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FINAL PROGRAM

Sponsored by IEEE Computer Society Technical Committee on Visualization and Graphics In Cooperation with ACM/SIGGRAPH

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IEEE Symposium on Information Visualization (InfoVis 2001)
www.infovis.org/infovis2001

IEEE Symposium on Parallel and Large-Data Visualization and Graphics (PVG 2001)
www.gg.caltech.edu/PVG01

IEEE Visualization 2001 Conference Co-Chairs:

Mike Bailey, *San Diego Supercomputer Center*

Charles Hansen, *University of Utah*

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
7:00am	REGISTRATION	REGISTRATION	REGISTRATION	REGISTRATION	REGISTRATION	REGISTRATION
8:00am	TUTORIALS	TUTORIALS; Symposium on Information Visualization *Royal I-V and Pacific*; Symposium on Parallel and Large Data Visualization and Graphics • *Island and Sun I-V*	TUTORIALS; Symposium on Information Visualization *Royal I-V and Pacific*; Symposium on Parallel and Large Data Visualization and Graphics • *Island and Sun I-V*	Keynote Session *Island, Pacific, and Royal*	Papers; Panel; WIP; Exhibition • *Mission Bay Room*	Papers; Panel; Cases
9:00am				Papers; Papers; Cases	Papers; Papers; Cases	Papers; Cases; WIP
10:00am						
11:00am					Vis 2002 Open Meeting • *Pacific*	
12:00pm						
1:00pm					Papers; Papers; Cases	Capstone Session *Island, Pacific, and Royal*
2:00pm				Papers; Papers; Cases		
3:00pm						
4:00pm				Papers; Panel; WIP	Papers; Panel; Papers	
5:00pm				Exhibition • *Mission Bay Room*		
6:00pm		InfoVis Posters *Sunset Ballroom*				
7:00pm		Symposium & Tutorial Reception *Sunset Ballroom*	VizLies *Island & Sun*	Conference Reception *Island, Pacific, and Royal*	BOFs	
8:00pm						
9:00pm		InfoVis 2002 Open Meeting • *Royal & Pacific*				
10:00pm						

The three conference tracks will cover:

Visualization Techniques
Information Visualization, Databases, Human Perception, Mesh and Data Simplification, Human Factors, Multi-resolution Techniques, Multivariate Visualization, Parallel and Large-Data Visualization and Graphics, Virtual Reality

Visualization Algorithms
Volume Rendering, Flow Visualization, Isosurfaces, Compression, Vector and Tensor Visualization, Sonification

Visualization Applications
Archaeology, Astrophysics, Virtual Reality, Automotive, Biomedicine, Chemistry, Education, Aerospace, Electronics, Environment, Data Explorer, Iris Explorer, Mathematics, Mechanics, Physics, WWW, Java, Finance, VRML, HTML, AVS, Molecular Biology, Khoros, VTK

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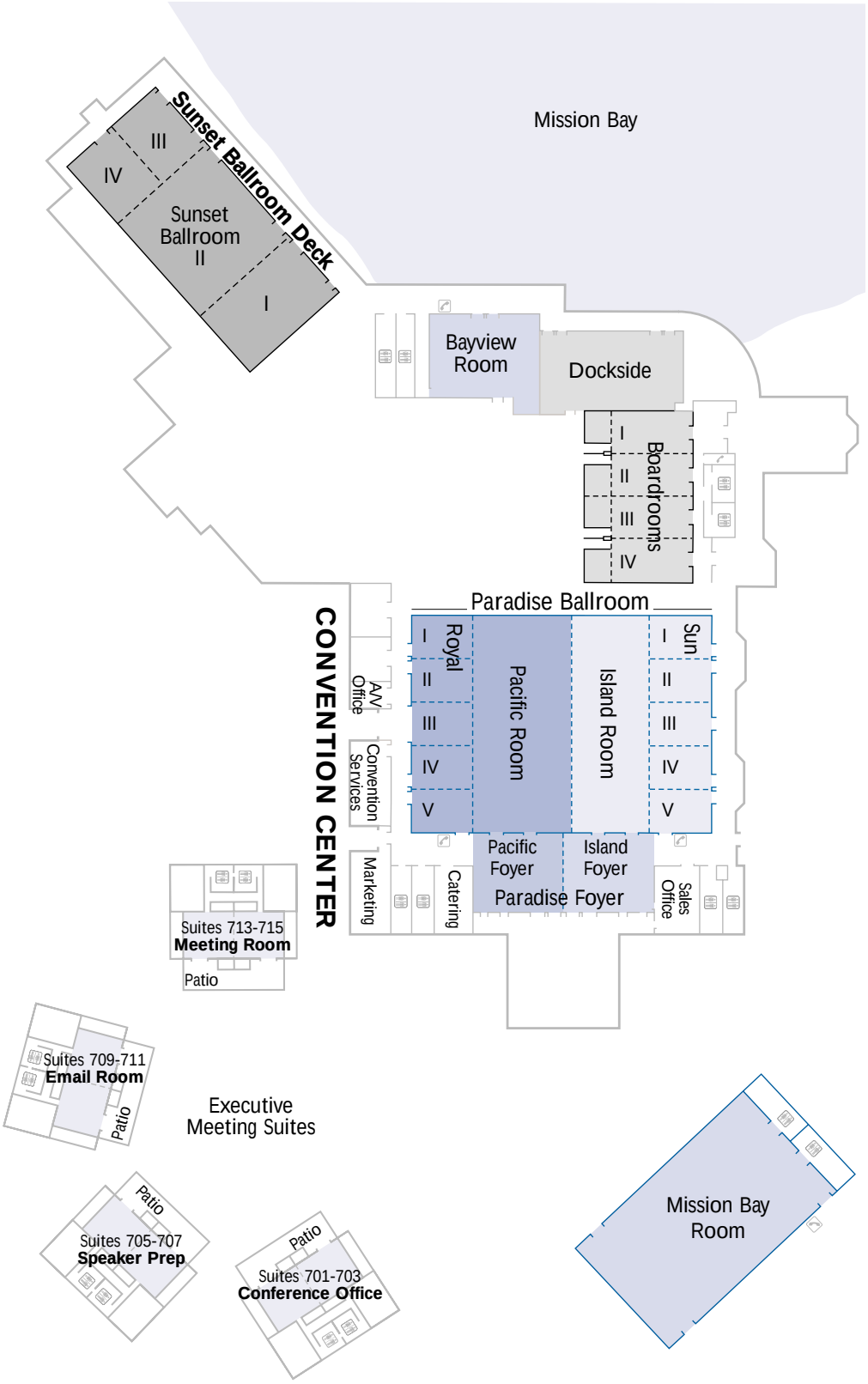

Welcome to IEEE Visualization 2001

Welcome to the IEEE Visualization 2001 conference!

This conference occupies an important niche in the community. It is the one place that completely focuses on the use of computer graphics and interactive techniques in the visualization of complex data. So, it doesn't matter if your application is biotechnology, medicine, chemistry, physics, engineering, mathematics, or business, this conference will be your key to seeing the latest ideas and products. And, with the focused theme, the opportunities to network with your colleagues are exceptional!

This document describes the Visualization 2001 technical program, including Papers, Panels, Tutorials, Case Studies, and Works in Progress. As you can see, the technical committees have done an outstanding job of selecting the very best that this field has to offer.

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INTERNET ACCESS

Internet access will be available Sunday through Friday. Check at the conference for scheduled times.

Executive Suites 709-711

SYMPOSIUM AND TUTORIAL RECEPTION

Monday, October 22, 2001

7:30 p.m. - 9:30 p.m.

