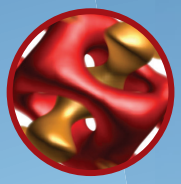
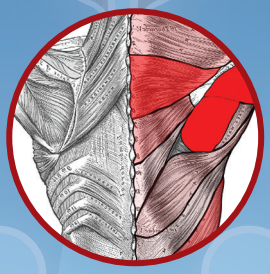
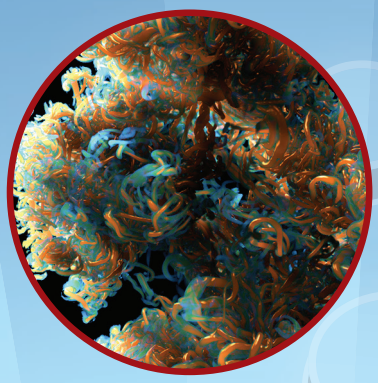




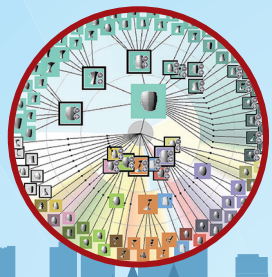


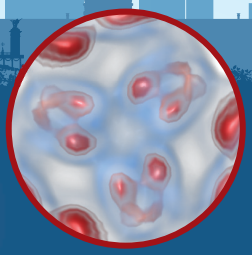
VIS 2014

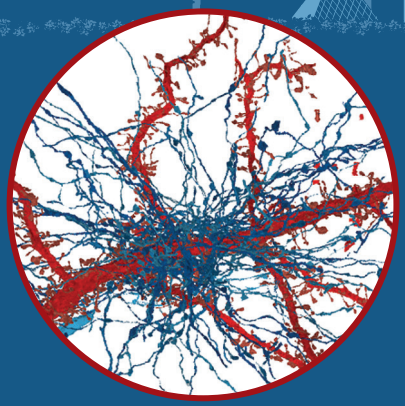
VAST • INFOVIS • SCIVIS
LDAV

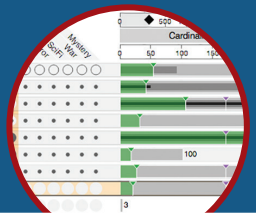
9–14 NOVEMBER 2014
PARIS, FRANCE

Program









IEEE

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Welcome

Welcome to VIS 2014 in Paris! The VIS acronym represents the three main conferences appearing this week: IEEE Visual Analytics Science and Technology (VAST), IEEE Information Visualization (InfoVis), and the IEEE Scientific Visualization (SciVis). All the conferences now run single track in parallel from Tuesday to Friday. Additionally, VIS is hosting the IEEE Symposium on Large-Scale Data Analysis and Visualization (LDAV) on Sunday and Monday, as well as a diverse program of workshops and tutorials at which you can learn about and develop skills in the latest in VIS and contribute to VIS research efforts and agendas. This year, VIS celebrates its 25th anniversary with several special events in addition to its standard program. Scattered throughout the week, you will also be able to explore the Arts Program, Exhibit on Jacques Bertin, Doctoral Colloquium, and a series of panels, posters, Meetups (previously known as birds-of-a-feather—BOF), exhibitions, and a practitioner experiences track. It definitively promises to be an exciting and stimulating week!

We continue the recent tradition in which topical papers published during the last year in IEEE *Transactions on Visualization and Computer Graphics* (*TVCG*) are presented during the conference. The presentations are now merged with the main conference sessions according to the topic of the papers and not as separate sessions. *TVCG* will publish all of the papers from InfoVis and SciVis, and 35 papers from VAST in a special December 2014 issue of the journal. In addition, this year, 21 VAST papers are presented at the conference level, so as to increase the opportunity for presenting emerging work, results, and applications of Visual Analytics.

This year, VIS features 8 workshops, 10 tutorials, and 6 panels, and roughly 150 posters overall. The opening session for the three conferences on Tuesday features keynote speaker Alberto Cairo – author of 'The Functional Art' and director of the Visualization Program at University of Miami Center for Computational Science; the closing session on Friday features capstone speaker Barbara Tversky – Professor of Psychology Emerita at Stanford University and Professor of Psychology at Columbia Teachers College. Each conference day begins with a fast-forward session containing a brief 30-second preview of every paper to be presented during that day.

As always, a number of other events will enrich the week. Posters from all of the conferences will be on display and video previews of work presented during the conference will be viewable on special displays. Wednesday evening will feature a special poster viewing event and a VIS reception. The numerous breaks, various Compass lunch events to support the next generation of visualization researchers by helping connect beginning and advanced researchers, and evenings in the lobby will provide many further opportunities for social and collaborative interaction.

Welcome to Paris, thank you for coming, and have a great VIS!

Jean-Daniel Fekete, *INRIA*
VIS 2014 General Chair

Giuseppe Santucci, *(VAST) Università degli Studi di Roma "La Sapienza"*
Jason Dykes, *(InfoVis) City University London*
David Laidlaw, *(SciVis) Brown University*
Chuck Hansen, *(LDAV) University of Utah*
Thierry Carrard, *(LDAV) CEA*
VIS 2014 Conference & Symposium Chairs

TOC

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Additional copies of the VAST, InfoVis, and SciVis 2014 digital proceedings can be ordered from:

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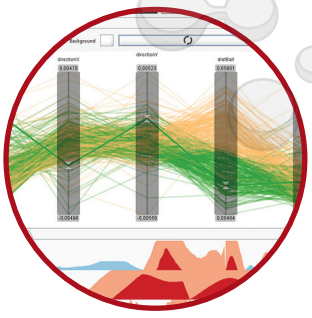
For information on awards, national initiatives, conferences and symposia, and a comprehensive membership directory, please visit **http://vgtc.org/**.



