VisWeek 2011
Program
23 - 28 October, 2011
Providence, Rhode Island, USA

Sponsored by the IEEE Computer Society Visualization and Graphics Technical Committee.
Welcome to VisWeek 2011! This year’s program includes three conferences: IEEE Visualization (Vis), Information Visualization (InfoVis), and Visual Analytics Science and Technology (VAST); two new symposia: the first IEEE Symposium on Biological Data Visualization (BioVis), and the first IEEE Symposium on Large-Scale Data Analysis and Visualization (LDAV); a new art show; and the traditional panels, posters, tutorials, workshops, birds-of-a-feather (BOF) meetings, exhibitions, and doctoral colloquium. It promises to be an exciting and stimulating week.

For the first time this year, topical papers published during the last year in IEEE Transactions on Visualization and Computer Graphics (TVCG) will make up four of the technical paper sessions. As has been the case for the last 5 years, TVCG will once again publish all of the Vis and InfoVis papers in a special issue of the journal.

This year’s program introduces a new format. The opening session Tuesday will feature keynote speaker Paul Thagard, one day earlier than traditionally; the closing session, featuring capstone speaker Amanda Cox, remains midday Friday. Each of these four days will start with a fast-forward session, where every paper to be presented during the day will offer a 30-second preview. This program change provides us with space to hold the growing body of quality work that our discipline is producing each year while staying within three parallel technical sessions.

As always, a number of other events will enrich the week. Posters from all 5 venues will be on display throughout the week, with their own fast-forward early Wednesday evening, right before the VisWeek banquet. Panels will provoke us. The banquet, breaks, evenings in the lobby, and the walkable Providence downtown area will provide opportunities for social and collaborative interactions. Take a collaborative gondola ride only 2 blocks from the conference hotel! The doctoral colloquium will provide PhD students a chance to make connections with researchers outside their institution and get feedback on their research plans. And finally, exhibitions, challenges, and contests will help us all keep up on the latest applications, methods, and technologies.

Welcome to Providence, and have a great VisWeek!

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VisWeek 2011 General Chairs

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William Pike (VAST), Pacific Northwest National Laboratory
Jonathan C. Roberts (VAST), Bangor University
Torsten Möller (BioVis), Simon Fraser University
Raghu Machiraju (BioVis), The Ohio State University
Nils Gehlenborg (BioVis), Harvard University
Kwan-Liu Ma (LDAV), University of California, Davis
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About Providence, Rhode Island
IEEE VisWeek comes to the beautiful city of Providence, RI, the capital city of the smallest state in the country, but packed with exciting entertainment, shopping and food options. A lively downtown area just steps away from the conference hotel, a multi-cultural mix of many award-winning restaurants in several neighbourhoods all in walking distance, a wonderful and elaborate river-walk area for relaxing, and a vibrant art-scene, are all settled among scores of immaculately preserved homes from the Colonial, Federal, Greek Revival, and Victorian eras.

The Westin Providence
THIRD FLOOR - HOTEL

The Rhode Island Convention Center
FIFTH FLOOR

1 Conference Registration
Located in West Prefunction
Saturday, 6pm - 9pm
Sunday - Thursday, 7:30am - 4:30pm
Friday, 7:30am - 10:30am

2 Birds-of-a-Feather (BOF) Board
Check the board for conference times and locations. All conference attendees are welcome. Located in West Prefunction, next to Registration.

3 Posters
BioVis
Located in Ballroom A Foyer
Sunday - Monday, 8:30am - 6pm
Hosted Viewing, Sunday, 4:15pm - 6pm

LDAV
Located in West Prefunction
Sunday - Monday, 6pm - 6pm
Hosted Viewing, Sunday, 6pm - 7:30pm

VisWeek
Located in East & West Prefunction & Ballroom A Foyer
Tuesday - Thursday, 10am - 6pm
Hosted Viewing, Wednesday, 6pm - 7pm

4 Art Show
Located in Rotunda, Ballroom E, 555A-555B Hallway
Tuesday - Thursday, 10am - 6pm

5 Exhibits & Interactive Demos
Located in Ballroom BC
Tuesday - Thursday, 10am - 6pm

6 Internet Access
Located in 554A
Sunday - Thursday, 7am - 5pm
Friday, 7am - 11am

7 Speaker Preparation
Located in 558B
Sunday - Thursday, 7:30am - 5pm
Friday, 7:30am - 9am
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BioVis Abstracts

Poster/Demo Viewings & Reception  
Ballroom A Foyer  
Sunday 8:30am - Monday 6pm

1. NGS Explorer: An Application for Visually Contextualizing and Interrogating Multivariate Omics Data, Georg Tremmel, Atsushi Niida, Yuichi Shiraishi, Masao Nagasaki, Satoru Miyano


5. Analysis-Ready Meshes of Neuronal Forests, John Edwards, Chandrakul Bajaj, Justin Kinney, Terrence Sejnowski, Tom Bartol, Daniel Johnston, Kristen Harris


8. Toward Systems-Level Visualizations of Molecular Networks on Large-Scale, High-Resolution Displays, Jillian Aurisano, James A. Radosevich, Jason Leigh

9. 3D Reconstruction and Visualization of the Developing Drosophila Wing Imaginal Disc at Cellular Resolution, Linge Bai, Thomas Widmann, Frank Juelicher, Christian Dammann, David Breen

10. Interactive visualization of multiscale biomedical data: an integrated approach, Debora Testi, Gordon Clapworthy, Stephen Aylward, Alejandro Frangi, Richard Christie

11. Neural Process Reconstruction from Sparse User Scribbles, Mike Roberts, Won-Ki Jeong, Amelio Vazquez-Reina, Markus Unger, Horst Bischof, Jeff Lichtman, Hanspeter Pfister

12. Visualizing Global Correlation in Large-Scale Molecular Biological Data, A.N.M. Choudhury, Kristin Potter, Theresa-Marie Rhyne, Yarden Livnat, Chris Johnson, Orly Alter

13. VESPA: Visual Exploration and Statistics to Promote Annotation for Prokaryotic Genomes, Bobbie-Jo Webb-Robertson, Elena Peterson, Jeffrey Jensen, Mark Kobold, Hyunjoo Walker, William Cannon, Lee Ann McCue


15. CluMa-GO: Bring Gene Ontologies and Hierarchical Clusterings Together, Andreas Kerren, Ilir Jusufi, Vladyslav Aleksakhin, Falk Schreiber

16. Animating Cell Biology for Research and Teaching, Janet Iwasa

17. 3D Reconstruction and Analysis of Bat Flight Maneuvers from Sparse Multiple View Video, Attila Bergou, Sharon Swartz, Kenneth Breuer, Gabriel Taubin

18. Visualization of experimental design & workflows in biological experiments, Eamonn Maguire, Philippe Rocca-Serra, Min Chen, Susanna-Assunta Sansone

19. Spatially Continuous Change of Abstraction in Molecular Visualization, Wouter Lueks, Ivan Viola, Matthew van der Zwan, Henk Bekker, Tobias Isenberg


21. Light Microscopy-Based Reconstruction and Interactive Structural Analysis of Cortical Neural Networks, Vincent J. Derksen, Marcel Oberlaender, Bert Sakmann, Hans-Christian Hege


24. FvNano: A Virtual Laboratory to Manipulate Molecular Systems, Matthieu Chavent, Marc Piuszzi, Alex Tek, Marc Baaden

25. Lessons Learned from Tool Development for Animal Movement Analysis, Florian Mamsmann, David Spretko, Hallidor Janetzk

26. InBox: In-situ Multiple-Selection and Multiple-View Exploration of Diffusion tensor MRI Visualization, Haipeng Cai, Jian Chen, Alexander P. Auchus, Stephen Correia, David H. Laidlaw

LDAV Posters

Poster Viewings & Reception  
West Prefunction  
Sunday 6pm - Monday 6pm

A Flow-Guided File Layout for Out-Of-Core Streamline Computation, Chun-Ming Chen, Lijie Xu, Ten-Yok Lee, Han-Wei Shen

Activity Detection for Scientific Visualization, Sedat Ozer, Deborah Silver, Karen Bemis, Pino Martin, Jay Tinkle

Scalable Multivariate Volume Visualization and Analysis, Hanqi Guo, He Xiao, Min Lu, Xiaoru Yuan

A System for Scalable Visualization of Geographic Archival Records, Jefferson R. Heard and Richard J. Marciano

CERA-TV: A Framework for Interactive High-Quality Tetra voxel Volume Visualization on Standard PCs, Klaus Engel


Distributed Tera voxel Volume Visualization Using Distributed Shared Virtual Memory, Johanna Beyer, Markus Hadwiger, Jens Schneider, Won-Ki Jeong, Hanspeter Pfister

Visualization and Pattern Identification in Large Scale Time Series Data, Steve Holtz, Guillermo Valle, Jessica Howard, Patricia Morreale

Preserving Proximity Relations and Minimizing Edge-crossings in High Dimensional Graph Visualizations, Amina Shabbeer, Cagri Ozaglar, Bulent Yener, Kristin P. Bennett