Sunset Ballroom

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VISUALIZATION 2001 TUTORIALS

Sunday

TUTORIAL 1

Pacific Room

Sunday 8:30-5:30

Large Scale Data Visualization and Rendering

Instructors: Kenneth (Ken) M. Martin, *Kitware Inc.*
Greg Abram, *IBM Thomas J. Watson Research Center*
James Ahrens, *Los Alamos National Laboratory*
Randall Frank, *Lawrence Livermore National Laboratory*
Patrick Moran, *NASA Ames Research Center*

Level: Beginner/Intermediate

Course Description:
Visualizing and rendering large data is a significant and multifaceted problem. In this tutorial we will discuss some of the issues in handling large data and a variety of approaches to dealing with them. Examples of these solutions will be provided in the context of software tools such as OpenDX, VTK, the Demand Driven Visualizer, and Chromium. Topics covered will include parallel visualization, data streaming, lazy evaluation, collection issues, and sort-first versus sort-last rendering. Results will be presented from a variety of problem domains.

TUTORIAL 2

Island Room

Sunday 8:30-12:30

Information Visualization for Beginners

Instructor: Bob Spence, *Imperial College*

Level: Beginner

Course Description:
Many people and institutions possess considerable volumes of data which may 'hide' some fundamental relation which could be exploited to advantage: estate agents, banks, medical researchers, fraud investigators and many others would like to be able to view some graphical presentation of that data and perhaps interact with it and, at some point, be able to say "Ah Ha! Now that is interesting!" That is what Information Visualization is all about: it is the process of forming a mental model of data, thereby supporting insight into that data.

TUTORIAL 3

Island Room

Sunday 1:30-5:30

Rendering and Visualization in Parallel Environments

Instructors: Dirk Bartz, *University of Tübingen*
Cláudio Silva, *AT&T Labs - Research*

Level: Beginner/Intermediate

Course Description:
The continuing commoditization of the computer market has precipitated a qualitative change. Increasingly powerful processors, large memories, big harddisk, high-speed networks, and fast 3D rendering hardware are now affordable without a large capital outlay. Clusters of workstations and SMP-servers are utilizing these technologies to drive interactive applications like large graphical display walls (i.e., Powerwall or CAVE systems). In this course, attendees will learn how to understand and leverage (technical and personal) workstation- and server-based systems as components for parallel rendering. Topics include: parallel polygon and parallel volume; workload characterization and partitioning; static, dynamic, and adaptive load balancing. These concepts are then applied to characterize various parallelization strategies reported in the literature for polygon and volume rendering. The course does not dwell on actual implementations of these strategies but focuses on a comparison of their benefits and drawbacks. Case studies will provide additional material to explain the use of these techniques.

VISUALIZATION 2001 TUTORIALS (cont.)

Monday, Tuesday

TUTORIAL 4

Dockside

Monday 8:30-5:30

Multiresolution Techniques for Surfaces and Volumes

Instructors: Markus Gross, *Swiss Federal Institute of Technology (ETH)*
Kenneth Joy, *University of California at Davis*
Richard Hammersley, *Schlumberger Austin Technology Center*
Andreas Hubeli, *Swiss Federal Institute of Technology (ETH)*
Hong-Qian (Karen) Lu, *Schlumberger Austin Technology Center*
Hanspeter Pfister, *MERL - Mitsubishi Electric Research Laboratories*

Level: Intermediate

Course Description:
Multiresolution methods and hierarchical data organization have become powerful tools for the representation of surfaces and volumes within visualization. Their power lies in the fact that they combine a lot of useful properties, such as level of detail, local support, smoothness, error bounds and fast computations. This allows one to design efficient methods for data approximation, analysis and compression often resulting in computationally less expensive algorithms. Therefore, multiresolution and hierarchical methods have been used widely and successfully in the visualization community and have developed to a core methodology. Prominent examples comprise adaptive surface and mesh simplification, multiresolution visualization, volume compression and renderings.

The goal of this tutorial is two-fold: we will describe the most important state-of-the art surface and volume representations and we will elucidate their usefulness as modeling tools for visualization. The discussed representations include wavelets, hierarchical splines, subdivision surfaces, mesh reduction methods for surfaces and volumes, discrete surface and volume representations, schemes based on signal processing tools and classical representations. In addition we will show the power of the described methods in various applications with a special emphasis on geosciences. In each of them hierarchy is used in a different setting allowing us to demonstrate the versatility of design patterns and strategies for multiresolution methods.

TUTORIAL 5

Dockside

Tuesday 8:30-5:30

From Transfer Functions to Level Sets: Advanced Topics in Volume Image Processing

Instructors: Terry S. Yoo, *National Library of Medicine, NIH*
Raghu Machiraju, *Ohio State University*
Gordon Kindlmann, *University of Utah*
Torsten Möller, *Simon Fraser University*
Ross Whitaker, *University of Utah*

Level: Advanced Intermediate

Course Description:
What are the elements for quality in volume graphics? What do you have to know about image analysis for volume graphics? Efficiency is not the problem; in many cases adding computer power does not improve the image. Rather, additional graphics pipelines simply reduce the time needed to create a flawed image. When brute force fails, research must fall back on the mathematical principles of the geometry and the underlying nature of sampled volume data. We will cover advanced volume processing topics in 1) linear and nonlinear filtering, 2) reconstruction, 3) transfer function design, 4) wavelets and multiresolution techniques, and 5) volume modeling and manipulation through level set methods and constrained implicit surfaces. As visualization specialists move beyond manipulating relatively inflexible tools for the creation of images that convey messages, they will require advanced capabilities in analysis and manipulation of the data models with which they are presented. This course is designed to cover some of the most important methods for analyzing, smoothing, and reconstructing volume data as part of visualization. We will also present techniques that are of ever increasing importance in our field, such as level sets and implicit surfaces for modeling and manipulating volume models.

INFOVIS OPEN MEETING

Future Directions for the InfoVis Symposium

Bring ideas, feedback, and input, and have your say.

Monday, October 22, 2001

9:30 p.m. - 10:30 p.m.

Royal I-V and Pacific

TUESDAY EVENING SPECIAL SESSION

Tuesday, October 23, 7:30pm

Island and Sun

(VizLies 2001)

How to Lie and Confuse with Visualization

People have misled with statistics and maps for years. Now it's time to look again into what is misleading and confusing in the field of visualization. Your once-a-year big chance to do just that, in the open, will be in this special party session on Tuesday, October 23, 2001 at 7:30 p.m. You are invited to bring with you visualization lies and confusing articles (yours or others), on MS PowerPoint slides, transparencies, or on video. During this evening, you will be allowed to lie and confuse, but not to take credit for the work of others,* so please do not forget to mention the producers' names. After the informal presentations and truthful debates, the audience will choose the biggest (visualization) lie for 2001. When the evening is over, lying will be outlawed again (for another year). Quite seriously, we hope that by presenting common and uncommon errors occurring in the visual presentation of information, all of us in the visualization community will benefit, or at least have a good laugh at the expense of others. Reservations and advance submissions are now being accepted . Please send them to **Nahum Gershon**, The MITRE Corporation, 1820 Dolley Madison Blvd., McLean, VA 22102-3481. Reservations and advance submissions are not required but are strongly recommended. Confused? For more information (genuine!), please contact gershon@mitre.org.

**Instead, you are allowed to professionally blame those responsible for the lies and confusion.*

October 22–23, 2001
San Diego Paradise Point Hotel
San Diego, California
http://www.infovis.org/infovis2001

IEEE SYMPOSIUM ON INFORMATION VISUALIZATION (INFOVIS 2001) *Royal I-V and Pacific*

Sponsored by the IEEE Computer Society Technical Committee on Visualization and Graphics

INFOVIS 2001 KEYNOTE SESSION

To Draw a Tree

Speaker: Pat Hanrahan, *Stanford University*

Abstract: The quintessential goal of information visualization is depicting abstractions and relations for non-spatial data. A hierarchy is a particularly expressive abstraction that can be applied to a broad range of domains: the genealogical lineages of human descent, the functional decomposition of complex mechanical objects, the classification of knowledge, the evolutionary relationships between species. All of these hierarchical relationships are representable through the abstraction of a recursively defined tree. For this reason, trees occupy a place along with arrays, lists and graphs as one of the most important data structures in computer science.