Paris

In 2014, IEEE VIS comes to the city of Paris, France for the first European edition in the the conference's 25-year history. Paris is the capital of France, and attracts around 28 million tourists per year, making it the world's leading tourist destination. The city is renowned for its 2000 years of history, as well as for its spectacular monuments, museums, theaters, restaurants, and cafés. The public transportation system in Paris is also cheap, efficient, and extensive, allowing you to visit the city and region conveniently. The list of attractions is endless---so please check with the Visitors Bureau of Paris or ask student volunteers during the conference for help finding the best attractions for you.

25th Anniversary Celebration

As we celebrate the 25th year of the IEEE VIS Event at IEEE VIS 2014 in Paris, we invite you to share your inspiring milestone visualizations with our community.

We have already gathered initial content that we have collated online. We thank many members of the IEEE VIS community for sharing these contributions.

During IEEE VIS 2014, we will print many of these images and produce a real and interactive timeline exhibit during the conference week. If you have video content, we also plan to show video examples in the time line exhibit as well.

Please visit http://ieeevis.org/vis25timeline for more details.

Bertin's Exhibit

Exhibition on Jacques Bertin

Exhibit chairs: Charles Perin, *INRIA* , Pierre Dragicevic, *INRIA*, Jean-Daniel Fekete, *INRIA*

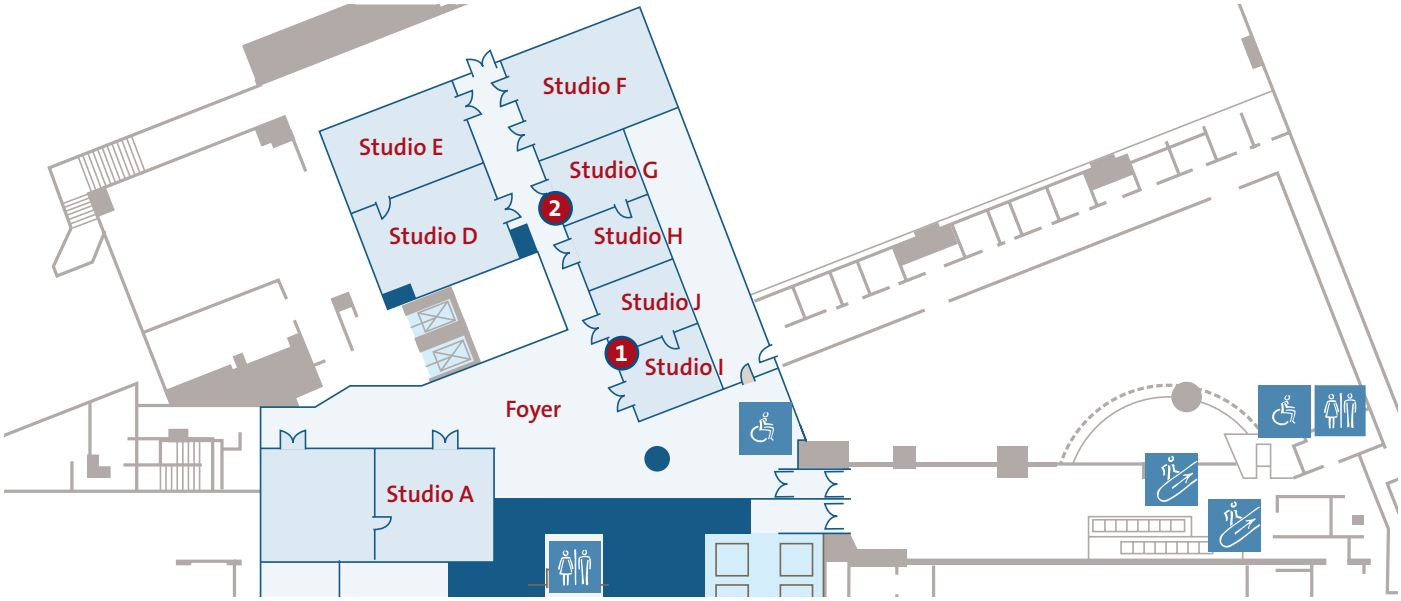
Located on Level 2, Studio IJ

Open from Tuesday–Thursday, 10:00 – 18:00

On the occasion of its 25th birthday and its unprecedented location in France, Vis 2014 will host an exhibit on Jacques Bertin. Jacques Bertin was a French cartographer whose 1967 monograph Sémiologie Graphique (Semiology of Graphics) has had a great influence on the Vis community. This exhibit will focus on Jacques Bertin's work that is less known by the community. It will showcase unique documents on loan from the Archives de France and the Archives Nationales, including his physical matrices and work from his colleagues conducted at the Laboratoire de Cartographie, which he founded in 1954. The exhibition was made possible with the support of Tableau Software.