Exploring Large Data over Wide Area Networks, Mark Hereld, Joseph A. Insley, Eric C. Olson, Michael E. Papka, Venkatram Vishwanath, Michael L. Norman, Rick Wagner

Towards a Scalable and Reliable Real Time In-Network Data Analysis Infrastructure, Selim Ciraci, Jian Yin

Preserving Proximity Relations and Minimizing Edge-crossings in High Dimensional Graph Visualizations, Amina Shabbeer, Cagri Ozaglar, Bulent Yener, Kristin P. Bennett

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Towards a Scalable and Reliable Real Time In-Network Data Analysis Infrastructure, Selim Ciraci, Jian Yin

Pixel-based Overlays for Navigating a Galaxy of Observations, A.N.M. Choudhury, Kristin Potter, Theresa-Marie Rhyne, Yarden Livnat, Chris Johnson, Orly Alter

Towards a Scalable and Reliable Real Time In-Network Data Analysis Infrastructure, Selim Ciraci, Jian Yin

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Preserving Proximity Relations and Minimizing Edge-crossings in High Dimensional Graph Visualizations, Amina Shabbeer, Cagri Ozaglar, Bulet
Our goal with this workshop is to bring together data storytellers from diverse disciplines and continue the conversation of how these different fields utilize each other’s techniques and articulate principles for telling data narratives. Our target participants are researchers, journalists, bloggers, and others who seek to understand how visualizations support narrative, stories, and other communicative goals. Participants may be designers of such visualizations or designers of tools that support the creation of narrative visualizations. Visualizations that serve as a “community mirror” and thus create opportunities for discussion, reflection and sharing within a social network are also suitable topics. While we are inspired by many visualizations that display personal histories and storylines, our focus is on visualization situated in storytelling contexts, not necessarily visualizations of stories.

This workshop will provide a unique and valuable opportunity for use in clinical practice. In addition, physicians will provide detailed information about areas in healthcare where additional visualization techniques are needed.

Visualization and visual analytics show great potential as methods to analyze, filter, and illustrate many of the diverse data used in clinical practice. Today, (a) physicians and clinical practitioners are faced with the challenging task of analyzing large amount of unstructured, multi-modal, and longitudinal data to effectively diagnose and monitor the progression of a particular disease; (b) patients are confronted with the difficult task of understanding the correlations between many clinical values relevant to their health; and (c) healthcare organizations are faced with the problem of improving the overall operational efficiency and performance of the institution while maintaining the quality of patient care and safety.

Visualization and visual analytics can potentially provide great benefits to each of these three core areas of healthcare. However, to be successful, the resulting visualization must be able to meet the physician’s requirements and be useful for both patients and physicians.

This tutorial presents both quantitative and qualitative approaches to human-subject experiments of visualizations. It covers (1) the basic principles of experimental design and analysis, with an emphasis on human-subject experiments in visualization; (2) formative evaluation methods for iteratively assessing and improving visualization user interfaces; and (3) approaches to designing and conducting qualitative studies that aim to measure the degree to which specific visualization designs afford insight formation.

Level of expertise: All Levels

We present a half-day tutorial to review different applications of information theory to visualization. Information theory tools, widely used in scientific fields such as engineering, physics, genetics, neuroscience, and more recently in computer graphics, are also emerging as state of the art in visualization.

Applications areas are view selection, flow visualization, ambient occlusion, time-varying volume visualization, transfer function definition, LOD time-varying volume visualization, iso-surface similarity maps and quality metrics.

The applications fall broadly into two categories: the mapping of the problem to an information channel, as in viewpoint applications, and the direct use of measures as entropy, Kullback-Leibler distance, Jensen-Shannon divergence, and f-divergences, to evaluate for example the homogeneity of a set of samples or being used as metrics. We will also discuss the potential applications of information bottleneck method that allows us to progressively extract or merge information in a hierarchical structure.

Weingarten and computer graphics provide visual representations of data in order to communicate, provide insight and enhance problem solving. The human observer actively processes these visual representations using perceptual and cognitive mechanisms that have evolved over millions of years. The goal of this tutorial is to provide an introduction to these processing mechanisms, and to show how this knowledge can guide the decisions we make about how to represent data visually, how we visually represent patterns and relationships in data, and how we can use human pattern recognition to extract features in the data. This course will help the student (1) understand basic principles of spatial, temporal, and color processing by the human visual system; (2) explore basic cognitive processes, including visual attention and semantics; (3) Develop skills in applying knowledge about human perception and cognition to interactive visualization and computer graphics applications.
During the past five years, Next Generation Sequencing (NGS) technology is changing biomedical research in a revolutionary way. For the first time, researchers can directly study the genome at single-base resolution in a relatively inexpensive manner. There have been many applications utilizing these technology including genomic, computational sciences to cancer genetics and disease biology, and clinical arenas. Importantly, such collaboration begins with and depends on accessing and visualizing the data. Examples will be shared to illustrate the importance and need for visualization.

In this talk, I will give an overview on a few applications of NGS in cancer research and the challenges associated with the large data including data visualization, analysis, management, and integration.

12:10pm - 2pm
- Lunch Break

2pm - 3:40pm
- BioVis Papers
  - Ballroom BC
  - Molecular and Image Data
    - Chair: Chris Johnson
  - Quick2Insight: A User-Friendly Framework for Interactive Rendering of Biological Image Volumes, Yanling Liu, Curtis Lisle, Jack Collins
  - Modeling and Visualization of Receptor Clustering on the Cellular Membrane, Martin Falk, Markus Daub, Guido Schneider, Thomas Ertl
  - Parallel Contour-Buildup Algorithm for the Molecular Surface, Michael Krone, Sebastian Grottel, Thomas Ertl
  - Fiber Stippling: An Illustrative Rendering for Probabilistic Diffusion Tractography, Mathias Goldau, Alexander Wiebel, Nico Stephan Gorbach, Corina Melzer, Mario Hlawitschka, Gerik Scheuermann, Marc Tittgemeyer
  - Visualization of Anisotropic Contact Potentials within Protein Structures, Corinna Vehlow, Bernhard Preim, Michael Lappe
  - Abstract - Neural Process Reconstruction from Sparse User Scribbles, Mike Roberts, Won-Ki Jeong, Amelio Vazquez-Reina, Markus Unger, Horst Bischof, Jeff Lichtman, Hanspeter Pfister

3:40pm - 4:15pm
- Coffee Break

4:15pm - 6pm
- BioVis Posters and Demo Session
  - Ballroom BC
  - BioVis Fast Forward: 4:15pm,
  - BioVis Posters Viewing: 4:45pm
  - Ballroom A Foyer

6pm - 7:30pm
- Symposia Reception and Poster Viewing
  - Posters & Demos on Display
  - West Prefunction

**Vis in Other Venues**

- CHI 2011: Jordan Crouser, Remco Chang
- CHI 2011 Provenance Workshop: Wenwen Dou, Chris North, Remco Chang, Alex Endert, Richard May, Bill Pike
- CSCW 2011: Danyel Fisher
- EuroVis 2011: Tobias Isenberg, Bongshin Lee
- ITS 2010: Petra Isenberg
- IVCS 2011: Christian Tominski
- PacificVis 2011: Melanie Topy
- UIST 2011: Anastasiia Bezerianos, Pierre Dragicevic
- VDA 2011: Robert Kosara
Monday, 24 October

**VisWeek Workshop (8:30am - 5:55pm)**  
**Room 555AB**  
**Interactive Visual Text Analytics for Decision Making**  
Organizers: Christopher Collins, Eser Kandogan, Shixia Liu, Michelle Zou

Analyzing text documents has become increasingly an important part of decision making in large corporations, small businesses, and households. This workshop will explore advanced research in the field of text visualization and analytics and their applications.

The goal of this workshop is to bring together researchers and industry practitioners interested in text visualization, text analytics, and visualization, to define the emerging fields of visual text analytics, and to discuss ideas, techniques, and applications to support decision making in different domains.

**VisWeek Workshop (8:30am - 5:55pm)**  
**Room 556AB**  
**Working with Uncertainty Workshop: Representation, Quantification, Propagation, Visualization, and Communication of Uncertainty**  
Organizers: Chris Johnson, Alex Pang

Tools, techniques and methodologies are needed in every facet of dealing with uncertainty from representation, quantification, propagation, and visualization. The domain of expertise and applications that have a stake in addressing uncertainty is not limited to the visualization community. This workshop will bring together researchers and practitioners from different fields who have a strong interest for the proper treatment of uncertainty. It will provide a venue for describing and identifying open problems, current best practices, and discussions on challenges and long term directions.

**VisWeek Tutorial (8:30am - 12:10pm)**  
**Room 557**  
**Applying Color Theory to Visualization**  
Organizers: Theresa-Marie Rhyne

We highlight the visual impact of specific color combinations and provide practical suggestions on digital color mixing for visualization. The successful application of color theory is a key component in the design of digital media for interactive visual discovery, time series animation, and other visual analytics efforts. Various artists’ and scientists’ theories of color and how to apply these theories to creating your own digital media work will be reviewed. Our tutorial includes a hands on session that teaches you how to build and evaluate color schemes with Adobe’s Kuler, Color Scheme Designer, and Color Brewer tools. Each of these color tools are available online for your continued use in creating visualizations. Please bring various small JPEG examples of your visualizations for doing color analyses.