Considering the simple problem of how to effectively draw a tree uncovers many issues fundamental to information visualization. Different drawing styles emphasize different properties of trees, often in subtle ways. I will discuss how people think about trees, and thus what kinds of relationships a tree drawing can usefully convey. My discussion will include a review of many methods for drawing trees, including both historical examples from the sciences and techniques recently developed by researchers in information visualization.

***Pat Hanrahan** is the CANON USA Professor of Computer Science and Electrical Engineering at Stanford University where he teaches computer graphics. His current research involves visualization, image synthesis, and graphics systems and architectures. Before joining Stanford he was a faculty member at Princeton. He has also worked at Pixar where he developed volume rendering software and was the chief architect of the RenderMan™ Interface - a protocol that allows modeling programs to describe scenes to high quality rendering programs. Previous to Pixar he directed the 3D computer graphics group in the Computer Graphics Laboratory at New York Institute of Technology. Professor Hanrahan has received three university teaching awards. He has also received an Academy Award for Science and Technology, the Spirit of America Creativity Award, the SIGGRAPH Computer Graphics Achievement Award, and was recently elected to the National Academy of Engineering.*

MONDAY, October 22, 2001

8:30 - 8:45 ***Opening Remarks***; *Chair:* Keith Andrews

8:45 - 9:45 ***Keynote Address*: To Draw a Tree**, Pat Hanrahan, *Stanford University*; *Chair:* Pak Chung Wong

COFFEE BREAK ***Monday, 9:45 - 10:15am***

10:15 - 11:30 **Papers 1**: ***Time, Change, and Clustering***; *Chair:* Daniel Keim

(1) **Visualizing Time-Series on Spirals**, Marc Weber, *crcp*, Marc Alexa, *TU Darmstadt*, and Wolfgang Müller, *e4ib.com*

(2) **Change Blindness in Information Visualization: A Case Study**, Lucy Nowell, Elizabeth Hetzler, and Ted Tanasse, *Pacific Northwest National Laboratory*

(3) **Cluster Stability and the Use of Noise in Interpretation of Clustering**, George Davidson, Brian Wylie, and Kevin Boyack, *Sandia National Laboratories*

BREAK ***Monday, 11:30 - 11:45am***

11:45 - 12:15 **Technical Notes 1: *Software Testing and Focus Zooming***; *Chair:* Tamara Munzner

(1) **Technical Note: Visually Encoding Program Test Information to Find Faults in Software**, James Eagan, Mary Jean Harrold, James Jones, and John Stasko, *Georgia Institute of Technology*

(2) **Technical Note: Getting Along: Composition of Visualization Paradigms**, Alan Keahey, *Visual Insights, Inc.*

LUNCH ***Monday, 12:15 - 1:45pm***

1:45 -3:15 **Papers 2 + Technical Note 2: *Graph Visualization***; *Chair:* Stephen North

(1) **Animated Exploration of Graphs with Radial Layout**, Ka-Ping Yee, Danyel Fisher, Rachna Dhamija, and Marti Hearst, *University of California, Berkeley*

(2) **Effective Graph Visualization Via Node Grouping**, Janet Six and Ioannis Tollis, *University of Texas at Dallas*

(3) **Visualization of State Transition Graphs**, Frank van Ham, Huub van de Wetering, and Jarke van Wijk, *Eindhoven University of Technology*

(4) **Technical Note: Graph Sketches**, James Abello, *AT&T Labs - Research*, Irene Finocchi, *University of Rome*, and Jeffrey Korn, *AT&T Labs* - Research

COFFEE BREAK ***Monday, 3:15 - 3:45pm***

3:45 - 5:00 **Papers 3: *Hierarchical Visualization***; *Chair:* George Robertson

(1) **Ordered Treemap Layouts**, Ben Shneiderman, *University of Maryland*, and Martin Wattenberg, *Dow Jones*

(2) **Collapsible Cylindrical Trees: A Fast Hierarchical Navigation Technique**, Raimund Dachselt and Jürgen Ebert, *Dresden University of Technology*

(3) **Botanical Visualization of Huge Hierarchies**, Ernst Kleiberg, Huub van de Wetering, and Jarke van Wijk, *Eindhoven University of Technology*

BREAK ***Monday, 5:00 - 6:45pm***

6:45 -7:30 **Interactive Posters** (co-located with Symposium Reception); *Chair:* Tamara Munzer

(1) **Visualizing Hierarchies Using a Modified Focus+Context Technique**, Ricardo A. Cava, *UCPel-CEFET*, and Carla Freitas, *UFRGS*

(2) **Utilization of Wireless Technology in Immersive Visualization to Facilitate International NGO Disaster**, Eric G. Frost, Mark L. Bellows, Teddy P. Bunyapanasarn, Kelly M. Hazen, John P. O'Hara, Christopher S. Reel, Gia Truong, and Dawn M. Wise, *San Diego State University*

(3) **Interactive Visualization of Prices and Earnings around the Globe**, Luc Girardin and Dominique Brodbeck, *Macrofocus GmbH*

(4) **Visualization for Energy Efficient Building Design**, Daniel Glaser and M. Susan Ubbelohde, *University of California Berkeley*

(5) **Visualizing the Patent Document Collection as a Graph of Inventors and their Inventions**, Douglas Gordin and Robert Farrell, *IBM T.J. Watson Research Center*

(6) **AS Graph: a Macroscopic Visualization of the Internet**, Bradley Huffaker, Margaret Murray, Young Hyun, K.C. Claffy, and David Moore, *CAIDA*

(7) **A Component-based Framework for Uniform Resource Visualization**, Kukjin Lee, *Michigan State University*

(8) **Visualizing Time related events for Intrusion Detection**, Kovalan Muniandy, *ORINCON Corporation*

7:30 - 9:30 **Symposium Reception**

9:30 - 10:30 **InfoVis Open Meeting**; *Chairs:* Keith Andrews and John Dill

TUESDAY, October 23, 2001

8:30 - 9:45 **Papers 4**: ***Blurring, Queries, and Bar Charts***; *Chair:* Jim Thomas

(1) **Semantic Depth of Field**, Robert Kosara, Silvia Miksch, *Vienna University of Technology*, and Helwig Hauser, *VRVis Research Center, Austria*

(2) **Interactive Visualization of Multiple Query Results**, Susan Havre, Elizabeth Hetzler, Ken Perrine, Elizabeth Jurrus, and Nancy Miller, *Pacific Northwest National Laboratory*

(3) **Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation**, Daniel Keim, *University of Constance*, Ming Hao, *HP Labs, Palo Alto*, Julian Ladisch, *University of Constance*, Meichun Hsu, and Umeshwar Dayal, *HP Labs, Palo Alto*

COFFEE BREAK ***Tuesday, 9:45 - 10:15am***

10:15 - 11:30 **Papers 5: *Empirical Studies***; *Chair:* Stuart Card

(1) **An Empirical Comparison of Three Commercial Information Visualization Systems**, Alfred Kobsa, *University of California, Irvine*

(2) **A Comparison of 2-D Visualization of Hierarchies**, Todd Barlow and Padraic Neville, *SAS Institute*

(3) **2D vs 3D, Implications on Spatial Memory**, Monica Tavanti and Mats Lind, *Uppsala University*

BREAK ***Tuesday, 11:30 - 11:45am***

11:45 - 12:15 **Case Studies 1: *Decision Trees and Clickstreams***; *Chair:* Nahum Gershon