The Marriott Rive-Gauche

Level 2: Les Quartiers Rive Gauche



1 Bertin's Exhibit

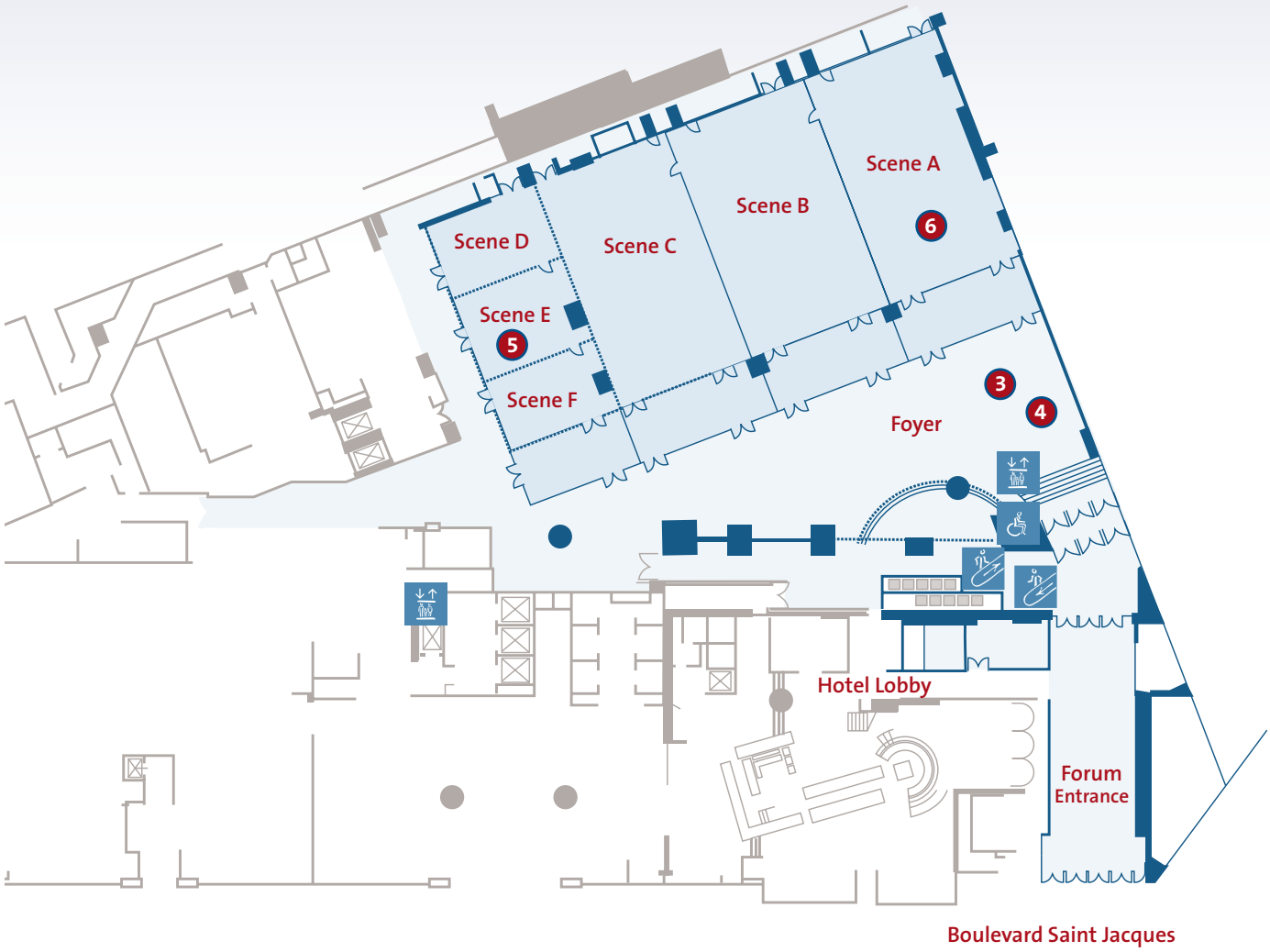
Located in Studio IJ
Tuesday–Thursday, 10:00–18:00
Hosted Viewing, Wednesday, 18:00–19:00

2 Family Room

Located in Studio G
Sunday – Thursday, 8:00–18:00
Friday, 8:00–12:00

The Marriott Rive-Gauche

Level 0: Les Rives de Seine



3 Conference Registration

Located in front of Scene A Foyer near the Entrance
Saturday, 18:00–20:00
Sunday, 7:00–16:30
Monday–Thursday, 7:30–16:30
Friday, 7:30–10:30

4 Meetups (BOF) Board

Located next to Registration
Check the board for times and locations, or to arrange a new Meetup. All attendees are welcome.

5 Exhibits

Located in Scene DEF
Tuesday–Thursday, 10:00–18:00

6 Posters

LDAV & Workshops
Located in Scene A
Sunday–Monday, 8:30–19:00
Hosted Viewing, Sunday–Monday, 18:00–19:00

VIS
Located in Forum ABC
Tuesday–Thursday, 8:30–17:55
Hosted Viewing, Wednesday, 18:00–19:00

Level 1: Les Clubs de Jazz

7 VISAP Art Show

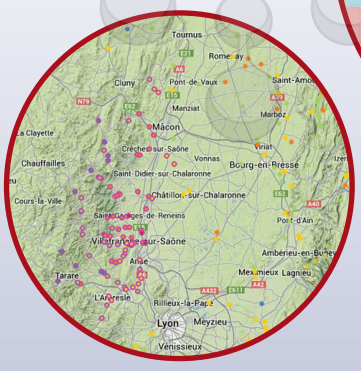
Located in Forum GHIJ
Tuesday–Thursday, 8:30–17:55
Hosted Viewing, Wednesday, 18:00–19:00

