This panel presents five approaches to careers in visualization: Academic Center (Johnson), Industrial Research (Lorensen), Academic Research (Munzner), Entrepreneur (Schroeder), and Government Scientist (Yoo). Panelist will describe their history, motivation, and positive/negative aspects of their career choice.

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 3:10 p.m.

Blrm A

PhD Colloquium Afternoon Paper Session

Chairs: Penny Rheingans and Alark Joshi, *University of Maryland, Baltimore County*

Feature-Based Graph Visualization, Daniel Archambault

Adaptive Visualization of Dynamic Unstructured Meshes, Steven P. Callahan

Visualization and Exploration of Perfusion Data, Steffen Oeltze

Visualization Techniques for Computational Mechanics, Alisa Neeman

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. –4:55 p.m.

Blrm A

Panel: Publishing your Visualization Research

Moderator: Penny Rheingans, *University of Maryland, Baltimore County*

Panelists: David Ebert, *Purdue University,* David Laidlaw, *Brown University,* Tamara Munzner, *University of British Columbia,* Jarke van Wijk, *Technische Universiteit Eindhoven*

Successful publishing begins with an original idea and ends with a contribution to the body of human knowledge. Along the way, the idea may be realized through an implementation, demonstrated to be relevant, evaluated, spun into a compelling technical story, and presented. Alternatively, the idea may be initially misunderstood and rejected. This panel bring together researchers who are active in publishing, reviewing, editing, and mentoring to discuss success stories, setbacks, and strategies.

VAST SYMPOSIUM

8:30 a.m. – 10:15 a.m.

Blrm C/D

PhD Colloquium, Please see left column for full schedule

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm C/D

Panel: Visual Analytics Education

Moderator: Jim Foley, *Georgia Institute of Technology*

Panelists: Stuart K. Card, *PARC*, David Ebert, *Purdue,* Alan MacEachren, *Penn State,* Bill Ribarsky, *UNC-Charlotte*

Visual Analytics is a newly-evolving field that spans across several more established disciplines. This panel will discuss how VA system developers and researchers are best educated at the MS and PhD levels.

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 3:10 p.m.

Blrm C/D

Evaluation and Collaborative Aspects

Chair: Brian Fisher, *Simon Fraser University*

Toward a Multi-Analyst, Collaborative Framework for Visual Analytics, Susan E. Brennan, Klaus Mueller, Greg Zelinsky, IV Ramakrishnan, David S. Warren, Arie Kaufman

Collaborative Visual Analytics: Inferring from the spatial organization and collaborative use of information, Paul Keel

Beyond Usability: Evaluation Aspects of Visual Analytic Environments, Jean Scholtz

Visualizing The Performance of Computational Linguistics Algorithms, Stephen Eick, Justin Mauger, Alan Ratner

ScentIndex: Conceptually Reorganizing Subject Indexes for Reading, Ed H. Chi, Lichan Hong, Julie Heiser, Stuart K. Card

BREAK 3:10 p.m. – 3:40 p.m.

3:40 p.m. – 5:20 p.m.

Blrm C/D

Multidimensional Multivariate Data

Chair: Pat Hanrahan, *Stanford University*

A Visual Interface for Multivariate Temporal Data: Finding Patterns of Events across Multiple Histories, Jerry Fails, Amy Karlson, Layla Shahamat, Ben Shneiderman

User Interfaces for the Exploration of Hierarchical Multi-dimensional Data, Mark Sifer

Exploratory Visualization of Multivariate Data with Variable Quality, Zaixian Xie, Shiping Huang, Matthew Ward, Elke Rundensteiner

Semantic Image Browser: Bridging Information Visualization with Automated Intelligent Image Analysis, Jing Yang, Jianping Fan, Daniel Hubball , Yuli Gao, Hangzai Luo, William Ribarsky, Matthew Ward

Pixnostics: Towards Measuring the Value of Visualization, Joern Schneidewind, Daniel Keim, Mike Sips

5:20 p.m. – 5:40 p.m.

Blrm C/D

Closing Remarks

Chairs: Pak Chung Wong, *Pacific Northwest National Laboratory,* Daniel Keim, *University of Konstanz*

FRIDAY, NOVEMBER 3

8:30 a.m. – 6:00 p.m.

Frederick/Columbia

Interactive Demo Lab

Harborview

Vis Posters

8:30 a.m. – 10:15 a.m.

Blrm A

Panel: Is there Science in Visualization?