(1) **Case Study: Visualization for Decision Tree Analysis in Data Mining**, Todd Barlow and Padraic Neville, *SAS Institute*

(2) **Case Study: E-Commerce Clickstream Visualization**, Jeffrey Brainerd and Barry Becker, *Blue Martini Software*

LUNCH ***Tuesday, 12:15 - 1:45pm***

1:45 - 2:15 **Case Studies 2: *GIS and Medicine***; *Chair:* Bob Spence

(3) **Case Study: Design and Assessment of an Enhanced Geographic Information System for Exploration of Multivariate Health Statistics**, Robert Edsall, *Arizona State University*, Alan MacEachren, *The Pennsylvania State University*, and Linda Pickle, *National Cancer Institute*

(4) **Case Study: Graphic Data Display for Cardiovascular System**, James Agutter, Noah Syroid, Frank Drews, Dwayne Westenskow, Julio Bermudez, and David Strayer, *University of Utah*

BREAK ***Tuesday, 2:15 - 2:30pm***

2:30 - 3:30 **Late Breaking Hot Topics**; *Chair:* John Dill

(1) **Data Wear: Revealing Trends of Dynamic Data in Visualizations**, Chris North, Umer Farooq, and Dilshad Akhter, *Virginia Tech*

(2) **Email Visualizations to Aid Communications**, Steven Rohall, Daniel Gruen, Paul Moody, and Seymour Kellerman, *IBM Research at Lotus Development*

(3) **Visualizing Communication Timelines Containing Sparsely Distributed Clusters**, Marcus Beale, Marty Einstein, Scott McCrickard, Chris North, and Purvi Saraiya, *Virginia Tech*

(4) **Exploring the Video Reality: 3D Approaches to Video Visualization and Browsing**, Rune Hjelsvold, *Siemens Corporate Research*

COFFEE BREAK ***Tuesday, 3:30 - 4:00pm***

4:00 - 5:30 ***Capstone Panel*: Battlespace Visualization: A Grand Challenge**

Organizer: Jeffrey Posdamer, *Sarnoff Corporation*

Speakers: Jack Dantone, Rear Admiral (Ret.), *National Imagery and Mapping Agency*
Nahum Gershon, *MITRE*
John Dale, *National Imagery and Mapping Agency*
Trish Hamburger, *Naval Surface Warfare Center, Integrated Command Environment Laboratory*
Ward Page, *Command Post of the Future*

5:30 - ***Closing Remarks***; *Chair:* Steven Feiner

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Stefan Kerpedjiev, *MAYA Viz*
Jake Kolojejchick, *MAYA Viz*
Sharon Laskowski, *National Institute of Standards and Technology*
Jock Mackinlay, *University of Aarhus*
Tamara Munzner, *Compaq Systems Research Center*
Stephen C. North, *AT&T Labs*
Harald Reiterer, *University of Konstanz*
George Robertson, *Microsoft Research*
Steven Roth, *MAYA Viz*
Hikmet Senay, *J. P. Morgan*
Robert Spence, *Imperial College*
John Stasko, *Georgia Institute of Technology*
James Thomas, *Pacific Northwest National Laboratory*
Matthew Ward, *Worcester Polytechnic Institute*
Colin Ware, *University of New Hampshire*
Jarke J. van Wijk, *Eindhoven University of Technology*
Graham Wills, *Lucent Technologies Bell Labs*
Jim Wise, *Integral*Visuals, Inc.*
Pak Chung Wong, *Pacific Northwest National Laboratory*
William Wright, *Visual Insights*

October 22–23, 2001
San Diego Paradise Point Hotel
San Diego, California
http://www.gg.caltech.edu/PVG01/

IEEE SYMPOSIUM ON PARALLEL AND LARGE-DATA VISUALIZATION AND GRAPHICS (PVG 2001) *Island and Sun I-V*

Sponsored by the IEEE Computer Society Technical Committee on Visualization and Graphics

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David Breen, *California Institute of Technology*
Alan Heirich, *Compaq Computer Corporation*
Anton Koning, *SARA Computing and Networking Services*

Program Committee

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Sorin Istrail, *Celera Genomics Corporation*
Ulrich Lang, *University of Stuttgart*
Peter Lindstrom, *Lawrence Livermore National Laboratories*
Kwan-Liu Ma, *University of California, Davis*
Raghu Machiraju, *Ohio State University*
Steven Molnar, *nVidia Corporation*
Erik Reinhard, *University of Utah*
Cláudio Silva, *AT&T Labs-Research*
Sam Uselton, *Lawrence Livermore National Laboratories*

MONDAY, October 22, 2001

8:45 - 9:45 ***Welcome and Keynote Address***; *Chair:* David Breen

Visualization Challenges for a New Cyber-pharmaceutical Computing Paradigm, Russell J. Turner, Kabir Chaturvedi, Nathan J. Edwards, Daniel Fasulo, Aaron L. Halpern, Daniel H. Huson, Oliver Kohlbacher, Jason R. Miller, Kmut Reinert, Karin A. Remington, Russel Schwartz, Brian Walenz, Shibu Yooseph, and Sorin Istrail, *Celera Genomics Corporation*

COFFEE BREAK ***Monday, 9:45 - 10:15am***

10:15 - 12:15 ***Surfaces and Parallel Rendering***; *Chair:* Raghu Machiraju

(1) **Delaunay Based Shape Reconstruction from Large Data**, Tamal K. Dey, Joachim Giesen, and James Hudson, *Ohio State University*

(2) **Parallel Point Reprojection**, Erik Reinhard, Peter Shirley, and Charles Hansen, *University of Utah*

(3) **Parallel Rendering with K-Way Replication**, Rudrajit Samanta, Thomas Funkhauser, and Kai Li, *Princeton University*

(4) **Sort-Last Parallel Rendering for Viewing Extremely Large Data Sets on Tile Displays**, Kenneth Moreland, Bryan Wylie, and Constantine Pavlakos, *Sandia National Laboratories*

LUNCH ***Monday, 12:15 - 1:45pm***

1:45 - 3:15 ***Vector Field Visualization***; *Chair:* Dirk Bartz

(1) **Case Study: Parallel Lagrangian Visualization Applied to Natural Convective Flows,** Luis M. de la Cruz, Ian Garcia, Victor Godoy, and Eduardo Ramos, *DGSCA-UNAM, Mexico*

(2) **Case Study: Visualizing Ocean Currents With Color and Dithering**, Patricia Crossno, *Sandia National Laboratories,* Edward Angel, *University of New Mexico,* and *Albuquerque High Performance Computing Center,* and David Munich, *Albuquerque High Performance Computing Center*

(3) **Real-Time Out-of-Core Visualization of Particle Traces**, Ralph Bruckschen, Falko Kuester, Bernd Hamann, and Kenneth I. Joy, *University of California, Davis*

COFFEE BREAK ***Monday, 3:15 - 3:45pm***

3:45 - 4:45 ***Software Infrastructure for Parallel Visualization***; *Chair:* Anton Koning

(1) **An Application Architecture for Large Data Visualization: A Case Study**, C. Charles Law, Amy Henderson, *Kitware Inc.,* and James Ahrens, *Los Alamos National Laboratories*

(2) **Jupiter: A Toolkit for Interactive Large Model Visualization**, Dirk Bartz, Dirk Staneker, Wolfgang Straßer, *University of Tübingen,* Brian Cripe, Tom Gaskins, Kristann Orton, *Hewlett-Packard Corporation,* Michael Carter, Andreas Johannsen and Jeff Trom, *Engineering Animation Inc.*

TUESDAY, October 23, 2001

8:45 - 9:45 ***Architectures for Structured Volume Rendering***; *Chair:* Charles Hansen

(1) **Parallel Volume Rendering on a Single-Chip SIMD Architecture**, M. Meißner, S. Grimm, W. Straßer, *University of Tübingen,* J. Packer, and D. Latimer, *PixelFusion Ltd*