VISAP Papers

Presented in the Auditorium
Wednesday, 8:30–12:10

8 Speaker Preparation

Located in Forum EF
Sunday–Thursday, 7:30–17:00
Friday, 7:30–9:00



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Melanie Tory, *University of Victoria*
Chris Weaver, *University of Oklahoma*
Jarke J. van Wijk, *Technical University Eindhoven*

Symposium Posters

LDAV Posters

Located in Scene A
Sunday–Monday, 8:30–19:00
Hosted Viewing, Sunday–Monday, 18:00–19:00

Bacterial Gene Neighborhood Investigation Environment: A Large-Scale Genome Visualization for Big Displays, Jillian Aurisano, Khairi Reda, Andrew Johnson, Jason Leigh

In-situ Processing and Interactive Visualization for Large-Scaled Numerical Simulations, Fang Chen, Markus Flatken, Ingrid Hotz, Andreas Gerndt

SeedMe: A Cyberinfrastructure for Sharing Results, Amit Chourasia, Mona Wong-Barnum, David Nadeau, Michael L. Norman

UnityMol: Interactive Scientific Visualization for Integrative Biology, Sébastien Doutreligne, Tristan Cragnolini, Samuela Pasquali, Philippe Derreumaux, Marc Baaden

Parallel Processing and Immersive Visualization of Sonar Point Clouds, Alessandro Febretti, Kristof Richmond, Peter Doran, Andrew Johnson

CosMovis: Analyzing Semantic Network of Sentiment Words in Movie Reviews, Hyoji Ha, Gi-nam Kim, Wonjoo Hwang, Hanmin Choi, Kyungwon Lee

Movie Analytics: Visualization of the Co-starring Network, Dominique Haughton, Mark-David McLaughlin, Kevin Mentzer, Changan Zhang

Remote Parallel Rendering for High-Resolution Tiled Display Walls, Daniel Nachbaur, Raphael Dumusc, Ahmet Bilgili, Juan Hernando, Stefan Eilemann

Visualizing results in the SALOME platform for large numerical simulations: an integration of ParaView, Alejandro Ribés, Adrien Bruneton

Remote Visualization of Large Scale Fast Dynamic Simulations in a HPC Context, Fabien Vivodtzev, Isabelle Bertron

VIS Art Program (VISAP)

VISAP Art Show

Located in Forum GHIJ
Tuesday–Thursday, 8:30–17:55
Hosted Viewing, Wednesday, 18:00–19:00

Voice of Sisyphus, George Legrady, Ryan McGee, Joshua Dickinson

Hearts and Minds, Roderick Coover, Scott Rettberg, Daria Tsoupikova, Arthur Nishimoto

Spatial Correlation, Jung Nam, Daniel F. Keefe

Smellmap, Kate McLean

Soybots: Mobile Micro-Gardens, Fabian Winkler, Shannon McMullen

Observation, William Fairbrother, Mercedes Gimeno-Segovia

Psycolorgy, Chin-En Soo

Flows, Duncan Shingleton, Mark Kobine

Shanghai Metro Flow, Till Nagel, Benedikt Groß

Escher Animator, Danny Bazo

Culturegraphy, Kim Albrecht, Marian Dörk, Boris Müller

Point Cloud, Muhammad Hafiz Wan Rosli, Andres Cabrera

Visualizing Expressiveness in Conducting Gestures, Kyungho Lee

VISAP Papers

Presented in the Auditorium on Wednesday 8:30–12:10

Art+Interpretation, Angus Forbes, Fanny Chevalier

What Public Visualization Can Learn from Street Art, Sandy Claes, Andrew Vande Moere

PhysicSpace: From Quantum to Human Scale, Kevin Walker, Karin von Ompteda

Beyond Data: Abstract Motionscapes as Affective Visualization, Chao Feng, Lyn Bartram, Diane Gromala

Expressive Cartography and the Aesthetics of Public Visualization, Patricio Davila, Dave Colangelo, Maggie Chan, Robert Tu

Painting with Flow, Corinna Vehlow, Fabian Beck, Daniel Weiskopf

Node-Ring Graph Visualization Clears Edge Congestion, Katayoon Etemad, Sheelagh Carpendale, Faramarz Samavati

Staging Data Visualization Installations in Physical Locations, George Legrady, Angus Forbes

The Living Canvas: Interactive Chloroplasts, Margaret Dolinsky, Roger Hangarter

Analogy and Conceptual Blending are Part of a Visualization Toolkit for Artists and Scientists, Jack Ox

Visualization on Spherical Displays: Challenges and Opportunities, Karla Vega, Eric Wernert, Patrick Beard, Cassandre Gniady, David Reagan, Michael Boyles, Chris Eller

Automatically Generating Animations From Escher's Images, Danny Bazo

Spatial Correlation: An Interactive Display of Virtual Gesture Sculpture, Jung Nam, Daniel F. Keefe

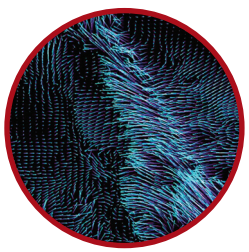
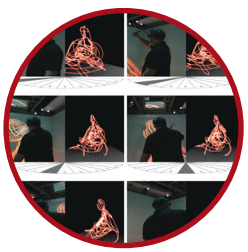
Application of Gestalt Principles to Multimodal Data Representation, Muhammad Hafiz Wan Rosli, Andres Cabrera

Shanghai Metro Flow - Multiple Perspectives into a Subway System, Till Nagel, Benedikt Groß