Moderator: T. J. Jankun-Kelly, *Mississippi State University*

Panelists: Robert Kosara, *University of North Carolina at Charlotte*, Gordon Kindlmann, *Brigham and Women's Hospital, Harvard Medical School,* Chris North, *Virginia Tech,* Colin Ware, *University of New Hampshire,* E. Wes Bethel, *Lawrence Berkeley National Laboratory*

Advances in computer graphics technology and computing power have enabled the development of visualization techniques that have had a positive impact on medicine, computational science, bioinformatics, and finance. However, this focus on transitional efforts has not sufficiently addressed the basic science needed to create universal, validated principles on which to ground future visualization efforts. The purpose of the panel is to (1) assess whether a science of visualization is necessary and (2) discuss what is needed for such a science.

Blrm B

Large Data Set Visualization

Chair: Valerio Pascucci, *Lawrence Livermore National Laboratory*

Interactive Point-Based Rendering of Higher-Order Tetrahedral Data, Yuan Zhou, Michael Garland

Ambient Occlusion and Edge Cueing for Enhancing Real Time Molecular Visualization, Marco Tarini, Paolo Cignoni, Claudio Montani

Fast and Efficient Compression of Floating-Point Data, Peter Lindstrom, Martin Isenburg

Visualization and Analysis of Large Data Collections: a Case Study Applied to Confocal Microscopy Data, Wim de Leeuw, Pernette Verschure, Robert van Liere

Blrm E/F

Isosurfaces and Polygonal Meshes II

Chair: Ramani Duraiswami, *University of Maryland*

On Histograms and Isosurface Statistics, Hamish Carr, Brian Duffy, Barry Denby

Interactive Point-based Isosurface Exploration and High-quality Rendering, Haitao Zhang, Arie Kaufman

Using Difference Intervals for Time-Varying Isosurface Visualization, Kenneth Waters, Christopher Co, Kenneth Joy

Isosurface Extraction and Spatial Filtering using Persistent Octree (POT), Qingmin Shi, Joseph JaJa

BREAK 10:15 a.m. – 10:45 a.m.

10:45 a.m. – 12:00 p.m.

Blrm A

Volume rendering of extremely large datasets

Chair: Xavier Tricoche, *University of Utah*

Scalable Data Servers for Large Multivariate Volume Visualization, Markus Glatter, Colin Mollenhour, Jian Huang, Jinzhu Gao

Distributed Shared Memory for Roaming Large Volumes, Laurent Castanié, Christophe Mion, Xavier Cavin, Bruno Lévy

Progressive Volume Rendering of Large Unstructured Grids, Steven P. Callahan, Louis Bavoil, Valerio Pascucci, Cláudio T. Silva

Blrm B

Vector/Tensor Visualization II

Chair: Holger Theisel, *Max Planck Institute Saarbrücken*

Representing Higher-Order Singularities in Vector Fields on Piecewise Linear Surfaces, Wan-Chiu Li, Bruno Vallet, Nicolas Ray, Bruno Lévy

Techniques for the Visualization of Topological Defect Behavior in Nematic Liquid Crystals, Vadim A. Slavin, Robert A. Pelcovits, George Loriot, Andrew Callan-Jones, David H. Laidlaw

Diffusion Tensor Visualization with Glyph Packing, Gordon Kindlmann, Carl-Fredrik Westin

Blrm E/F

Volume Modeling and Rendering

Chair: David Ebert, *Purdue University*

Extensions of the Zwart-Powell Box Spline for Volumetric Data Reconstruction on the Cartesian Lattice, Alireza Entezari, Torsten Möller

A Generic and Scalable Pipeline for GPU Tetrahedral Grid Rendering, Joachim Georgii, Rüdiger Westermann

A Spectral Analysis of Function Composition and its Implications for Sampling in Direct Volume Visualization, Steven Bergner, Torsten Möller, Daniel Weiskopf, David J. Muraki

LUNCH BREAK 12:00 p.m. – 1:30 p.m.

1:30 p.m. – 3:10 p.m.

Blrm C/D/E/F

Capstone: Designing Visualizations to Enable Molecular Insights

Jane Richardson, *Duke University*

Our laboratory research goal of understanding 3D molecular structures depends strongly on the development and use of visualization systems. We especially value their effectiveness for enabling scientific insights, in our original research process as well as in the communication of those results, which leads us to emphasize interactive functionality and pragmatic effectiveness over perfection as presentation images. Therefore we design alternative molecular visualizations tuned to the medium, the user, and the specific scientific problem at hand; feedback from our own use improves them further.