We will also share our own personal failures and successes with applying these color theories and tools to actual visualization projects.

**8:30am - 10:10am**

**BioVis Papers**  
**Ballroom BC**

**Omics Data**  
Chair: Matt Hibbs

**Track Browser: Transforming the Genome Browser from Visualization Tool to Analysis Tool**, Jeremy Goecks, Kanwei Li, Dave Clements, James Taylor

**Visual Analysis of Next-Generation Sequencing Data to Detect Overlapping Genes in Bacterial Genomes**, Svenja Simon, Daniela Oelke, Richard Landstorfer, Klaus Neuhaus, Daniel A. Keim

**TIALA - Time Series Alignment Analysis**, Günter Jäger, Florian Battke, Kay Nieselt

**IHAT: interactive Hierarchical Aggregation Table**, Corinna Vehlow, Julian Heinrich, Florian Battke, Daniel Weiskopf, Kay Nieselt

**A Visual Analysis System for Metabolomics Data**, Philip Livengood, Ross Maciejewski, Wei Chen, David Ebert


**LDAV Workshop Overview**  
**Ballroom D**

**LDAV Keynote: (8:40am - 9:30am)**  

**LDAV Papers (9:30am - 10:10am)**  
**Session 1**  
Chair: Peter Lindstrom


**Toward Simulation-Time Data Analysis and I/O Acceleration on Leadership-Class Systems**, Venkatram Vishwanath, Mark Hereld, Michael E. Papka

**10:10am - 10:30am**

**Coffee Break**

**10:30am - 12:10pm**

**BioVis Papers**  
**Ballroom BC**

**Biological Networks, Pathways and Connectivity**  
Chair: Guy Melançon

**Metrics for Comparing Explicit Representations of Interconnected Biological Networks**, David Mayerich, Chris Bjornsson, Jonathan Taylor, Badrinath Roysam

**GenAMap: Visualization Strategies for Structured Association Mapping**, Ross Curtis, Peter Kinnaird, Eric Xing


**MDMap: A System for Data-driven Layout and Exploration of Molecular Dynamics Simulations**, Robert Patro, Cheuk Yiu Ip, Sujal Bista, Samuel Cho, D. Thirumalai, Amitabh Varshney

**Abstract - InBox: In-situ Multiple-Selection and Multiple-View Exploration of Diffusion tensor MRI Visualization**, Haipeng Cai, Jian Chen, Alexander P. Auchus, Stephen Correia, David H. Laidlaw

**LDAV Papers**  
**Ballroom D**

**Session 2**  
Chair: Huy Vo

**Atypical Behavior Identification in Large-Scale Network Traffic**, Daniel M. Best, Ryan P. Hafen, Bryan K. Olsen, William A. Pike

**Analysis of Large-Scale Scalar Data Using Hixels**, David Thompson, Joshua A. Levine, Janine C. Bennett, Peer-Timo Bremer, Attila Gyulassy, Valerio Pascucci, Philippe P. Pêbay
Revisiting Wavelet Compression for Large-Scale Climate Data using JPEG 2000 and Ensuring Data Precision, Jonathan Woodring, Susan Mniszewski, Christopher Brislawn, David DeMarle, James Ahrens

Histogram Spectra for Multivariate Time-Varying Volume LOD Selection, Steven Martin, Han-Wei Shen

12:10pm - 2pm

- BioVis Feedback session (12:10pm - 1pm)
- Lunch Break

2pm - 3:40pm

- BioVis Papers Ballroom BC
  Phyllogenetic and Population Data, Morphometry
  Chair: David Duke
  Evaluating the VIPER Pedigree Visualisation: Detecting Inheritance Inconsistencies in Genotyped Pedigrees, Trevor Paterson, Martin Graham, Jessica Kennedy, Andy Law
  Visual Exploration of Microbial Populations, Sara Johansson Fernstad, Jimmy Johansson, Suzi Adams, Jane Shaw, David Taylor
  Visualizing Virus Population Variability From Next Generation Sequencing Data, Michael Correll, Subhadip Ghosh, David O’Connor, Michael Gleicher
  EVEVis: A Multi-Scale Visualization System for Dense Evolutionary Data, Robert Miller, Vadim Mozhaïskiy, Ilias Tagkopoulos, Kwan-Liu Ma

[Honorable Mention] Semantically Steered Visual Analysis of Highly Detailed Morphometric Shape Spaces, Max Hermann, Anja C. Schunke, Reinhard Klein

Abstract - Interactive Visualization of Multiscale Biomedical Data: an Integrated Approach, Debora Testi, Gordon Clapworthy, Stephen Aylward, Alejandro Frangi, Richard Christie

- LDAV Papers Ballroom D
  Session 3
  Chair: Berk Geveci
  Parallel Clustering for Visualizing Large Scientific Line Data, Jishang Wei, Hongfeng Yu, Kwan-Liu Ma, Jackie Chen
  Evaluating the Benefits of An Extended Memory Hierarchy for Parallel Streamline Algorithms, David Camp, Hank Childs, Amit Chourasia, Christoph Garth, Kenneth I. Joy
  Parallel In Situ Indexing for Data-intensive Computing, Jinoh Kim, Hasan Abbasi, Luis Chacon, Ciprian Docan, Scott Klaskey, Qing Liuk, Norbert Podhorszki, Arie Shoshani, Kesheng Wu
  Incremental, Approximate Database Queries and Uncertainty for Exploratory Visualization, Danyel Fisher

3:40pm - 4:15pm

- Coffee Break

4:15pm - 5:30pm

- BioVis Challenges Session Ballroom BC
  We have selected a range of speakers that, together with the keynote speaker, will cover developments in a broad range of active research topics in modern biological data visualization, from genes to proteins to organisms to populations. The speakers include developers of visualization tools widely used in biology, as well as active users who apply visualization methods to discover new biological knowledge.
  Speaker: Cydney Nielsen (4:15pm)
  Visualizing next-generation sequence data. As our ability to generate sequencing data continues to increase, data analysis is replacing data generation as the rate-limiting step in genomics studies. This talk will discuss some of key visualization tools that facilitate analysis tasks by enabling researchers to explore, interpret and manipulate their data, and in some cases perform on-the-fly computations. We will focus particularly on methods designed for the analysis of de novo sequencing assemblies and read alignments, highlighting the strengths and limitations of these approaches and the challenges ahead.
  Speaker: Arthur Olson (4:40pm)
  Visualization of biomolecular assemblies and environments. Gaining insight into biological processes at a molecular scale requires visualizing biological assemblies using a synthesis of both abstract & 3D visualization. This talk will highlight currently emerging methods used for exploring molecular recognition and self-assembly using hybrid user interfaces that combines 3D solid printing and augmented reality environments, as well as methods for fast, integrated, and large-scale macromolecular visualization.
  Speaker: Willy Supatto (5:05pm)
  Visualizing embryonic development. Advances in microscopy now allow collection of 4D image data of embryonic development at unprecedented time and spatial resolution. This talk shows how this image data is being used to reveal new insights into developmental patterns, and highlights the need for more specifically-tailored visualization tools to manage these multidimensional data. The talk also discusses the challenges of combining data from multiple experiments, integrating raw imaging data and performing multidimensional analysis.

5:30pm - 5:55pm

- BioVis Contest & Awards Ballroom BC
- BioVis Closing Remarks

4:15pm - 6pm

- LDAV Papers Ballroom D
  Session 4
  Chair: Hank Childs
  Parallel Visualization on Large Clusters using MapReduce, Huy T. Vo, Jonathan Bronson, Brian Summa, João L.D. Comba, Juliana Freire, Bill Howe, Valero Pascucci, Cláudio T. Silva
  The ParaView Coprocessing Library: A Scalable, General Purpose In Situ Visualization Library, Nathan Fabian, Kenneth Moreland, David Thompson, Andrew C. Bauer, Pat Marion, Berk Gevecik, Michel Rasquin, Kenneth E. Jansen
  Dax Toolkit: A Proposed Framework for Data Analysis and Visualization at Extreme Scale, Kenneth Moreland, Utkarsh Ayachit, Berk Geveci, Kwan-Liu Ma
  Scalable Parallel Building Blocks for Custom Data Analysis, Tom Peterka, Robert Ross, Wesley Kendall, Attila Gyulassy, Valerio Pascucci, Han-Wei Shen, Teng-Yok Lee, Abon Chaudhuri

7pm - 9pm

- BioVis Contest BoF Room 557
  The foremost purpose of applying Vis to Biology is to improve Biological Experts’ access to information, and the BioVis Contest exists to help Vis Experts develop tools that are better suited for that purpose. Come meet the Biological domain experts who created the data for this year’s contest, and talk with real users of eQTL data who desperately need better tools. Learn more about the domain, and the end users’ real needs. Find out what’s brewing for Round 2 of the eQTL data analysis challenge, and help plan the theme for the next BioVis Round 1 challenge.
8am - 10:10am

- **VisWeek Welcome**
  Ballroom A

- **VisWeek Keynote: Visual Thinking in Discovery and Invention: From Physics to Cognitive Social Science**
  Speaker: Paul Thagard, University of Waterloo

  This talk will discuss the role of visual thinking in scientific discovery and technological invention. Visual thinking uses picture-like representations as internal mental models or as external depictions such as diagrams. The first part of the talk will analyze the role of visual thinking in 100 great discoveries and 100 great inventions. The second part will discuss the contribution of visual thinking to developing new theories in the social sciences based on advances in cognitive science. Cognitive-affective mapping is a new technique for visualizing the role of emotion in social cognition. EMPATHICA is a new graphical system for resolving conflicts by increasing empathy using cognitive-affective maps.