Hearts and Minds: The Interrogations Project, Roderick Coover, Scott Rettberg, Daria Tsoupikova, Arthur Nishimoto

Flows: Manifesting CO2 Emissions, Duncan Shingleton, Mark Kobine

Smellmap: Amsterdam – Olfactory Art & Smell Visualisation, Kate McLean

For a detailed program, please visit http://visap.uic.edu/2014/program.html

VIS 2014 At-a-Glance

Sunday

VIS

- Symposium & Workshop Posters
- WS: Visualizing Elec. Health Record Data @ *Scene B*
- WS: VAST Challenge @ *Scene C*
- WS: DECISIVe: Cognitive Biases in Vis @ *Auditorium*
- WS: Visualization Literacy Testing @ *Forum ABC*
- WS: 3DVis: 3D for Data Vis? @ *Scene DEF*
- Tut: Visualization Analysis & Design @ *Forum GHIJ*

LUNCH BREAK

- WS: Death of the Desktop @ *Scene B*
- WS: VAST Challenge (cont) @ *Scene C*
- WS: Vis for Predictive Analytics @ *Auditorium*
- Tut: Interaction in Visualization @ *Forum ABC*
- Tut: Visualization & Analysis w/ Python @ *Scene DEF*
- Tut: Where Do I Start? @ *Forum GHIJ*

BREAK

- Symposium & Workshops Posters Viewing & Reception *(Scene Foyer & Various Ballrooms) - (18:00–20:00)*

LDAV *Scene A*

- Opening, Fast Forward, & Keynote: Anders Ynnerman
- Exploiting Modern Architectures for Vis
- Posters FF *(17:45-17:55)*

Monday

VIS

- Symposium & Workshop Posters
- WS: Provenance for Sensemaking @ *Scene B*
- WS: VizSec @ *Scene C*
- WS: BELIV @ *Auditorium*
- Tut: Applying Color Theory to Vis @ *Forum ABC*
- Tut: Glyph-based Visualization @ *Scene DEF*
- Tut: Best Practice of Visual Design @ *Forum GHIJ*

LUNCH BREAK

- WS: BusinessVis @ *Scene B*
- WS: VizSec @ *Scene C*
- WS: BELIV (cont) @ *Auditorium*
- Tut: Everything Except the Chart @ *Forum ABC*
- Tut: Intro to Tensor Field Visualization @ *Scene DEF*
- Tut: Answering Questions @ *Forum GHIJ*

- Symposium & Workshops Posters Viewing *(Various Ballrooms) - (18:00–19:00)*

LDAV *Scene A*

- Fast Fwrd, Foundational Techniques for Large & Complex Data

BREAK

- In Situ Visualization of Large Data

LUNCH BREAK

- Applications to Very Large Data Sets
- Awards and Closing *(15:30-15:40)*

Tuesday

VIS

- VIS Welcome (8:00 - 8:30)
- VIS Keynote Speaker: Alberto Cairo, *Journalist, designer, and Professor of Vis, Infographics & Data Journalism, Univ. of Miami* (8:30–9:30)
- VIS Paper FF (9:30–10:00)

BREAK

LUNCH BREAK

- Digital Compass Lunch

BREAK

- VIS Posters & VISAP (8:30–18:00) @ *Forum ABC, Forum GHIJ*
- Exhibits (10:00–18:00) @ *Scene DEF, Scene Foyer, Studio IJ*
- Panel: Data with a Cause @ *Auditorium*
- Compass: Meet the Candidates @ *Forum ABC*

VAST *Scene C*

- Papers: VAST Intro + Fund. of Visual Analytics
- Papers: Empowering Users in Visual Analytics
- Papers: Clustering and Classification

InfoVis *Scene B*

- Papers: InfoVis Intro + Techniques (ends @ 12:20)
- Papers: Maps & Trees
- Papers: Networks

SciVis *Scene A*

- Papers: SciVis Intro + Volume Vis Systems
- Papers: Scalar Analysis and Volume Rendering
- Papers: Perception and Evaluation

8:00 8:30 9:00 9:30 10:00 10:30 11:00 11:30 12:00 13:00 14:00 14:30 15:00 15:30 16:00 16:30 17:00 17:30 18:00 18:30 19:00 20:00 21:00

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Wednesday

VIS	VAST (Scene C)	InfoVis (Scene B)	SciVis (Scene A)
VIS Papers Fast Forward @ *Scene B*			
VISAP Papers @ *Auditorium*	Papers: Visual Analytics in Societal Applications	Papers: Interaction & Authoring	Papers: Biomedical and Molecular Visualization
BREAK			
VISAP Papers @ *Auditorium*	Papers: Visual Analytics of Spatio-temporal Activities	Papers: Exploratory Data Analysis	Papers: Features Extraction and Flows
LUNCH BREAK			
	Panel: Horizon 2020	Papers: Design Process & Persuasion	Papers: Flowline Tracing, Clustering, & Visualization
BREAK			
	Papers: Visual Analysis of Relationships	Panel: Challenges in Financial Visualization	SciVis Contest
VIS Poster + Art Program Viewing @ *Scene ABC, Forum GHIJ*			
VIS Banquet @ *Scene ABC*			