(2) **Scalable Interactive Volume Rendering Using Off-the-Shelf Components**, Santiago Lombeyda, *California Institute of Technology,* Laurent Moll, Mark Shand, *Compaq Computer Corporation,* David Breen, *California Institute of Technology,* and Alan Heirich, *Compaq Computer Corporation*

COFFEE BREAK ***Monday, 9:45 - 10:15am***

10:15 - 11:15 ***Unstructured Volume Rendering***; *Chair:* Sam Uselton

(1) **Multiresolution View-Dependent Splat Based Volume Rendering of Large Irregular Data**, Jeremy Meredith, *Lawrence Livermore National Laboratories,* and Kwan-Liu Ma, *University of California, Davis*

(2) **Parallelizing a High Accuracy Hardware-Assisted Volume Renderer for Meshes with Arbitrary Polyhedra**, Janine Bennett, Richard Cook, Nelson Max, *Lawrence Livermore National Laboratories, and University of California, Davis*, Deborah May, and Peter Williams, *Lawrence Livermore National Laboratories*

11:15 - 12:15 ***Panel Discussion***; *Chair:* Alan Chalmers

Parallelism: Rendering, Visualization and Large Data

LUNCH ***Monday, 12:15 - 1:45pm***

1:45 - 3:15 ***Parallel Isosurface and Volume Rendering***; *Chair:* Kwan-Liu Ma

(1) **Scalable Isosurface Visualization of Massive Datasets on COTS Clusters**, Xiaoyu Zhang, Chandrajit Bajaj, and William Blanke, *University of Texas at Austin*

(2) **A Unified Infrastructure for Parallel Out-of-Core Isosurface and Volume Rendering of Unstructured Grids**, Yi-Jen Chiang, *Polytechnic University,* Ricardo Farias, *SUNY at Stony Brook,* Cláudio T. Silva, and Bin Wei, *AT&T Labs-Research*

(3) **Parallel View-Dependent Isosurface Extraction Using Multi-Pass Occlusion Culling**, Jinzhu, Gao and Han-Wei Shen, *Ohio State University*

3:15 - 3:30 ***Closing Remarks***; *Chair:* Alan Heirich

CONFERENCE RECEPTION

Wednesday, October 24, 2001

7:30 p.m. - 9:30 p.m.

Island, Pacific, and Royal

VISUALIZATION 2001 CONFERENCE PROGRAM

TECHNICAL CONFERENCE AT A GLANCE

	WEDNESDAY			THURSDAY			FRIDAY		
	Pacific Room	*Island Room*	*Royal I-V*	*Pacific Room*	*Island Room*	*Royal I-V*	*Pacific Room*	*Island Room*	*Royal I-V*
8:00am									
9:00am	**Keynote Session** *Andrew Glassner* *Island, Pacific, and Royal*			**P6**: *Papers* Displays & Color Maps	**N2**: *Panels* Challenges for Remote Visualization	**W2**: *Works in Progress* Information Vis. & Tensor Fields	**P13**: *Papers* View-Dependent Techniques	**N4**: *Panels* Commodity Graphics Accelerators	**C5**: *Cases* Earth Sciences
10:00am	**P1**: *Papers* Point-Based Rendering & Modeling	**P2**: *Papers* Flow & Time-Dependent Visualization	**C1**: *Cases* Information Visualization	**P7**: *Papers* Unstructured Grids & Volume Rendering	**P8**: *Papers* Isosurfaces & Distance Fields	**C3**: *Cases* Physical Science & Engineering	**P14**: *Papers* Biomedical Applications	**C6**: *Cases* Virtual Reality	**W3**: *Works in Progress* Volume Visualization
11:00am									
12:00pm									
1:00pm				Vis 2002 Open Meeting • *Pacific*					
2:00pm	**P3**: *Papers* Filtering & Sampling	**P4**: *Papers* Simplification	**C2**: *Cases* Bio-Medical	**P9**: *Papers* Interactive Volume Rendering	**P10**: *Papers* Multiresolution & Compression	**C4**: *Cases* Bio-Medical II	**Capstone Session** *TBD* *Island, Pacific, and Royal*		
3:00pm									
4:00pm	**P5**: *Papers* Vector Fields	**N1**: *Panels* Vis for Bio- & Chem-Informatics	**W1**: *Works in Progress* Tools & Systems	**P11**: *Papers* Subdivision	**N3**: *Panels* Realisim, Expressionism, & Abstraction	**P12**: *Papers* Approximation & Compression			
5:00pm									

BIRDS-OF-A-FEATHER (BOF) SESSIONS

Please check at the conference for updates to the BOF session schedule. Vendors are encouraged to sign up on-site.

Thursday 7:00-9:00

The VTK Visualization Toolkit ***Sun***

William Schroeder, *Kitware,* will.schroeder@kitware.com

VISUALIZATION 2001 EXHIBITION

Open

Wednesday, 12:15pm - 9:30pm and Thursday, 9:00am - 4:00pm

Mission Bay Room

KEYNOTE SESSION

Do You See What I See? Stories, Images, and Communication In A Wired World

Speaker: Andrew Glassner

Dr. Andrew Glassner is a writer-director, and a consultant in story structure, interactive fiction, and computer graphics. He started working in 3D computer graphics in 1978, and has carried out research at the NYIT Computer Graphics Lab, Case Western Reserve University, the IBM T.J. Watson Research Lab, the Delft University of Technology, Bell Communications Research, Xerox PARC, and Microsoft Research. A popular writer and speaker, he has published numerous technical papers on topics ranging from digital sound to 3D rendering. His book "3D Computer Graphics: A Handbook for Artists and Designers" has taught a generation of artists through two editions and three languages. Glassner created and edited the "Graphics Gems" series and the book "An Introduction to Ray Tracing". He wrote the two-volume text "Principles of Digital Image Synthesis". His most recent book is "Andrew Glassner's Notebook", a collection of the first three years of his regular column by the same name appearing in IEEE Computer Graphics & Applications. He has served as Chair of the SIGGRAPH '94 Papers Committee, Creator of the Sketches venue at SIGGRAPH, Founding Editor of the Journal of Graphics Tools, and Editor-in-Chief of ACM Transactions on Graphics. Glassner's research work has resulted in six US and international patents. He holds a PhD in Computer Science from The University of North Carolina at Chapel Hill.

As a storyteller and director, Glassner wrote and directed the short animated film "Chicken Crossing" which premiered at the Siggraph '96 Electronic Theatre, and designed the highly participatory Internet game "Dead Air" for The Microsoft Network, where he wrote and directed the live-action pilot episode. He also wrote and directed internal Microsoft videos. Glassner is now a full-time writer-director, and a consultant in storytelling and interactive fiction to the computer game and online entertainment industries. In his spare time, Andrew paints, plays jazz piano, kayaks, and hikes.