10:10am - 10:30am

- **Coffee Break**

10:30am - 12:10pm

- **VisWeek Papers Fast Forward (10:30am - 10:40am)**
  Ballroom A

- **VAST Papers (10:40am - 11:40am)**
  Foundations of the Analysis Process
  Chair: Margit Pohl
  
  Visual Analytic Roadblocks for Novice Investigators, Bum chul Kwon, Brian Fisher, Ji Soo Yi
  
  Perception-based Visual Quality Measures, Georgia Albuquerque, Martin Eisemann, Marcus Magnor
  
  Characterizing the Intelligence Analysis Process: Informing Visual Analytics Design through a Longitudinal Field Study, Youn-ah Kang, John Stasko

- **Vis Contest (11:40am - 12:10pm)**
  Ballroom A

12:10pm - 2pm

- **Lunch Break**

2pm - 3:40pm

- **VisWeek Panel**
  Ballroom D
  
  **Theories of Visualization - Are There Any?**
  Panelists: Jarke Van Wijk, Colin Ware, Çağatay Demiralp, David Laidlaw
  
  A fundamental question in visualization is what constitutes a “good” visualization. A related question whether one visualization is better than another. In general, these hard questions are addressed by running user studies. However, evaluating visualizations with user studies a posteriori, in an inductive approach, is neither sufficient nor efficient. Ideally, we would like to have models that not only define what a good visualization is but also tell us how to construct them. Historically, general theories have been born from elimination and/or unification of competing and complementary theories that have emerged from specific domains. Clearly we need more theories of this kind in visualization. In this panel, we will discuss example theories of visualization and ponder how they relate to one another.

3:40pm - 4:15pm

- **Vis Papers**
  Room 557
  
  Saliency, Deep Features, Events, and Devices
  Chair: Xiangfeng David Gu
  
  [Honorable Mention] Saliency-Assisted Navigation of Very Large Landscape Images, Cheuk Yiu Ip, Amitabh Varshney
  
  Hierarchical Event Selection for Video Storyboards with a Case Study on Snooker Video Visualization, Matthew L. Parry, Philip A. Legg, David H.S. Chung, Iwan W. Griffiths, Min Chen
  
  [Honorable Mention] Artificial Defocus for Displaying Markers in Microscopy Z-Stacks, Alessandro Giusti, Pierluigi Taddei, Cristina Magli, Giorgio Corani, Luca Gambardella, Luca Gianaroli
  
  Visualization of Topological Structures in Area-Preserving Maps, Xavier Tricoche, Christoph Garth, Allen Sanderson
  
  Multi-Touch Table System for Medical Visualization: Application to Orthopedic Surgery Planning, Claes Lundström, Thomas Rydell, Camilla Forsell, Anders Persson, Anders Ynnerman

4:15pm - 5:30pm

- **VisWeek George Robertson (4:15pm - 5pm)**
  Ballroom D
  
  George Robertson (CMU, PARC, Microsoft Research) coined the term “information visualization” in 1993, and is regarded as a forefather of Infovis. He retired from Microsoft in 2011. This invited panel will be a tribute to his deep and long-standing impact. At the panel, Danyel Fisher(Microsoft Research) Jock Mackinlay (Tableau), Mary Czerwinski (Microsoft Research) and Jeff Heer (Stanford) will toast his accomplishments and discuss how his work has influenced them and the field. George will share some concluding thoughts.

- **Discovery Exhibition (5pm - 5:30pm)**
High Performance and Scalable Vis (4:15pm - 5:35pm)
Chair: Gordon Kindlman

Load-Balanced Parallel Streamline Generation on Large Scale Vector Fields, Boonthanome Nouanesengsy, Teng-Yok Lee, Han-Wei Shen

Extinction-Based Shading and Illumination in GPU Volume Ray-Casting, Philipp Schlegel, Maxim Makhinya, Renato Pajarola

GPU-Based Interactive Cut-Surface Extraction From High-Order Finite Element Fields, Blake Nelson, Robert Haines, Robert M. Kirby

GPU-Based Real-Time Approximation of the Ablation Zone for Radiofrequency Ablation, Christian Rieder, Tim Krüger, Christian Schumann, Horst K. Hahn

4:15pm - 5:45pm

VAST Papers (4:15pm - 5:15pm)
Chair: Brian Fisher

[Honorable Mention] How Locus of Control Influences Compatibility with Visualization Style, Caroline Ziemkiewicz, R. Jordan Crouser, Ashley Rye Yauilla, Sara L. Su, William Ribarsky, Remco Chang

Obvious: A Meta-Toolkit to Encapsulate Information Visualization Toolkits — One Toolkit to Bind Them All, Jean-Daniel Fekete, Pierre-Luc Hémery, Thomas Baudel, Jo Wood

Supporting Effective Common Ground Construction in Asynchronous Collaborative Visual Analytics, Yang Chen, Jamal Alsakran, Scott Barlowe, Jing Yang, Ye Zhao

VAST Challenge Awards (5:15pm - 5:45)

5:45pm - 6:30pm

VisWeek Posters Fast Forward

VisWeek 2012 is the premier forum for advances in scientific and information visualization. The event-packed week brings together researchers and practitioners from academia, government, and industry to explore their shared interests in tools, techniques, and technology.

We invite you to participate in IEEE Visualization, IEEE Information Visualization, and IEEE Visual Analytics Science and Technology by sharing your research, insights, experience, and enthusiasm.

In 2012, IEEE VisWeek comes to the beautiful city of Seattle, Washington. Downtown Seattle is easily walkable and waiting to be explored. Shopping, dining, arts and visitor attractions are within steps of hotels and inns. The city is surrounded by pristine waterways, two mountain ranges and three national parks. To the west lies the only temperate rain forest in the continental US. To the east, a world-class wine region. For more information, please see http://www.visitseattle.org/Home.aspx.

www.visweek.org

Follow @ieeevisweek to keep up with conference activities and announcements.

Questions? Email info@visweek.org

VisWeek 2012 General Chairs:
Richard May, Pacific Northwest National Laboratory
William Pike, Pacific Northwest National Laboratory
Pak Chung Wong, Pacific Northwest National Laboratory
Wednesday, 26 October

8am - 8:30am
- VisWeek Papers Fast Forward

8:30am - 10:10am
- InfoVis Papers
  - Theory and Foundations
    Chair: Jeff Heer
    Quality Metrics in High-Dimensional Data Visualization: An Overview and Systematization, Enrico Bertini, Andrada Tatu, Daniel Keim
    [Honorable Mention] Benefitting InfoVis with Visual Difficulties, Jessica Hullman, Eytan Adar, Priti Shah
    Product Plots, Hadley Wickham, Heike Hofmann
    Visualisation Rhetoric: Framing Effects in Narrative Visualization, Jessica Hullman, Nicholas Diakopoulos
    Adaptive Privacy-Preserving Visualization Using Parallel Coordinates, Aritra Dasgupta, Robert Kosara
- Vis Papers
  - Statistics, Geometry, and Signal Processing
    Chair: Gunther Weber
    Feature-Based Statistical Analysis of Combustion Simulation Data, Janine C. Bennett, Vaidyanathan Krishnamoorthy, Shusen Liu, Ray W. Grout, Evatt R. Hawkes, Jacqueline H. Chen, Jason Shepherd, Valerio Pascucci, Peer-Timo Bremer
    Quasi Interpolation With Voronoi Splines, Mahsa Mirzargar, Alireza Entezari
    Topological Splines: A Structure-Preserving Visual Representation of Scalar Fields, Carlos D. Correa, Peter Lindstrom, Peer-Timo Bremer
    [Best Paper] Towards Robust Topology of Sparsely Sampled Data, Carlos D. Correa, Peter Lindstrom
    Visualization of AMR Data With Multi-Level Dual-Mesh Interpolation, Patrick J. Moran, David Ellsworth
- VAST Papers
  - Visual-Computational Analysis of Multivariate Data
    Chair: Ross Maciejewski
    Guiding Feature Subset Selection with an Interactive Visualization, Thorsten May, Andreas Bannach, James Davey, Tobias Ruppert, Jörn Kohlhammer
    Observation-level Interaction with Statistical Models for Visual Analytics, Alex Endert, Chao Han, Dipayan Maiti, Leanna House, Scotland Leman, Chris North
    Pointwise Local Pattern Exploration for Sensitivity Analysis, Zhenyu Guo, Matthew O. Ward, Elke A. Rundensteiner, Carolina Ruiz
    Interactive Decision making using Dissimilarity to visually represented Prototypes, M.A. Migut, J.C. van Gemert, M. Worringer
    BaobabView: Interactive Construction and Analysis of Decision Trees, Stef van den Elzen, Jarke J. van Wijk