VIS Posters & VISAP (8:30–18:00) @ *Forum ABC, Forum GHIJ*

Exhibits (10:00–18:00) @ *Scene DEF, Scene Foyer, Studio IJ*

Thursday

VIS	VAST (Scene C)	InfoVis (Scene B)	SciVis (Scene A)
VIS Papers Fast Forward @ *Scene B*			
	Papers: Searching and Tracking	Papers: Evaluation	Papers: Maps and Topology
BREAK			
Panel: Bridging the Gap @ *Auditorium*	Papers: Visual Analytics in Infrastructural & Enviro. Applications	Papers: Applications	Papers: Visual Integration and Design
LUNCH BREAK			
	Papers: Visual Analysis of Changes	Industry Presentations Session	Papers: Data Transformation and Comparative Vis
BREAK			
	Papers: Visual Analysis of Semantic Meanings	Papers: Perception & Design	Panel: 2D vs 3D

VIS Posters & VISAP (8:30–18:00) @ *Forum ABC, Forum GHIJ*

Exhibits (10:00–18:00) @ *Scene DEF, Scene Foyer, Studio IJ*

Friday

VIS	VAST (Scene C)	InfoVis (Scene B)	SciVis (Scene A)
VIS Papers Fast Forward @ *Scene B*			
Panel: Words of Wisdom @ *Auditorium*	Papers: Visual Analytics in Scientific Applications	Papers: Docs, Search & Images	Papers: Video and High Dimensional Data
BREAK			
VIS Capstone Speaker: Barbara Tversky, *Stanford University & Columbia Teachers College (10:30–11:30)*			
VIS Closing @ *Scene ABC (11:30–12:00)*			

8:00 8:30 9:00 9:30 10:00 10:30 11:00 11:30 12:00 13:00 14:00 14:30 15:00 15:30 16:00 16:30 17:00 17:30 18:00 18:30 19:00 20:00 21:00

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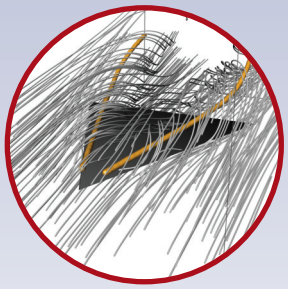

VIS 2014
Program Details

Sunday, 09 November

Full Day

VAST Workshop (8:30–19:00) *Scene C*
VAST Challenge
Contributors: Kristin Cook, Georges Grinstein, Mark Whiting

The VAST Challenge asked participants to solve a mystery using diverse and conflicting datasets. A record 73 entries from 13 countries explored analysis of streaming data, geospatial and geotemporal data, transaction data, and unstructured text. This workshop brings together organizers, participants, and conference attendees to discuss the challenge. Award and honorable mention winners will present their work. The meeting will also feature a poster session. This workshop is open to all VIS attendees. A detailed program can be found at http://vacommunity.org/Workshop2014.

Half day

Workshop (8:30–12:10) *Scene B*
Visualizing Electronic Health Record Data
Contributors: Catherine Plaisant, Silvia Miksch, Theresia Gschwandtner, Sana Malik

NOTE: full day, afternoon session in another venue, see website.

Electronic Health Record (EHR) databases contain millions of patient records including events such as diagnoses, test results, or medication prescriptions. These records are an invaluable data source for clinical research and improvement of clinical quality, as they provide longitudinal health information about patient populations. The use of EHR databases could be dramatically improved if easy-to-use interfaces allowed clinical researchers and quality improvement analysts to explore complex patterns in order to build and test hypotheses regarding the benefits, risks, and appropriateness of treatments or medication regimens. Novel strategies in information visualization and visual analytics are needed. The interest in this topic is growing at very rapid pace and is very interdisciplinary by nature, both in term of field (medicine and computer science) but also research environment (academic research as well as industry and government agencies). Because of the European location of the conference, we have a unique opportunity to create bridges and explore new collaborations between groups that would have never met otherwise.

Workshop (8:30–12:10) *Auditorium*
DECISIVe: Dealing with Cognitive Biases in Visualisations
Contributors: Geoffrey Ellis, David Peebles, Donald Kretz, Gaëlle Lortal

NOTE: full day, afternoon session in another venue, see website.

Our inherent reliance on mental shortcuts, or heuristics, sometimes results in deviations in judgment from what rational decision models would predict. These deviations are known as cognitive biases. Heuristics allow us to make "good enough" decisions without expending all of our cognitive effort on the task, however, in critical decision environments, "good enough" is often NOT good enough. Visualisation tools are increasingly adept at making sense of complex data, but researchers who study cognitive biases have come to realise that the quality of decisions made with these tools are often impaired because tool designers fail to address how heuristics and biases operate in a human-computer interactive setting.

Workshop (8:30–12:10) *Forum ABC*
Towards An Open Visualization Literacy Testing Platform
Contributors: Sung-Hee Kim, Jeremy Boy, Sukwon Lee, Ji Soo Yi, Niklas Elmqvist

NOTE: full day, afternoon session in another venue, see website.

We propose a hands-on workshop where participants will learn about and discuss visualization literacy by actually designing and evaluating questions for a visualization literacy measure. Though the value of information visualization is becoming apparent to a broad audience, visualization researchers often acknowledge that people have different levels of understanding of visualization techniques. In other words, our understanding of how users interpret visualizations has not caught up with design and technical developments, and even the concept of visualization literacy is still debated. Different domains of research, such as mathematics education, cognitive science, and psychology, have been approaching this problem within their domain. We believe that researchers in information visualization and visual analytics should lead the effort in defining the concept, and in creating valid and practical measurement tools.

Workshop (8:30–12:10) *Scene DEF*
3DVis: Does 3D really make sense for Data Visualization?
NOTE: full day, afternoon session in another venue, see website.