WEDNESDAY, October 24, 2001

Wednesday, 8:30 - 10:00am — *Island, Pacific, and Royal*

WELCOME *Conference Welcome:* **Mike Bailey and Charles Hansen,** *Conference Co-Chairs*

KEYNOTE *Keynote Session:* **Andrew Glassner, "Do You See What I See? Stories, Images, and Communication In A Wired World"**; *Chair:* David Breen

COFFEE BREAK *Wednesday, 10:00 - 10:15am*

Wednesday, 10:15 - 12:15pm

P1 *Papers:* **Point-Based Rendering and Modeling**; *Chair:* Hanspeter Pfister — ***Pacific***

(1) **Point Set Surfaces,** Marc Alexa, *TU Darmstadt*, Johannes Behr, *ZGDV Darmstadt*, Daniel Cohen-Or, Shachar Fleishman, David Levin, *Tel Aviv University*, and Cláudio T. Silva, *AT&T Labs*

(2) **EWA Volume Splatting**, Matthias Zwicker, *ETH Zürich*, Hanspeter Pfister, Jeroen van Baar, *MERL*, and Markus Gross, *ETH Zürich*

(3) **Hybrid Simplification: Combining Multi-Resolution Polygon and Point Rendering**, Jonathan D. Cohen, *Johns Hopkins University*, Daniel G. Aliaga, *Lucent Technologies*, and Weiqiang Zhang, *Johns Hopkins University*

(4) **POP: A Hybrid Point and Polygon Rendering System for Large Data**, Baoquan Chen and Minh Xuan Nguyen, *University of Minnesota*

P2 *Papers:* **Flow and Time-Dependent Visualization**; *Chair:* Thomas Ertl — ***Island***

(1) **Lagrangian-Eulerian Advection for Unsteady Flow Visualization**, Bruno Jobard, Gordon Erlebacher, and M. Youssuff Hussaini, *Florida State University*

(2) **Transport and Anisotropic Diffusion in Time-Dependent Flow Visualization**, David Bürkle, Tobias Preußer, and Martin Rumpf, *Duisburg University*

(3) **Enridged Contour Maps**, Jarke J. van Wijk and Alexandru Telea, *Eindhoven University of Technology*

(4) **Visualization of Sports Using Motion Trajectories: Providing Insights into Performance, Style, and Strategy**, Gopal Pingali, Agata Opalach, Yves Jean, and Ingrid Carlbom, *Lucent Technologies*

C1 *Cases:* **Information Visualization**; *Chair:* Pak Chung Wong — ***Royal***

(1) **PingTV: A Case Study in Visual Network Monitoring**, Alexander Gubin, *Lucent Technology*, William Yurcik, and Larry Brumbaugh, *Illinois State University*

(2) **Case Study: Medical Web Service for the Automatic 3D Documentation for Neuroradiological Diagnosis**, Sabine Iserhardt-Bauer, *University of Stuttgart*, Peter Hastreiter, *University of Erlangen-Nuremberg*, Thomas Ertl, *University of Stuttgart,* K. Eberhardt, and B. Tomandl, *University of Erlangen-Nuremberg*

(3) **Case Study: Visual Debugging of Cluster Hardware**, Patricia Crossno and Rena Haynes, *Sandia National Laboratories*

(4) **Case Study on Real-Time Visualization of Virtual Tübingen on Commodity PC Hardware**, Michael Meißner, Jasmina Orman, and Stephen J. Braun, *University Tübingen*

LUNCH *Wednesday, 12:15 - 1:45pm*

Wednesday, 1:45 - 3:45pm

P3 *Papers:* **Filtering and Sampling**; *Chair:* Torsten Möller — ***Pacific***

(1) **Undersampling and Oversampling in Sample Based Shape Modeling**, Tamal K. Dey, Joachim Giesen, Samrat Goswami, James Hudson, Raphael Wenger and Wulue Zhao, *Ohio State University*

(2) **Optimal Regular Volume Sampling**, Thomas Theußl, Vienna University of Technology, Torsten Möller, *Simon Fraser University*, and Eduard Gröller, *Vienna Institute of Technology*

(3) **Simplicial Subdivisions and Sampling Artifacts**, Hamish Carr, *University of British Columbia*, Torsten Möller, *Simon Fraser University*, and Jack Snoeyink, *University of North Carolina at Chapel Hill*

(4) **A Simple Algorithm for Surface Denoising**, Jianbo Peng, Vasily Strela, and Denis Zorin, *New York University*

P4 *Papers:* **Simplification**; *Chair:* Amitabh Varshney — *Island*

(1) **Attribute Preserving Dataset Simplification**, Jason D. Walter and Christopher G. Healey, *North Carolina State University*

(2) **A Memory Insensitive Technique for Large Model Simplification**, Peter Lindstrom, *Lawrence Livermore National Laboratory*, and Cláudio T. Silva, *AT&T Labs*

(3) **Efficient Adaptive Simplification of Massive Meshes**, Eric Shaffer and Michael Garland, *University of Illinois at Urbana-Champaign*

(4) **Connectivity Shapes**, Martin Isenburg, University of North Carolina at Chapel Hill, Stefan Gumhold, *University of Tübingen*, and Craig Gotsman, *Technion*

C2 *Cases:* **Bio-Medical**; *Chair:* Rob Erbacher — *Royal*

(1) **An Immersive Virtual Environment for DT-MRI Volume Visualization Applications: A Case Study**, S. Zhang, C. Demiralp, D. F. Keefe, M. DaSilva, D.H. Laidlaw, B.D. Greenberg, *Brown University*, P.J. Basser, C. Pierpaoli, *National Institutes of Health*, E.A. Chiocca, and T.S. Deisboeck, *Massachusetts General Hospital*

(2) **Chromatin Decondensation: A Case Study of Tracking Features in Confocal Data**, Wim de Leeuw and Robert van Liere, *Center for Mathematics and Computer Science, CWI, Amsterdam, Netherlands*

(3) **Case Study: An Environment for Understanding Protein Simulations Using Game Graphics**, Donna Gresh, Frank Suits, and Yuk Yin Sham, *IBM T.J. Watson Research Center*

(4) **Surgical Simulator for Hysteroscopy: A Case Study of Visualization in Surgical Training**, Kevin Montgomery, LeRoy Heinrichs, Cynthia Bruyns, Simon Wildermuth, *Stanford University*, Christopher Hasser, Stephanie Ozenne, and David Bailey, *Immersion Corporation*

COFFEE BREAK *Wednesday, 3:45 - 4:00pm*

Wednesday, 4:00 - 5:30pm

P5 *Papers:* **Vector Fields**; *Chair:* Roger Crawfis — *Pacific*

(1) **Quantitative Comparative Evaluation of 2D Vector Field Visualization Methods**, David H. Laidlaw, R.M. Kirby, J. Scott Davidson, Timothy S. Miller, Marco da Silva, William H. Warren, and Michael Tarr, *Brown University*

(2) **A Tetrahedra-Based Stream Surface Algorithm**, Gerik Scheuermann, Tom Bobach, Hans Hagen, *University of Kaiserslautern*, Karim Mahrous, Bernd Hamann, Kenneth I. Joy, and Wolfgang Kollmann, *University of California, Davis*

(3) **Continuous Topology Simplification of Planar Vector Fields**, Xavier Tricoche, Gerik Scheuermann, and Hans Hagen, *University of Kaiserslautern*

N1 *Panel:* **Visualization for Bio- and Chem-Informatics: Are You Being Served?** — *Island*

Organizer: John Peter Lee, *AstraZeneca R&D, Boston*

Speakers: Christopher Ahlberg, *Spotfire, Inc.*
Daniel Carr, *George Mason University*
Georges Grinstein, *University of Massachusetts, Lowel and AnVil Informatics, Inc.*
John Kinney, *DuPont Biosolutions Enterprise*
Jeffrey Saffer, *OmniViz, Inc.*

W1 *Works in Progress:* **Tools and Systems**; *Chair:* Hans Hagen — *Royal*

(1) **Transport Layer for Remote Client-Server Rendering Systems**, A. Parachuri and J. Meyer, *Mississippi State University*

(2) **Building Shaker-Earthquake Simulation in a CAVE**, J. Meyer and P. Chopra, *Mississippi State University*

(3) **An Easy-to-use Tool for Huge Meshes Visualization**, R. Borgo, P. Cignoni, and R. Scopigno, *Istituto Scienza e Tecnologie dell'Informazione - Consiglio Nazionale delle Ricerche*

(4) **Skelselect: A Tool to Aid in Skeleton Extraction and Visualization**, A. Bhattacharya, D. Silver, *Rutgers University*, and N. Gagvani, *Sarnoff Corporation*