POSTERS

Sunday-Tuesday, Harborview

InfoVis Posters

Visualizing Multivariate Network Using GeoSOM and Spherical Disk Layout, Yingxin Wu, Masahiro Takatsuka, Richard Webber

SportVis: Discovering Meaning in Sports Statistics Through Information Visualization, Andy Cox, John Stasko

NeuroVis: exploring interaction techniques by combining dimensional stacking and pixelization to visualize multidimensional multivariate data, John T. Langton, Astrid A. Prinz, Timothy J. Hickey

Effects of Animations on Maintaining Perceptual Constancy in Node-Link Diagrams, Maruthappan Shanmugasundaram, Pourang Irani, Carl Gutwin

Multi-Resolution Techniques for Visual Exploration of Large Time-Series Data, Ming Hao, Umeshwar Dayal, Tobias Schreck, Daniel Keim

The Tradeoffs when Using Space Time Cube Representation, Per Ola Kristensson, Daniel Anundi, Marius Björnstad, Nils Dahlbäck, Hanna Gillberg, Jonas Haraldsson, Ingrid Mårtensson, Mathias Nordvall, Josefine Ståhl

The Star System --- A Case Study for Clustered Graph Animation, Richard Webber

Visualization and Analysis of Small-World Email Networks, Xiaoyan Fu, Seok-Hee Hong, Nikola S. Nikolov, Xiaobin Shen, Yingxin Wu, Kai Xu

Topographically-Based Real-Time Traffic Anomaly Detection in a Metropolitan Highway System, Rajmonda Sulo, Anushka Anand, Leland Wilkinson, Robert Grossman, Stephen Eick

NewsEye: A Geographic News Visualization, Rowena Luk, Emelie KaiFeng Cheng

Visualizing Set Concordance with Permutation Matrix and Fan Diagram, Bohyoung Kim, Bongshin Lee, Jinwook Seo

Conversation Maps for Collaborative Drawing-Centered Design, Daniel Glaser, Alastair Iles, Cheryl Geisler

Two-Tone Pseudo Coloring for Multiple Variables, Mathias John, Christian Tominski, Heidrun Schumann

Exploring OLAP Aggregates with Hierarchical Visualization Techniques, Svetlana Mansmann, Marc H. Scholl, Daniel Keim, Florian Mansmann

Exploring Block Access Patterns of Native XML Storage, Halldor Janetzko, Daniel A. Keim, Marc Kramis, Florian Mansmann, Marcel Waldvogel

Interactive Poster: Visual Navigation Through Large Directed Graphs and Hypergraphs, Jason Eisner, Michael Kornbluh, Gordon Woodhull, Raymond Buse, Samuel Huang, Constantinos Michael, George Shafer

DocuBurst: Document Content Visualization Using Language Structure, Christopher Collins

Non-linear Summarization of a Database for 3D Model Retrieval, Yoshiki Akaike, Toshiya Shimizu, Jun Kobayashi, Ryutarou Ohbuchi

Visualizing Program Syntax to Support Agile Programming, Andrew Seniuk, Sheelagh Carpendale

Interactive Annotations on Large, High-Resolution Information Displays, Tobias Isenberg, Petra Neumann, Sheelagh Carpendale, Simon Nix, Saul Greenberg

PlantPost - Visualizing TemporalAspects of Message Postings, Annie Tat, Russell Kruger, Sheelagh Carpendale, Alan Dunning

Personalizing Typed Text through Visualization, Petra Neumann, Annie Tat, Torre Zuk, Sheelagh Carpendale

TreePlus: Visualizing Graphs as Trees, Bongshin Lee, Cynthia Sims Parr, Catherine Plaisant, Benjamin B. Bederson

Wednesday-Friday, Harborview

Visualization Posters

A Framework for Adaptive Visualization, K.W. Brodlie, J. Brooke, M. Chen, D. Chisnall, C.J. Hughes, N.W. John, M.W. Jones, M. Riding, N. Roard, M.J. Turner, J. Wood

ElVis: A Portal for Scientific Graphics, Eliot Feibush, Douglas McCune, Scott Klasky

Forecast Visualizations for Terrorist Events, Jason Goffeney, Greg S. Schmidt, Jason Dalton, Jim D'Archangelo

Simultaneous Visualization of Density and Velocity of Smoke, Masataka Imura, Yoshihiro Yasumuro, Yoshitsugu Manabe, Kunihiro Chihara

Visualizing Phosphorilation Experiments Data in the Context of Known Protein Interactions, Radu Jianu, David Laidlaw, Arthur Salomon