Contributors: Thierry Duval, Pascale Kuntz, Jérôme Royan, Wolfgang Stuerzlinger, Gilles Venturini

The aim of this workshop is to discuss 3D display and 3D user interfaces for scientific and information visualization and Visual Analytics. As such, it starts by analyzing the state of the art in 3D visualization and associated interaction. We also review how 3D displays and user interfaces match human perceptual, cognitive and motor capabilities. We then go to the heart of the 2D vs. 3D debate. On the one hand, 3D technologies provide additional options for display and interaction, which broadens the space of potential solutions considerably. Consequently, many 3D visualization approaches have been implemented. The recent introduction of low-cost virtual and augmented reality hardware further paves the way towards a deeper exploration of the design space for 3D visualization. Moreover, better consistency in terms of dimensions between the visualization and interaction may also improve the immersion and navigation in huge amounts of data. On the other hand, the experimental results from studies that investigate the differences between 2D and 3D visualization interfaces provide no real evidence for the claimed benefits of 3D technologies. Thus, the current body of literature provides at best

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inconclusive guidance on the benefits of 3D approaches. Moreover, a deep consideration of human abilities and capabilities identifies a potential mismatch with full 3D user interfaces. Yet, there may be a bias in the evaluations, as the prevalent visualization and interaction techniques in all areas of visualization are based on non-immersive technologies.

Tutorial (8:30–12:10) *Forum GHIJ*
Visualization Analysis and Design
Contributor: Tamara Munzner

This introductory tutorial provides a unified approach encompassing information visualization techniques for tables and networks, scientific visualization techniques for sampled spatial data, and visual analytics techniques for interweaving data transformation and analysis with interactive visual exploration. It focuses on abstractions and design choices rather than algorithms. No previous experience is assumed in visualization, programming, mathematics, computer graphics, human–computer interaction, or graphic design.

Workshop (14:00 – 17:55) *Scene B*
Death of the Desktop – Envisioning Visualization without Desktop Computing
Contributors: Yvonne Jansen, Petra Isenberg, Jason Dykes, Sheelagh Carpendale, Sriram Subramanian, Daniel F. Keefe

How do we envision visualization systems in the next 5, 10, 25+ years? Is it possible that desktop systems will die out? What would be the consequences of a concerted community focus on non-desktop visualization? Which advances would make such a radical change possible? We will be exploring possible visualization futures with rich scenarios in which designers, practitioners and researchers creatively explore opportunities for `beyond-the-desktop' visualization. We will be discussing these and using them, and other means of engaging with the future, to develop the community's perspective on the VIS of tomorrow and beyond. What is your 'imagined future' for visualization? http://beyond.wallviz.dk/

Workshop (14:00–17:55) *Auditorium*
Visualization for Predictive Analytics
Contributors: Enrico Bertini, Adam Perer, Ross Maciejewski, Jimeng Sun

One of the surprising facts of much current visualization research is that prediction does not often play a significant role. Most visualization research seems to focus exclusively on data analysis and presentation, with little support for predictive analytics and the numerous models researchers have developed for this purpose. Upon reflection, this comes as a surprise as many scientific endeavors and many business problems are mostly concerned with prediction. Looking more closely at the recent advancements (and tremendous popularity) of Data Science, one may recognize that the vast majority of problems addressed involve some form of prediction and modelling. Notable examples are: prediction of drug effectiveness in drug development, prediction of diseases in healthcare, prediction of crime in city management.

Tutorial (14:00–17:55) *Forum ABC*
Opening the Black Box of Interaction in Visualization
Contributor: Hans-Jörg Schulz, Tatiana von Landesberger, Dominikus Baur

Interaction is a key ingredient of modern visualization and visual analysis systems. Yet, so far interaction is perceived from either of three different angles: interaction activities (e.g., visualization tasks/events), interaction architectures (e.g., model-view-controller), or interaction metaphors (e.g., direct manipulation). This tutorial for beginning audiences aims to bring these three perspectives on interaction together by detailing the state-of-the-art for each and providing a comprehensive view on interaction.

Tutorial (14:00–17:55) *Scene DEF*
Visualization and Analysis with Python
Contributor: Jonathan Woodring, Julien Jomier, Joseph Cottam, Peter Wang

Python is a powerful environment due to the wide variety of libraries developed for it. One of the areas where Python excels at is visualization and analysis of data. This tutorial will cover the visualization capabilities of several interactive tools, analysis, simulation, & web environments (e.g., iPython, VTK, pandas, yt). This tutorial is intended for intermediate level participants that have a basic understanding of Python. Beginner participants are welcome, but Python fundamentals will not be covered in this tutorial.

Tutorial (14:00–17:55) *Forum GHIJ*
"Where Do I Start?" Practical Methods for the Design Studies in Information Visualization and Visual Analysis
Contributor: Laura McNamara, Kerstan Cole, Susan Stevens-Adams

Visualization and visual analytic practitioners emphasize the importance of tailoring visualizations to a user. However, studying an unfamiliar work domain and building productive design relationships with domain stakeholders can feel quite daunting. Drawing on our collective experience in informatics system design and evaluation, our tutorial provides infovis/VA practitioners with systematic introduction to practical social/behavioral science approaches for engaging user communities in the study of their work processes.