(5) **Remote View-dependent Isosurface Visualization**, Z. Liu, A. Finkelstein, and K. Li, *Princeton University*

THURSDAY, October 25, 2001

Thursday, 8:30 - 10:00am

P6 *Papers:* **Displays and Color Maps**; *Chair:* Dinesh Manocha — *Pacific*

(1) **PixelFlex: A Reconfigurable Multi-Projector Display System**, Ruigang Yang, David Gotz, Justin Hensley, Herman Towles, *University of North Carolina at Chapel Hill*, and Michael S. Brown, *University of Kentucky*

(2) **Dynamic Shadow Removal from Front Projection Displays**, Christopher Jaynes, Stephen B. Webb, R. Matt Steele, Michael Brown, and W. Brent Seales, *University of Kentucky*

(3) **The "Which Blair Project": A Quick Visual Method for Evaluating Perceptual Color Maps**, Bernice E. Rogowitz and Alan D. Kalvin, *IBM T.J. Watson Research Center*

N2 *Panel:* Challenges for Remote Visualization — *Island*

Organizer: Rick Stevens, *Argonne National Laboratory and University of Chicago*
Moderator: Michael E. Papka, *Argonne National Laboratory and University of Chicago*
Speakers: Chris Johnson, *University of Utah*
Polly Baker, *National Center for Supercomputing Applications*
Jason Leigh, *University of Illinois at Chicago*
Sam Uselton, *Lawrence Livermore National Laboratory*

W2 *Works in Progress:* Information Visualization and Tensor Fields; *Chair:* David Ebert — *Royal*

(1) **Visualizing File System Predictability**, A. Luo, A. Amer, N. Der, D. Long, and A. Pang, *University of California, Santa Cruz*

(2) **Gene Expression Mural: Visualizing Gene Expression Databases**, M. Clement, M. Ellis, J. Steele, Y. Tian, and C. North, *Virginia Tech*

(3) **Multiresolution Tetrahedral Meshes: Analysis and Comparison**, E. Danovaro, L. DeFloriani, *University of Genova*, M. Lee, and H. Samet, *University of Maryland*

(4) **Visualizing Diffusion Tensor Volume Differences**, M. daSilva, S. Zhang, C. Demiralp, and D. Laidlaw, *Brown University*

(5) **Visualizing Second Order Symmetric Tensor-Fields**, I. Hotz, *University of Kaiserslautern*

COFFEE BREAK *Thursday, 10:00 - 10:15am – sponsored by MERL*

Thursday, 10:15 - 12:15pm

P7 *Papers:* Unstructured Grids and Volume Rendering; *Chair:* Rüdiger Westermann — *Pacific*

(1) **Circular Incident Edge Lists: A Data Structure for Rendering Complex Unstructured Grids**, Bruno Lévy, Guillaume Caumon, Stéphane Conreaux, and Xavier Cavin, *Inria Lorraine*

(2) **Hardware-Software-Balanced Resampling for the Interactive Visualization of Unstructured Grids**, Manfred Weiler and Thomas Ertl, *University of Stuttgart*

(3) **The Perspective Shear-Warp Algorithm in a Virtual Environment**, Jürgen P. Schulze, Roland Niemeier, and Ulrich Lang, *High Performance Computing Center Stuttgart*

(4) **Cell-Projection of Cyclic Meshes**, Martin Kraus and Thomas Ertl, *University of Stuttgart*

P8 *Papers:* Isosurfaces and Distance Fields; *Chair:* Bill Lorensen — *Island*

(1) **Fast Detection of Meaningful Isosurfaces for Volume Data Visualization**, Vladimir Pekar, Rafael Wiemker, and Daniel Hempel, *Philips Research Laboratories*

(2) **Salient Iso-Surface Detection with Model-Independent Statistical Signatures**, Shivaraj Tenginakai, Jinho Lee, and Raghu Machiraju, *Ohio State University*

(3) **Distance-Field-Based Skeletons for Virtual Navigation**, Ming Wan, Boeing, Frank Dachille, and Arie Kaufman, *State University of New York at Stony Brook*

(4) **A Complete Distance Field Representation**, Jian Huang, Yan Li, Roger Crawfis, *Ohio State University*, Shao-Chiung Lu, *Visteon, Inc.*, and Shuh-Yuan Liou, *Ford Motor Company*

C3 *Cases:* Physical Science and Engineering; *Chair:* Penny Rheingans — *Royal*

(1) **Case Study: Reconstruction, Visualization, and Quantification of Neuronal Fiber Pathways**, Zhaohua Ding, John C. Gore, and Adam W. Anderson, *Yale University*

(2) **Visualizing 2D Probability Distributions from EOS Satellite Image-Derived Data Sets: A Case Study**, David Kao, *NASA Ames Research Center*, Jennifer L. Dungan, and Alex Pang, *UCSC*

(3) **Case Study: Application of Feature Tracking to Analysis of Autoignition Simulation Data**, Wendy S. Koegler, *Sandia National Laboratory*

(4) **Case Study: Visualization of Particle Track Data**, Xiaoming Wei, Arie E. Kaufman, *SUNY at Stony Brook*, and Timothy J. Hallman, *Brookhaven National Lab*

LUNCH *Thursday, 12:15 - 1:45pm*

Thursday, 1:45 - 3:45pm

P9 *Papers:* Interactive Volume Rendering; *Chair:* Baoquan Chen — *Pacific*

(1) **Interactive Volume Rendering Using Multi-Dimensional Transfer Functions and Direct Manipulation Widgets**, Joe Kniss, Gordon Kindlmann, and Charles Hansen, *University of Utah*

(2) **Texture Hardware Assisted Rendering of Time-Varying Volume Data**, Eric B. Lum, Kwan-Liu Ma, *University of California, Davis*, and John Clyne, *National Center for Atmospheric Research*

(3) **Accelerated Volume Ray-Casting using Texture Mapping**, Rüdiger Westermann and Bernd Sevenich, *University of Technology, Aachen*

(4) **RTVR – A Flexible Java Library for Interactive Volume Rendering**, Lukas Mroz and Helwig Hauser, *VRVis Research Center, Vienna*

P10 *Papers:* **Multiresolution and Compression**; *Chair:* Raghu Machiraju — *Island*

(1) **Multiresolution Feature Extraction from Unstructured Meshes**, Andreas Hubeli and Markus Gross, *ETH Zürich*

(2) **Fast Extraction of Adaptive Multiresolution Meshes with Guaranteed Properties from Volumetric Data**, Marcel Gavriliu, Joel Carranza, David E. Breen, and Alan H. Barr, *California Institute of Technology*

(3) **Wavelet Representation of Contour Sets**, Martin Bertram, *University of Kaiserslautern*, Daniel E. Laney, Mark A. Duchaineau, *Lawrence Livermore National Laboratory*, Charles D. Hansen, *University of Utah*, Bernd Hamann, and Kenneth I. Joy, *University of California, Davis*

(4) **User-Centric Viewpoint Computations for Haptic Exploration and Manipulation**, Miguel A. Otaduy and Ming C. Lin, *University of North Carolina at Chapel Hill*

C4 *Cases:* **Bio-Medical II**; *Chair:* David Laidlaw — *Royal*

(1) **Case Study: Interacting with Cortical Flat Maps of the Human Brain**, Monica K. Hurdal, *Florida State University and University of Minneapolis*, Kevin W. Kurtz, and David C. Banks, *Florida State University*

(2) **4D Space-Time Techniques: A Medical Imaging Case Study**, Melanie Tory, *Simon Fraser University*, Niklas Röber, *University of Magdeburg*, Torsten Möller, *Simon Fraser University*, Anna Celler, *Vancouver Hospital and Health Sciences Centre*, and M. Stella Atkins, *Simon Fraser University*