Hierarchy-based 3-D Visualization of Homologous Gene Expression across Different Organisms, Li Jin, Karl V. Steiner, Carl J. Schmidt, Keith S. Decker

Multi-Modal Medical Visualization based on Spatial Transfer Function, Jinman Kim, Stefan Eberl, David Feng

Proper Orthogonal Decomposition and Particle Image Velocimetry in Bat Flight, Mykhaylo Kostandov, Igor Pivkin, Kenneth Breuer, Sharon Swartz, David Laidlaw

Visualization of Nuclear Pasta, Jagannathan Lakshmipathy, John N. Huffman, Michael J. Boyles, Eric A. Wernert, Donald K. Berry

Image Based Streamline Generation and Rendering, Liya Li, Han-Wei Shen

Drishti - Volume Exploration and Presentation Tool, Ajay Limaye

Robust Centerline Extraction for Virtual Endoscopy Using a Modified Distance Field, Jianfei Liu, Kalpathi Subramanian

Steroscopic Visualization and Virtual Reality Displays, Salvatore Livatino, Filippo Privitera

Volume Rendering with a Grid-Independent Illuminant Particle Model, Frederika Rambu Ngana, Takuya Hatta, Naohisa Sakamoto, Jorji Nonaka, Satoshi Tanaka, Koji Koyamada

A Web-Based Interactive 3D Visualization Architecture, David Ostrowski

DTI-Mapper : A Framework for the Creation and Analysis of New Discriminants to Detect DTI Properties, Koji Sakai, Naohisa Sakamoto, Jorji Nonaka, Koji Koyamada, Yukio Yasuahara, Shiho Takagi, Kei Yamada, Hiroyuki Oouchi, Tsunehiko Nishimura

Visualizing Patterns in the Poincare Plot of a Magnetic, Allen R. Sanderson, Xavier Tricoche, Christoph Garth, Scott Kruger, Carl Solvinec, Eric Held, Joshua Breslau

Visualizing Abstract Data Using Animation, Amit Sawant, Christopher Healey

The Celera Genome Browser: Visualizing and Annotating the Human Genome, Russell Turner, James Baxendale, Peter Davies, Patrick Dunn, Leslie Foster, Scott Henderson, Todd Safford

Visualization support to chemistry research, Mario Valle

Illustrative Rendering for Information Visualization, Chris Waters, T.J. Jankun-Kelly

Transfer Function Fusing, Yingcai Wu, Huamin Qu, Hong Zhou, Ming-Yuen Chan

Visualization of Rupture Fault Simulation Inspired by Light Interference, Xiaoru Yuan, Minh X Nguyen, Yingchun Liu, David A. Yuen, Baoquan Chen, Yaolin Shi

Raycasting Feature-Enhanced Distance Field, Nan Zhang , Xiaoru Yuan, Huamin Qu, Baoquan Chen

INTERACTIVE DEMO LAB

Monday-Friday, Frederick/Columbia

NEW: Scientific Animation Theater

Vis 2006 will see the premiere of the Scientific Animation Theater. This year's film will include the following segments:

Exploring an Earthquake Simulation, Amit Chourasia, Steve Cutchin

27 Storms: Arlene to Zeta, Greg Shirah, Alex Kekesi, Lori Perkins, Horace Mitchell, Stuart A. Snodgrass, Marte Newcombe, Randall Jones, Jeff de La Beaujardiere, Kevin Mahoney, Eric Sokolowsky, Cindy Starr, Joycelyn Jones, James W. Williams, Jesse Allen, Tom Bridgman, Michael Starobin, Jeff Halverson

A Short Tour of the Cryosphere, Alex Kekesi, Cindy Starr, Horace Mitchell, Ryan Boller, Greg Shirah, Stuart A. Snodgrass, Walt Meier, Waleed Abdalati, Ron Weaver, Mary Jo Brodzik, Richard Armstrong, Jennifer Brennan, Carol Boquist, Brian Krupp, Jarrett Cohen, Michael Starobin, Mike Velle, Tom Bridgman, Randall Jones, Kevin Mahoney, Marte Newcombe, Lori Perkins, Eric Sokolowsky

Natural Neighbor Based Scattered Data Interpolation, Tom Bobach, Martin Bertram, Georg Umlauf

Room Acoustic Visualization and Auralization, Eduard Deines, Frank Michel, Martin Bertram, Hans Hagen, Falko Kuester