10:10am - 10:30am
- Coffee Break

10:30am - 12:10pm
- TVCG Papers
  - Session 1
    Chair: David Kao
    Exploring Brain Connectivity with Two-Dimensional Neural Maps, Radu Jianu, Çağatay Demiralp, David H. Laidlaw
    Hierarchical Line Integration, Marcel Hlawatsch, Filip Sadlo, Daniel Weiskopf
    Streamline Integration Using MPI-Hybrid Parallelism on a Large Multicore Architecture, David Camp, Christoph Garth, Hank Childs, Dave Pugmire, Kenneth J. Joy
    Efficient Visibility Encoding for Dynamic Illumination in Direct Volume Rendering, Joel Kronander, Daniel Jönnson, Joakim Löw, Patric Ljung, Anders Ynnerman, Jonas Unger
    Morse Set Classification and Hierarchical Refinement using Conley Index, Guoning Chen, Qingqing Deng, Andrzej Szymczak, Robert S. Lamee, Eugene Zhang
- InfoVis Papers
  - Techniques
    Chair: Jason Dykes
    [Best Paper] Context-Preserving Visual Links, Markus Steinberger, Manuela Waldner, Marc Streit, Alexander Lex, Dieter Schmalstieg
    Design Study of LineSets, a Novel Set Visualization Technique, Basak Alper, Nathalie Henry Riche, Gonzalez Ramos, Mary Czerwinski
    Developing and Evaluating Quilts for the Depiction of Large Layered Graphs, Juhee Bae, Ben Watson
    Arc Length-Based Aspect Ratio Selection, Justin Talbot, John Gerth, Pat Hanrahan
    Asymmetric Relations in Longitudinal Social Networks, Ulrik Brandes, Bobo Nick
- Vis Papers
  - Parametric and High Dimensional Space Exploration
    Chair: Shigeo Takahashi
    Interactive, Graph-Based Visual Analysis of High-Dimensional, Multi-Parameter Fluorescence Microscopy Data in Toponomics, Steffen Oeltze, Wolfgang Freiler, Reyk Hillert, Helmut Doleisch, Bernhard Preim, Walter Schubert
    Branching and Circular Features in High Dimensional Data, Bei Wang, Brian Summa, Valerio Pascucci, Mikael Vejdemos-Johansson
    Features in Continuous Parallel Coordinates, Dirk J. Lehmann, Holger Theisel
- VisWeek Panel
  - Process + Interaction + Insight: The Need for Analytic Provenance
    Panelists: Claudio Silva, Chris Weaver, Shaun Moon, Laura McNamara
    Visual analytics is the science of analytical reasoning facilitated by interactive visual interfaces. One key aspect that separates visual analytics from other related fields (InfoVis, SciVis, HCI) is...
the focus on analytical reasoning. While the final products generated from an analytical process are of great value, research has shown that the processes of the analyses themselves are just as important if not more so. These processes not only contain information on individual insights discovered, but also how the users arrive at these insights. This area of research that focuses on understanding a user’s reasoning process through the study of their interactions with a visualization is called analytic provenance, and has demonstrated great potential in becoming a foundation of the science of visual analytics.

12:10pm - 2pm

○ Lunch Break
○ Meet the Experts Lunch (12:30pm - 1:45pm, meet near Posters)

2pm - 3:40pm

○ InfoVis Papers
  Systems and Frameworks
  Chair: Robert Kosara
  VisBricks: Multiform Visualization of Large, Inhomogeneous Data, Alexander Lex, Hans-Jörg Schulz, Marc Streit, Christian Partl, Dieter Schmalstieg
  D3: Data-Driven Documents, Michael Bostock, Vadim Ogievetsky, Jeffrey Heer
  Flexible Linked Axes for Multivariate Data Visualization, Jarry H.T. Claessen, Jarke J. van Wijk
  Synthetic Generation of High-Dimensional Datasets, Georgia Albuquerque, Thomas Löwe, Marcus Magnor

○ Vis Papers
  Enriched Rendering and Visualization
  Chair: Bernhard Preim
  About the Influence of Illumination Models on Image Comprehension in Direct Volume Rendering, Florian Lindemann, Timo Ropinski
  Automatic Transfer Functions Based on Informational Divergence, Marc Ruiz, Anton Bardera, Imma Boada, Ivan Viola, Miquel Feixas, Mateu Sbert
  The Effect of Colour and Transparency on the Perception of Overlaid Grids, Lyn Bartram, Billy Cheung, Maureen C. Stone
  Flow Radar Glyphs: Static Visualization of Unsteady Flow with Uncertainty, Marcel Hlawatsch, Philipp Leube, Wolfgang Nowak, Daniel Weiskopf
  iView: A Feature Clustering Framework for Suggesting Informative Views in Volume Visualization, Ziyi Zheng, Nafees Ahmed, Klaus Mueller

○ VAST Papers
  Space and Time
  Chair: Chris Weaver
  [Best Paper] From Movement Tracks through Events to Places: Extracting and Characterizing Significant Places from Mobility Data, Gennady Andrienko, Natalia Andrienko, Christophe Hurter, Salvatore Rinzivillo, Stefan Wrobel
  Virtual Analysis of Route Diversity, He Liu, Yuan Gao, Lu Lu, Siyuan Liu, Huamin Qu, Lionel M. Nî
  SensePlace2: GeoTwitter Analytics Support for Situational Awareness, Alan M. MacEachren, Anuj Jaiswal, Anthony C. Robinson, Scott Pezanski, Alexander Savelyev, Prasenjit Mitra, Xiao Zhang, Justine Blanford

3:40pm - 4:15pm

○ Coffee Break

4:15pm - 5:30pm

○ InfoVis Papers
  Graphs
  Chair: Nathalie Henry-Riche
  Stereoscopic Highlighting: 2D Graph Visualization on Stereo Displays, Basak Alper, Tobias Höllerer, JoAnn Kuchera-Morin, Angus Forbes
  In Situ Exploration of Large Dynamic Networks, Steffen Hadlak, Hans-Jörg Schulz, Heidrun Schumann
  Parallel Edge Splatting for Scalable Dynamic Graph Visualization, Michael Burch, Corinna Vehlow, Fabian Beck, Stephan Diehl, Daniel Weiskopf
  Divided Edge Bundling for Directional Network Data, David Selassie, Brandon Keller, Jeffrey Heer
  Skeleton-Based Edge Bundling for Graph Visualization, Ozan Ersoy, Christophe Hurter, Fernando V. Paulovich, Gabriel Cantareira, Alexandru Telea

○ Vis Papers
  Maps and Surfaces
  Chair: Raphael Wenger
  Volume Analysis Using Multimodal Surface Similarity, Martin Haidacher, Stefan Bruckner, M. Eduard Gröller
  Asymmetric Tensor Field Visualization for Surfaces, Guoning Chen, Darrel Palke, Zhongzang Lin, Harry Yeh, Paul Vincent, Robert S. Larmee, Eugene Zhang
  An Interactive Local Flattening Operator to Support Digital Investigations on Artwork Surfaces, Nico Pietroni, Massimiliano Corsini, Paolo Cignoni, Roberto Scopigno
  Context Preserving Maps of Tubular Structures, Joseph Marino, Wei Zeng, Xianfeng Gu, Arie Kaufman
  Authalic Parameterization of General Surfaces Using Lie Advection, Guangyu Zou, Jiaxi Hu, Xianfeng Gu, Jing Hua

○ VAST Papers
  Applications
  Chair: Jimmy Johansson
  A Visual Navigation System for Querying Neural Stem Cell Imaging Data, Ishwar Kulkarni, Shanaz Y. Mistry, Brian Cummings, M. Gopi
  ParallelTopics: A Probabilistic Approach to Exploring Document Collections, Wenwen Dou, Xiaoyu Wang, Remco Chang, William Ribarsky
  Analysis of Large Digital Collections with Interactive Visualization, Weijia Xu, Maria Esteva, Suyog Dutt Jain, Varun Jain
  A Two-stage Framework for Designing Visual Analytics System in Organizational Environments, Xiaoyu Wang, Wenwen Dou, Thomas Butkiewicz, Eric A. Bier, William Ribarsky

6pm - 9pm

○ Poster Viewing (6pm - 7pm; bar opens at 6pm)
○ VisWeek Banquet (7pm - 9pm)
### Thursday, 27 October