(3) **Computed Tomography Angiography: A Case Study of Peripheral Vessel Investigation**, Armin Kanitsar, Vienna University of Technology, Rainer Wegenkittl, *TIANI Medgraph*, Petr Felkel, *VRVis Center Vienna*, Dominik Fleischmann, Doninique Sandner, *University of Vienna*, and Eduard Gröller, *Vienna University of Technology*

(4) **Graphical Strategies to Convey Functional Relationships in the Human Brain: A Case Study**, Tomihisa Welsh, Klaus Müller, Wei Zhu, Nora Volkow, and Jeffrey Meade, *State University of New York at Stony Brook and Brookhaven National Laboratory*

COFFEE BREAK *Thursday, 3:45 - 4:00pm*

Thursday, 4:00 - 5:30pm

P11 *Papers:* **Subdivision**; *Chair:* Kenneth Joy — *Pacific*

(1) **Fitting Subdivision Surfaces**, Nathan Litke, *California Institute of Technology*, Adi Levin, *Tel Aviv University*, and Peter Schröder, *California Institute of Technology*

(2) **Nonmanifold Subdivision**, Lexing Ying and Denis Zorin, *New York University*

(3) **Normal Bounds for Subdivision-Surface Interference Detection**, Eitan Grinspun and Peter Schröder, *California Institute of Technology*

N3 *Panel:* **Realism, Expressionism, and Abstraction: Applying Art Techniques to Visualization** — *Island*

Organizer: Theresa-Marie Rhyne, *North Carolina State University*
Speakers: David Laidlaw, *Brown University*
Victoria Interrante, *University of Minnesota*
Christopher Healey, *North Carolina State University*
David Duke, *University of Bath*

P12 *Papers:* **Approximation and Compression**; *Chair:* Sam Uselton — *Royal*

(1) **Smooth Approximation and Rendering of Large Scattered Data Sets**, Jörg Haber, Frank Zeilfelder, *Max Planck Institute for Informatik, Saarbrücken*, Oleg Davydov, *Justus-Liebig University*, and Hans-Peter Seidel, *Max Planck Institute for Informatik, Saarbrücken*

(2) **Real-Time Decompression and Visualization of Animated Volume Data**, Stefan Guthe and Wolfgang Straßer, *University of Tübingen*

(3) **Compressing Large Polygonal Models**, Jeffrey Ho, Kuang-Chih Lee, and David Kriegman, *University of Illinois at Urbana-Champaign*

F R I D A Y , O c t o b e r 2 6 , 2 0 0 1

Friday, 8:30 - 10:00am

P13 *Papers:* **View-Dependent Techniques**; *Chair:* Kelly Gaither — *Pacific*

(1) **Visualization of Large Terrains Made Easy**, Peter Lindstrom and Valerio Pascucci, *Lawrence Livermore National Laboratory*

(2) **Integrating Occlusion Culling with View-Dependent Rendering**, Jihad El-Sana, Neta Sokolovsky, *Ben-Gurion University*, and Cláudio T. Silva, *AT&T Labs*

(3) **Approximate Shading for the Re-Illumination of Synthetic Images**, Randy Scoggins, *U.S. Army Research and Development Center*, Raghu Machiraju, *Ohio State University*, and Robert J. Moorhead, *Mississippi State University*

N4 *Panel:* Commodity Graphics Accelerators for Scientific Visualization — *Island*

Organizers: Rick Stevens, *Argonne National Laboratory and University of Chicago*
Michael E. Papka, *Argonne National Laboratory and University of Chicago*
Speakers: Mark Kilgard, *nVIDIA*
Greg Humphreys, *Stanford University*
Thomas Funkhouser, *Princeton University*
Rick Stevens, *Argonne National Laboratory and University of Chicago*

C5 *Cases:* Earth Sciences; *Chair:* Eduard Gröller — *Royal*

(1) **A Case Study on Interactive Exploration and Guidance Aids for Visualizing Historical Data**, Stanislav Stoev and Wolfgang Straßer, *University of Tübingen*

(2) **The MetVR Case Study: Meteorological Visualization in an Immersive Virtual Environment**, Sean Ziegeler, Robert J. Moorhead, *Mississippi State University*, Paul J. Croft, and Duanjun Lu, *Jackson State University*

(3) **Archaeological Data Visualization in VR: Analysis of Lamp Finds at the Great Temple of Petra, a Case Study**, Daniel Acevedo, Eileen Vote, David H. Laidlaw, and Martha S. Joukowsky, *Brown University*

COFFEE BREAK *Friday, 10:00 - 10:15pm*

Friday, 10:15 - 12:15pm

P14 *Papers:* Biomedical Applications; *Chair:* Lisa Avila — *Pacific*

(1) **Volume Rendering of Fine Details Within Medical Data**, Feng Dong, Gordon J. Clapworthy, and Mel Krokos, *De Montfort University*

(2) **Visualization and Interaction Techniques for the Exploration of Vascular Structures**, Horst K. Hahn, Bernhard Preim, Dirk Selle, and Heinz-Otto Peitgen, *Center for Medical Diagnostic Systems and Visualization, Bremen, Germany*

(3) **Variational Classification for Visualization of 3D Ultrasound Data**, Raanan Fattal and Dani Lischinski, *The Hebrew University of Jerusalem*

(4) **Nonlinear Virtual Colon Unfolding**, Anna Vilanova Bartrolí, Rainer Wegenkittl, Andreas König, and Eduard Gröller, *Vienna University of Technology*

C6 *Cases:* Virtual Reality; *Chair:* Rachael Brady — *Island*

(1) **Virtual Temporal Bone Dissection: A Case Study**, Jason Bryan, Don Stredney, Greg Wiet, and Dennis Sessanna, *Ohio State University*

(2) **Semi-Immersive Space Mission Design and Visualization: Case Study of the "Terrestrial Planet Finder" Mission,** Ken Museth, Alan Barr, *California Institute of Technology*, and Martin Lo, *Jet Propulsion Laboratory*

(3) **Wind Tunnel Data Fusion and Immersive Visualization: A Case Study**, Kurt Severance, Paul Brewster, Barry Lazos, *NASA Langley Research Center*, and Daniel Keefe, *Brown University*

(4) **A Virtual Environment for Simulated Rat Dissection: A Case Study of Visualization for Astronaut Training**, Kevin Montgomery, *Stanford University*, Cynthia Bruyns, *NASA Ames Research Center and National Biocomputation Center*, and Simon Wildermuth, *Stanford University*

W3 *Works in Progress:* Volume Visualization; *Chair:* Han-Wei Shen — *Royal*

(1) **A Scalable Hardware Architecture for Parallel Volume Rendering**, S. Mori, S. Yamauchi, F. Harase, and S. Tomita, *Graduate School of Informatics, Kyoto University*

(2) **Authentication of Volume Data**, M. Kankanhalli, E. Chang, X. Guan, Z. Huang, and Y. Wu, *School of Computing, National University of Singapore*

(3) **Modeling and Visualization of Inter-Bone Distances in Joints**, C. Demiralp, G. Marai, S. Andrews, D. Laidlaw, J. Crisco, *Brown University*, and C. Grimm, *Washington University in St. Louis*

(4) **Parallelizing Sparse Grid Volume Visualization with Implicit Preview and Load Balancing**, M. Hopf and T. Ertl, *University of Stuttgart*

(5) **Interactive Visualization of Four-Dimensional Ultrasound Data**, R. Shekhar and V. Zagrodsky, *The Cleveland Clinic Foundation*

LUNCH *Friday, 12:15 - 1:00pm*

Friday, 1:00 - 2:15pm

CAPSTONE — *Pacific, Island, and Royal*

Capstone Session: **Awards for Best Paper, Best Panel, Best Hot Topics, and Best Case Study**
Capstone Address: **TBD**

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Wednesday, 12:15pm - 9:30pm and Thursday, 9:00am - 4:00pm
Mission Bay Room

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