2003 San Diego Wildfires, Atul Nayak, Evan Morikawa, Hans-Werner Braun

Illustrative Visualization of Hurricane Katrina, Alark Joshi, Jesus Caban, Penny Rheingans, Lynn Sparling

Towards Photorealistic Rendering of Astrophysical & Cosmological Simulation Data: Proto-Star ionizes surrounding Proto-Galaxy, Ralf Kaehler, John Wise, Tom Abel, Hans-Christian Hege

Parallel Volume Rendering of a High-Fidelity Unstructured-Grid Fire Simulation, Kenneth Moreland, Sheldon Tiesze

EPSS-GE: An Earth and Planetary System Science Game Engine, Gloria Brown-Simmons, Falko Kuester, Christopher Knox, So Yamaoka

Monday-Tuesday, Frederick/Columbia

Symposium Demos

The CanopyView Visualization Project - KeyVariable-Driven Ecology Visualization - In Java over Visualization Toolkit (VTK), Judith Cushing, Lee Zeman, Michael Finch, Nalini Nadkarni, Anne Fiala

Wednesday-Thursday, Frederick/Columbia

Conference Demos

An Information Interface to a Life-seeking Desert Rover, Peter Coppin

Rapid Development of Visual Tools for Exploring Geospatial, Temporal, and Conceptual Information, Chris Weaver, Ritesh Agrawal, Jin Chen, Mike Stryker, Alan M. MacEachren

Monday-Thursday, Frederick/Columbia

Full Week Demos

Storylines - a Tool to Explore Events and Key Players in Stories, Weizhong Zhu, Chaomei Chen

Modelling and Understanding Knowledge Related to Digital Shapes - the AIM@SHAPE Approach, Laura Papaleo, Leila De Floriani, Emanuele Danovaro

Great Grids: How and Why?, Maureen Stone, Lyn Bartram

Diorama Table, Keiko Takahashi, Shinji Sasada

Drishti: A Volume Exploration and Presentation Tool, Ajay Limaye

Visualization Interfaces on Reconfigurable High-Resolution Displays, Chris North

INFOVIS 2006 CONTEST RESULTS

Exploration of the local distribution of major ethnic groups in the USA, Sebastian Kay Belle, Daniela Oelke, Sonja Oettl, Mike Sips

π-flow, Mike Bennett, Brendan Sheehan, Benoit Gaudin, Aaron J. Quigley

Free Your data!, Sophie Engle, James Shearer, Michael Ogawa, Steve Haroz and Kwan-Liu Ma

Concise: a responsive data overview for small spaces, Kim Rees

Information at your fingertips: exploring the US Census Data, Mike Sips, Jörn Schneidewind, Daniel Keim, Stephen C. North

Visual discovery of patterns in census data, Zaixian Xie, Charudatta Wad, Do Quyen Nguyen, Qingguang Cui, Di Yang, Matthew O. Ward and Elke A. Rudensteiner

VAST 2006 CONTEST RESULTS

First place, Corporate Category: Applied Analysis with nSpace and GeoTime, Pascale Proulx, Lynn Chien, Adam Bodnar, Kaleb Ruch and William Wright

Second Place, Corporate Category: DECIDE™, Russell A. Lankenau, M. Andrew Eick, Alexander Decherd, Maxim Khailo, Phil Paris, and Jesse Fugitt

First Place, Student Category: Visualizing Relationships in a Diverse Data Collection, Summer Adams and Kanupriya Singhal

VIS 2006 CONTEST RESULTS

First Place: California Streaming, Jens Schneider, Jens Krüger, Kai Bürger, Rüdiger Westermann

Honorable Mention: Visualization of the Terashake Dataset, Ralf Sondershaus, Wolfgang Straßer

Honorable Mention: 2006 IEEE Visualization Design Contest, John van der Zwaag

SUPPORTERS AND EXHIBITORS

The IEEE Visualization 2006 Conference Committee gratefully acknowledges the following supporters and exhibitors:

GOLD SUPPORTERS

Kitware
Leaders in Visualization Technology

DELL

SILVER SUPPORTERS

Chevron

CYVIZ

IBM Research

MITSUBISHI ELECTRIC
Mitsubishi Electric Research Laboratories

TERARECON, INC.

Harvard Initiative in Innovative Computing

Microsoft Research

NIH/NSF
VISUALIZATION RESEARCH CHALLENGES

NATIONAL LIBRARY OF MEDICINE

ATi

Computer Systems, Inc.
MERCURY

PUBLISHER SUPPORTERS

A K Peters, Ltd.

palgrave macmillan

MORGAN KAUFMANN