**8am - 8:30am**
- VisWeek Papers Fast Forward  
  Ballroom A

**8:30am - 10:10am**
- TVCG Papers  
  **Session 2**  
  Chair: Steve Drucker
  - Conceptual Recurrence Plots: Revealing Patterns in Human Discourse, Daniel Angus
  - Forecasting Hotspots—A Predictive Analytics Approach, Ross Maciejewski, Ryan Hafem, Stephen Rudolph, Stephen G. Larew, Michael S. Cleveland, David S. Ebert
  - Interactive Visual Analysis of Heterogeneous Scientific Data across an Interface, Johannes Kehrer, Philipp Muigg, Helmut Doleisch, Helwig Hause
  - The Design Space of Implicit Hierarchy Visualization: A Survey, Hans-Jörg Schulz, Steffen Hadlak, Heidrun Schumann
  - Model-Driven Design for the Visual Analysis of Heterogeneous Data, Marc Streit, Hans-Jörg Schulz, Alexander Lex, Dieter Schmalstieg, Heidrun Schumann

- InfoVis Papers  
  **Applications**  
  Chair: Petra Isenberg
  - BirdVis: Visualizing and Understanding Bird Populations, Nivan Ferreira, Lauro Lins, Daniel Fink, Steve Kelling, Chris Wood, Juliana Freire, Cláudio Silva
  - BallotMaps: Detecting Name Bias in Alphabetically Ordered Ballot Papers, Jo Wood, Donia Badawood, Jason Dykes, Aidan Slingsby
  - Sequence Surveyor: Leveraging Overview for Scalable Genomic Alignment Visualization, Danielle Albers, Colin Dewey, Michael Gleicher
  - Visualization of Parameter Space for Image Analysis, A. Johannes Pretorius, Mark-Anthony P. Bray, Anne E. Carpenter, Roy A. Ruddle
  - TextFlow: Towards Better Understanding of Evolving Topics in Text, Weiwei Cui, Shixia Liu, Li Tan, Conglei Shi, Yangqiu Song, Zekai J. Gao, Xin Tong, Huamin Qu

- Vis Papers  
  **Aided Explorations**  
  Chair: Petra Isenberg
  - TransGraph: Hierarchical Exploration of Transition Relationships in Time-Varying Volumetric Data, Yi Gu, Chaoli Wang
  - Symmetry in Scalar Field Topology, Dilip Mathew Thomas, Vijay Natarajan
  - A Scale Space Based Persistence Measure for Critical Points in 2D Scalar Fields, Jan Reininghaus, Natallia Kotava, David Günther, Jens Kasten, Hans Hagen, Ingrid Hotz
  - Evaluation of Trend Localization with Multi-Variate Visualizations, Mark A. Livingston, Jonathan W. Decker

**10:10am - 10:30am**
- Coffee Break

**10:30am - 12:10pm**
- TVCG Papers  
  **Session 3**  
  Chair: Deborah Silver
  - Streamline Embedding for 3D Vector Field Exploration, Christian Roessl, Holger Theisel
  - Toward High-Quality Gradient Estimation on Regular Lattices, Zahid Hossain, Usman R. Alim, Torsten Möller
  - Drawing Contour Trees in the Plane, Christian Heine, Dominic Schneider, Hamish Carr, Gerik Scheuermann
  - Relation-aware Isosurface Extraction in Multi-field Data, N. Suthambhara, Vijay Natarajan

- InfoVis Papers  
  **Time and Trees**  
  Chair: Christopher Collins
  - Exploratory Analysis of Time-Series with ChronoLenses, Jian Zhao, Fanny Chevalier, Emmanuel Pietrigia, Ravin Balakrishnan
  - CloudLines: Compact Display of Event Episodes in Multiple Time-Series, Miloš Krstajić, Enrico Bertini, Daniel A. Keim
  - Evaluation of Traditional, Orthogonal, and Radial Tree Diagrams by an Eye Tracking Study, Michael Burch, Julian Heinrich, Natalia Konlevtsova, Markus Höferlin, Daniel Weiskopf
  - TreeNetViz: Revealing Patterns of Networks over Tree Structures, Liang Gou, Xiaolong (Luke) Zhang
  - Improved Similarity Trees and their Application to Visual Data Classification, Jose Gustavo S. Paiva, Laura Florian-Cruz, Helio Pedrini, Guilherme P. Telles, Rosane Minghim

- VisWeek Panel  
  Panelists: Robert M. Kirby, Claudio T. Silva, Robert S. Laramee, William Schroeder
  Over the past decade, there has been a concerted effort within the computational science and engineering (CS&E) community to articulate both the principles and the implementation of validation and verification (V&V) for numerical simulation. It was not that prior to this effort no V&V was accomplished within computational engineering, but rather that the community identified a need to assert a common language for the understanding and testing for computational algorithms and their implementations. By defining a common language and articulating a paradigm for critical examination, comparison and testing, the CS&E community has attempted to generate a culture for V&V.
  As visualization is the lens through which scientists examine their data, it too should undergo the same rigorous V&V analysis as other components of the simulation science pipeline. Like the CS&E community, it is not that this is not done in practice, but rather that there is not necessarily a common language or coherency of perspective that unifies the visualization community into a common culture of V&V. The purpose of this panel is to discuss what this common language and paradigm might look like within visualization. Following the lead of earlier work calling for such a culture what might “Verifiable Visualizations” look like and what makes them different than what is already done?
12:10pm - 2pm
- Lunch Break
- VisWeek Feedback Session: Open to all

Ballroom D

2pm - 3:40pm
- InfoVis Papers
- Evaluation
  Chair: Melanie Tory

A Study on Dual-Scale Data Charts, Petra Isenberg, Anastasia Bezieranos, Pierre Dragic, Jean-Daniel Fekete
- Evaluation of Artery Visualizations for Heart Disease Diagnosis, Michelle A. Borkin, Krzysztof Z. Gajos, Amanda Peters, Dimitrios Mitsouras, Simone Melchionna, Frank J. Rybicki, Charles L. Feldman, Hanspeter Pfister
- Exploring Ambient and Artistic Visualization for Residential Energy Use Feedback, Johnny Rodgers, Lyn Bartram
- Human-Centered Approaches in Geovisualization Design: Investigating Multiple Methods Through a Long-Term Case Study, David Llovd, Jason Dykes
- Visual Thinking In Action: Visualizations As Used On Whiteboards, Jagoda Walny, Sheelagh Carpendale, Nathalie Henry Riche, Gina Venolia, Philip Fawcett

Vis Papers
- Flow Visualization
  Chair: Christoph Garth
  Straightening Tubular Flow for Side-by-Side Visualization, Paolo Angelelli, Helwig Hauser
  Vortex Visualization in Ultra Low Reynolds Number Insect Flight, Christopher Koehler, Thomas Wischgoll, Haibo Dong, Zachary Gaston
  Two-Dimensional Time-Dependent Vortex Regions Based on the Acceleration Magnitude, Jens Kasten, Jan Reininghaus, Ingrid Hotz, Hans-Christian Hege
  Adaptive Extraction and Quantification of Geophysical Vortices, Sean Williams, Mark Petersen, Peer-Timo Bremer, Matthew Hecht, Valerio Pascucci, James Ahrens, Mario Hlawitschka, Bernd Hamann
  FoamVis: Visualization of 2D Foam Simulation Data, Dan R. Lipsha, Robert S. Laramee, Simon J. Cox, I. Tudur Davies

VisWeek Panel
- Meet the Editors
  Panelists: Ming Lin, Gabriel Taubin, Holly Rushmeier, Chaomei Chen, Chris Johnson
  In his “How to Run a Papermill” essay J. Woodwark stated: “In technical journals, [...] there is a special procedure in place by which your paper is vetted by the editor of the journal -- usually a cynical person -- who sends it out to a few cronies to demolish if they can. This is called refereeing, and the tougher it is (folklore has it) the better is the journal and the more -- not fewer -- submissions it receives.”
  The overall goal of this panel is to dispel certain myths associated with journal publications (such as moderate impact factors or unacceptably long timelines to publication), while starting a dialogue between the main visualization journal editorial boards and the visualization community at large. The panelists will present and discuss five major visualization journal venues available to researchers for disseminating their work. The goal is to inform the visualization audience of challenges from both sides and encourage a discussion for how to optimize the publication and editing process. Ultimately we hope to connect people and to promote interaction between them. To that end, this panel is one part of the larger, more ambitious Visweek Compass agenda.

3:40pm - 4:15pm
- Coffee Break

4:15pm - 5:30pm
- TVCG Papers
  Session 4
  Chair: Helwig Hauser
  Link Conditions for Simplifying Meshes with Embedded Structures, Dilip Mathew Thomas, Vijay Natarajan, Georges-Pierre Bonneau
  Topology Verification for IsoSurface Extraction, Tiago Etiene, Luis Gustavo Nonato, Carlos Scheidegger, Julien Tierny, Thomas J. Peters, Valerio Pascucci, Robert M. Kirby, Cláudio T. Silva
  Visual Reasoning about Social Networks using Centrality Sensitivities, Carlos Correa, Tarik Crnovrsanin, Kwan-Liu Ma
  Color Lens: Adaptive Color Scale Optimization for Visual Exploration, Niklas Elmqvist, Pierre Dragic, Jean-Daniel Fekete

InfoVis Papers
- Maps and Geovisualization
  Chair: Danyel Fisher
  Composite Density Maps for Multivariate Trajectories, Roeland Scheepens, Niels Willems, Huub van de Watering, Gennady Andrienko, Natalia Andrienko, Jarke J. van Wijk
  Focus+Context Metro Maps, Yu-Shuen Wang, Ming-Te Chi
  Flow Map Layout via Spiral Trees, Kevin Verbeek, Kevin Buchin, Bettina Speckmann
  Exploring Uncertainty in Geodemographics with Interactive Graphics, Aidan Slingsby, Jason Dykes, Jo Wood
  Drawing Road Networks with Focus Regions, Jan-Henrik Haunert, Leon Sering

VisWeek Panel
- Meet the Postdocs
  East Prefunction

6:15pm - 7:15pm
Friday, 28 October

8am - 8:30am
VisWeek Papers Fast Forward
Ballroom A

8:30am - 10:10am
InfoVis Papers
Multidimensional Visualization
Chair: Carsten Görg

[Honorable Mention] Local Affine Multidimensional Projection, Paulo Joia, Fernando V. Paulovich, Danilo Coimbra, José Alberto Cuminato, Luis Gustavo Nonato

Angular Histograms: Frequency-Based Visualizations for Large, High Dimensional Data, Zhao Geng, ZhenMin Peng, Robert S. Laramee, Rick Walker, Jonathan C. Roberts

DICON: Interactive Visual Analysis of Multidimensional Clusters, Nan Cao, David Gotz, Jimeng Sun, Huamin Qu

Brushing Dimensions – A Dual Visual Analysis Model for High-Dimensional Data, Cagatay Turkay, Peter Filzmoser, Helwig Hauser

MoleView: An Attribute and Structure-Based Semantic Lens for Large Element-Based Plots, Christophe Hurter, Ozan Ersoy, Alexandru Telea

Vis Papers
Medical Visualization
Chair: Kelly Gaither

Interactive Virtual Probing of 4D MRI Blood-Flow, Roy van Pelt, Javier Oliván Bescós, Marcel Breeuwer, Rachel E. Clough, M. Eduard Gröller, Bart ter Haar Romeny, Anna Vilanova

10:10am - 10:30am
Coffee Break

10:30am - 12:30pm
VisWeek Closing
Ballroom A

VisWeek Capstone: How Editing and Design Changes News Graphics
Speaker: Amanda Cox, New York Times

The Times graphics department has won many national and international awards, including the National Design Award for communication design. Learn how graphics editors report, design and edit data visualizations, integrate interactivity with story telling, and explain the news. How do basic ideas from journalism — including the importance of editing — influence the graphics the Times makes?
VisWeek Posters

**InfoVis Posters**

An Enhanced Slider for Safety Analysis, Yasmin I. Al-Zokari, Daniel Schneider, Dirk Zeckzer, Hans Hagen

Web-based Visualization of Phenology Data, Tom Auer, Alyssa Rosemartin, Doug Miller, Lee Marsh, Stephen Crawford

Dealertree: Those Email Overload of Daily Deals, or How I Squeezed Them Into a Beautiful Treemap, Dhruba Baishya

A generic algorithm for sequential, rectangular, space filling layouts, Thomas Baudel, Bertjan Broekema

Edge Bundling without Reducing the Source to Target Traceability, Fabian Beck, Martin Puppe, Patrick Braun, Michael Burch, Stephan Diehl

PortAssist: Visual Analysis for Porting Large Code Bases, Bertjan Broekema, Alexandru Telea

ChronAtlas: A Visualization for Dynamic Topic Exploration, Nan Cao, Yu-Ru Lin, David Gotz, Jimeng Sun, Huamin Qu

New York City's Foodshed: Complexities of Socioeconomics, Health, and Food Availability, Ilias Koen, Arlene Ducao

Visualization of Exploratory Video Analysis, Adam S. Fouse, James D. Hollan

[Honorable Mention] Modeling Human Performance from Visualization Interaction Histories, Steven R. Gomez, David H. Laidlaw

Visualizing Probability, Donna Gresh, Léa A. Deleris, Luca Gasparini, Dylan Evans

An Analytical Approach for the Creative Design of New Visualizations, Garth Griffin, Shaoheng Li, Connor Gramazio, Remco Chang

A Concept-Based Interactive Visualization Approach to Web Image Search, Enamul Hoque, Orland Hoeber, Minglun Gong

Guiding Visualization Users Towards Improved Analytic Strategies Using Small Interface Changes, Radu Jianu, David H. Laidlaw


LogicVis: Visualizing Trust Propagation at the Device Layer, Bita Mazloom, George Legrady, Mohit Tiwari, Tim Sherwood

Interactive Exploration of Geospatial Network Visualization, Till Nagel, Erik Duval

Interactive Visualization to Teach Innovation and Technology Adoption in Entrepreneurship Education, Erik Noyes, Leonidas Deligiannidis

uVis: A Formula-Based Visualization Tool, Kostas Pantazos, Shangjin Xu, Mohammad A. Kuhail, Soren Lauesen


Dimension Sets: Visual Analysis of Structured High-Dimensional Data, Harald Piringer, Wolfgang Berger

Supporting Climate Impact Research by a Smart View Management, Axel Radloff, Thomas Nocke, Heidrun Schumann

Schematized Small Multiples for the Visual Comparison of Geospatial Data, Andreas Reimer, Andrea Unger, Wouter Meulemans, Doris Dranisch

Designing New Visualizations from Scratch without Programming, Drew Skau, Robert Kosara

Scalable Global Views for Biological Rule-Based Modeling, Adam M. Smith, Wen Xu, James R. Faeder, G. Elisabeta Marai

DEVELO: A High Level Visualization Tool for Game Development, Andrew S. Stamps, T.J. Jankun-Kelly

Novel Interaction Techniques for Visual Comparison, Christian Tominski, Falko Löffler

Topic Hypergraph: Hierarchical Visualization of Thematic Structures in Long Documents, Guizhen Wang, Chaokai Wen, Binghui Yan, Jing Xia, Zhen Liu, Wei Chen

AARCs for Interactively Linking Display Elements, Colin Ware, William Wright

Singleton Set Distribution Views for Set-Valued Attribute Visualization, Kent Wittenburg, Georgiy Pekhteryev

MDS-Tree and MDS-Matrix for High Dimensional Data Visualization, Xiaoru Yuan, Zuchao Wang, Cong Guo

**VAST Posters**

[Best Poster] Using Random Projections to Identify Class-Separating Variables in High-Dimensional Spaces, Anushka Anand, Leland Wilkinson, Tuan Nhon Dang

Evaluation of Large Display Interaction Using Smart Phones, Jens Bauer, Sebastian Thelen, Achim Ebert

Query-Based Coordinated Multiple Views with Feature Similarity Space for Visual Analysis of MRI Repositories, Ian Bowman, Shantanu H. Joshi, John Darrell Van Horn

Reasonable Abstractions: Semantics for Dynamic Data Visualization, Joseph A. Cottam, Andrew Lumsdaine

Exploring Agent-Based Simulations using Temporal Graphs, R. Jordan Crouser, Jeremy G. Freeman, Remco Chang

Visual Analytical Approaches to Evaluating Uncertainty and Bias in Crowdsourced Crisis Information, Iain Dillingham, Jason Dykes, Jo Wood

TreeVersity: Comparing Tree Structures by Topology and Node’s Attributes Differences, John Alexis Guerra Gómez, Audra Buck-Coleman, Catherine Plaisant, Ben Shneiderman

Visual Sentiment Analysis on Twitter Data Streams, Ming Hao, Christian Rohrdantz, Halldór Janetzkó, Umeshwar Dayal, Daniel A. Keim, Lars-Erik Haug, Mei-Chun Hsu

Analysts Aren’t Machines: Inferring Frustration through Visualization Interaction, Lane Harrison, Wenwen Dou, Aidong Lu, William Ribarsky, Xiaooyang Wang

Automated Measures for Interpretable Dimensionality Reduction for Visual Classification: A User Study, Ilknur Ik, Andrew Rosenberg

3D Visualization of Temporal Changes in Bloggers’ Activities and Interests, Masahiko ITOH, Naoki YOSHINAGA, Masashi TOYODA, Masaru KITSUBE

A State Transition Approach to Understanding Users’ Interactions, Dong Hyun Jeong, Soo-Yeon Ji, William Ribarsky, Remco Chang

Visualizing an Information Assurance Risk Taxonomy, Victoria Lemieux, Barbara Endicott-Popovsky, Karl Eckler, Thomas Dang, Adam Jansen

Find Distance Function, Hide Model Inference, Jingjing Liu, Eli T. Brown, Remco Chang


PORGY: Interactive and Visual Reasoning with Graph Rewriting Systems, Bruno Pinaud, Jonathan Dubois, Guy Melaçon

[Honorable Mention] Exploring Proportions: Comparative Visualization of Categorical Data, Harald Piringer, Matthias Buchetics

Poxel and Heatmap Visual Analysis of Multidimensional Gun/Homicide Data, Scott D. Rothenberger, John E. Wenskivitch Jr, G. Elisabeta Marai
Vis Posters
Exploratory analysis of ocean flow models with stereoscopic multi-touch, Thomas Butkiewicz, Colin Ware
Measuring Seeding Resolution Dependence of Diffusion Tensor Streamtube Visualization, Haipeng Cai, Jian Chen, Alexander P. Aachus, Juebin Huang, David H. Laidlaw
[Honorable Mention] Joint Contour Nets: Topological Analysis of Multi-Variate Data, Hamish Carr, David Duke
Computing Reeb Graphs as a Union of Contour Trees, Harish DoraiaSwamy, Vijay Natarajan
The Paradox of Visualizations Making Information Comprehensible, Daniel Halpern, Kyong Eun Oh, James Chiang, Marilyn Tremaine, Karen Benis, Deborah Silver
Enhancing Depth Perception of Volume-Rendered Angiography Data, Marta Kersten-Ortel, Sean J. S. Chen, D. Louis Collins
Improved Visual Exploration and Hybrid Rendering of Stress Tensor Fields via Shape-Space Clustering, Andrea Kratz, Markus Hadwiger, Ingrid Hotz
Streamline Selection and Viewpoint Selection via Information Channel, Jun Ma, Jun Tao, Chaoi Wang, Ching-Kuang Shene
Visual Analysis of Brain/Gait Correlations, Adrian Maries, Srinanjani Mandayam, Caterina Rosano, G. Elisabeta Marai
Designing Transfer Functions for Exploring Hyperspectral Images, David Mayerich, Michael Walsh, Rohit Bhargava
Group Tracking in Scientific Visualization, Sedat Ozer, Deborah Silver, Pino Martin
3D Visualization of Wind Field and Pressures near Hurricane Eye using Google Earth, Reena R. Patel, Robert M. Wallace
Building a Better Barb, David H.F. Pilar, Colin Ware
FloodViz - Enabling Ensemble Visualization of Uncertainty in Simulations of River Flow and Inundation Modeling, Jibonanda Sanyal, Philip Amburn, Song Zhang, Jamie Dyer, John van der Zwaag, Derek Irby, Robert J. Moorhead
[Best Poster] Diderot: A Parallel DSL for Computing on Multi-Dimensional Tensor Fields, Nicholas Seltzer, Lamont Samuels, John Reppy, Gordon L. Kindlmann
Visualizing Coastal Spatial-Temporal Dynamics, Laura Tateosian, Sidharth Thakur, Eric Hardin, Helena Mitasova, Katie Weaver, Margery Overton
A Designer’s Approach to Scientific Visualization: Visual Strategies for Illustrating Motion Datasets, Lauren Thomson, Heesung Sohn, Joseph Downing, Arin Ellingson, David Nuckley, Daniel F. Keefe
Visual and Analytical Methods to Assess Geoscientific Model Configurations, Andrea Unger, Sven Schulte, Volker Klemann, Doris Dransch
Visualizing Multiple Scalar Fields with Hierarchical Topology Based on Contour Trees and Morse-Smale Complexes, Keqin Wu, Song Zhang

Discovery Exhibit
Tuesday 5pm - 5:30pm Ballroom D
Data Visualization of Immunological Competence of HIV Exposed but Uninfected (HEU) infants, Samar Al-Hajj, Edgardo S. Fortuno III, Brian Fisher
VSEM: Teaching using visualization, Bill Ferster

Interactive Visual Analysis Supporting Design, Tuning, and Optimization of Diesel Engine Injection, Kresimir Matkovic, Denis Gracanin, Mario Jelovíc, Helwig Hauser
Improving Document Review in E-Discovery, Sean M. McNee, Ben Arnette, Manfred Gabriel
VoteEasy: Helping Voters Find Political Matches, Kim Rees
Artist Melding Art, Science, Visualization - Creating Clearer Understanding of Environmental Issues, Francesca Samsel
Visual Analytics meets Political Science: Visualizing Patterns and Changes in States’ Policies toward Religion, Richard Traummüller, Enrico Bertini, Lyubomyr Havrylyuk, Oliver Sampson
Visual Analysis on Traffic Trajectory Data, Zuchao Wang, Hanqi Guo, Xiaour Yuan, Hao Liu, Hailing Zhang

VAST Challenge Awards
Tuesday 5pm - 5:30pm Ballroom D
Mini Challenge 1 Award
[Informative Use of Statistics and Evidence in Debrief] Mapping an Epidemic Outbreak: Effective Analysis and Presentation, Kevin Boone, Edward Swing
[Unique Integration of Tag Clouds In Geospatial Visualizations] ScatterBlogs: Geo-Spatial Document Analysis, Harald Bosch, Dennis Thom, Michael Wörner, Steffen Koch, Edwin Püttmann, Dominik Jäckle, Thomas Ertl

Mini Challenge 2 Award
[High Potential for Scalability] Guiding Security Analysis through Visualization, Lane Harrison, Wenwen Dou, Aidong Lu, William Ribarsky, Xiaoyu Wang
[Outstanding Integrated Overview Display] An Integrated Visualization on Network Events, Walter Marcelo Lamagna

Mini Challenge 3 Award
[Good Use of the Analytic Process] Jigsaw to Save Vastopolis, Elizabeth Braunstein, Carsten Görg, Zhicheng Liu, John Stasko
[Good Analysis & Support Debrief] Interactive Data Analysis with nSpace2®, Casey M. Canfield, David Sheffield

Grand Challenge Award

Interactive Visual Analysis Supporting Design, Tuning, and Optimization of Diesel Engine Injection, Kresimir Matkovic, Denis Gracanin, Mario Jelovic, Helwig Hauser
Improving Document Review in E-Discovery, Sean M. McNee, Ben Arnette, Manfred Gabriel
VoteEasy: Helping Voters Find Political Matches, Kim Rees
Artist Melding Art, Science, Visualization - Creating Clearer Understanding of Environmental Issues, Francesca Samsel
Visual Analytics meets Political Science: Visualizing Patterns and Changes in States’ Policies toward Religion, Richard Traummüller, Enrico Bertini, Lyubomyr Havrylyuk, Oliver Sampson
Visual Analysis on Traffic Trajectory Data, Zuchao Wang, Hanqi Guo, Xiaour Yuan, Hao Liu, Hailing Zhang
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**Vis Contest**

**Tuesday 11:40am - 12:10pm  Ballroom A**

Information-guided Streamtube Seeding for the Visualization of Vortex Behavior in a Centrifugal Pump at Deep Part Load, Thomas Kanzok, Paul Rosenthal

[Honorable Mention] Visualization of Vortex Core Differences between Ensemble Simulations, Alexis Yee Lyn Chan, Joohwi Lee, Russell M. Taylor II


**Vortex Catchment**, Filip Sadlo, Grzegorz Karch, Marcel Hlawatsch, Daniel Weiskopf, Thomas Ertl

**Interactive Fluid Dynamics Visualization**, Victor Mateevitsi, Andrew Johnson

**Vortices Identification Based on Projection of Streamlines**, Anonymous

**VisWeek Art show**

**Tuesday - Thursday 10am - 6pm  Rotunda, 555A - 556B, Ballroom E**

**Featured Artist**, Maxwell Roberts

**Moston**, Anya Belkina

**A China Of Many Senses**, Bill Seaman / Todd Berreth

**There's No Place Like House**, Mark Cypher

**Fluid Automata**, Angus Graeme Forbes

**Noise Of...**, Samuel Huron

**Sketching In Space**, Johann Habakuk Israel

**Firewire Picture**: Half-Day Closing, Matthew Kluber

**Frido Viewer (Art For The Science-Inspired Mind™)**, Studio Frido (Charles Keller, David M. Weinstein, Suresh I. Prajapati), Jens Krueger

**Limbique**, David Paulsen & Fidar Yoldas

**Black Rock**, Francesca Samson (With Brandt Westing And Karla Vega)

**CCC**, Keith Soo & Supernature Design

**First 24 Hours Of Spring**, Lauren Thorson

**Night Lights**, Lauren Thorson

**Birds-Of-Feather**

**Wednesday 12:30pm - 1:45pm  Prefunction & Ballroom A Foyer**

**Compass: Lunch with the Leaders**

Beginning researchers go for lunch with leaders of the visualization community (pay for your own lunch). Please sign up through the Compass Visweek page http://www.visweek.org/visweek/2011/info/volunteer/professionals-compass [1]

**Thursday 6:15pm - 7:15pm  East Prefunction**

**Compass: Meet the Postdoc / Faculty Candidate**

Graduating students and postdocs going on the job market present their work. Please sign up for a poster slot through the Compass Visweek page http://www.visweek.org/visweek/2011/info/volunteer/professionals-compass [1]

Please see BoF board near registration desk for current BoF sessions
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