LDAV Symposium

14:00–15:40

LDAV Opening Remarks & Day 1 Fast Forward *Scene A*
LDAV Keynote
Speaker: Anders Ynnerman

Anders Ynnerman is chair of scientific visualization at Linköping University and the director of the Norrköping Visualization Center - C. He is chair of the scientific council for the Center for Medical Image Science and Visualization (CMIV) at the Linköping University hospital. Ynnerman is currently serving as vice chair of the Eurographics association, of which he is also a fellow, and as an associate editor of IEEE Transactions on Visualization and Computer Graphics and of Computers & Graphics. Ynnerman has received several awards for his work on visualization and computational science, including the Akzo-Nobel Science Award, and he is a member of the Swedish Royal Engineering Science Academy. Ynnerman's current research interest lies in the area of fundamental aspects of computer graphics and visualization, in particular large scale and complex data sets with a focus on volumetric data.

15:45–16:15

Coffee Break

16:15–17:45

LDAV Papers *Scene A*
Exploiting Modern Architectures for Visualization
Visualizing Large 3D Geodesic Grid Data with Massively Distributed GPUs, Jinrong Xie, Hongfeng Yu, Kwan-Liu Ma

Multi-Threaded Streamline Tracing for Data-Intensive Architectures, Ming Jiang, Brian Van Essen, Cyrus Harrison, Maya Gokhale

Cache-Aware Sampling Strategies for Texture-Based Ray Casting on GPU, Junpeng Wang, Fei Yang, Yong Cao

17:45–17:55

LDAV Posters Fast Forward *Scene A*

18:00–20:00

Symposium & Workshops *Scene Foyer & Various Ballrooms*
Posters Viewing & Reception

Monday, 10 November

Full Day

Workshop (8:30–17:55) *Scene C*

VizSec: Visualization for Cyber Security

Contributors: Kirsten Whitley, Sophie Engle, Lane Harrison, Fabian Fischer, Nicholas Prigent, John Goodall

The 11th Visualization for Cyber Security (VizSec) is a forum that brings together researchers and practitioners from academia, government, and industry to address the needs of the cyber security community through new and insightful visualization and analysis techniques. VizSec will provide an excellent venue for fostering greater exchange and new collaborations on a broad range of security- and privacy-related topics.

Important research problems often lie at the intersection of disparate domains. Our focus is to explore effective, scalable visual interfaces for security domains, where visualization may provide a distinct benefit, including computer forensics, reverse engineering, insider threat detection, cryptography, privacy, preventing 'user assisted' attacks, compliance management, wireless security, secure coding, and penetration testing in addition to traditional network security. Human time and attention are precious resources. We are particularly interested in visualization and interaction techniques that effectively capture human analyst insights so that further processing may be handled by machines, freeing the analyst for other tasks. For example, a malware analyst might use a visualization system to analyze a new piece of malicious software and then facilitate generating a signature for future machine processing. When appropriate, research that incorporates multiple data sources, such as network packet captures, firewall rule sets and logs, DNS logs, web server logs, and/or intrusion detection system logs, is particularly desirable.

Workshop (8:30–17:55) *Auditorium*

BELIV: Beyond Time And Errors: Novel Evaluation Methods For Visualization

Contributors: Heidi Lam, Petra Isenberg, Tobias Isenberg, Michael Sedlmair

The BELIV workshop series is a bi-annual event focusing on the challenges of evaluation in visualization. Visualization has recently gained much relevance for its ability to cope with complex data analysis tasks and communication. While the overall use visualizations is accelerating, the growth of techniques for the evaluation of these systems has been slow. To understand these complex behaviors, evaluation efforts should be targeted at the component level, the system level, and the work environment level. The commonly used evaluation metrics such as task time completion and number of errors appear insufficient to quantify the quality of a visualization system; thus the name of the workshop: "beyond time and errors ...".

Half day

Workshop (8:30–12:10) *Scene B*

Provenance for Sensemaking

Contributors: Kai Xu, Simon Attfield, TJ Jankun-Kelly

During complex sensemaking and analysis task, it can be valuable to maintain a history of the processes and transformations involved - referred to as 'provenance' information. Provenance information can be a resource for "reflection-in-action" during analyses, for supporting planning and reframing of objectives and scope. It can also be a resource after the event, supporting the interpretation of claims, audit, accountability or training. There has been considerable work on capturing and visualizing of 'data provenance', which focuses on data collection and computation, and 'analytic provenance', which captures the interactive data exploration process. However, there is limited work of utilizing these provenance information to support sensemaking, in terms of improving its efficacy and avoid pitfalls such as data quality issue and human bias.

Tutorial (8:30–12:10) *Forum ABC*

Applying Color Theory to Visualization

Contributors: Theresa-Marie Rhyne

We examine the foundations of color theory and how these methods apply to building effective and compelling visualizations. We define color harmony and demonstrate the application of color harmony to visualization case studies. Our tutorial concludes with a hands on session that teaches how to use online and mobile apps to successfully capture, analyze and store color schemes for future use in visualizations. Please bring small JPEG examples of your visualizations for color analyses during the hands on session.

Tutorial (8:30–12:10) *Scene DEF*

Glyph-based Visualization

Contributors: Rita Borgo, Min Chen, Eamon Maguire, Sine McDougall, Matthew Ward

Multivariate data visualization (MDV) is nowadays a common requirement across different disciplines. Glyph-based visualization is a form of MDV. In comparison with other forms of MDV, such as parallel coordinates, glyph-based visualization exhibits some unique advantages as well as limitations. Well-designed glyphs can facilitate effective and intuitive visual search & pattern identification. This tutorial offers a timely introduction to the fundamentals, techniques and applications of glyph-based visualization.

Tutorial (8:30–12:10) *Forum GHIJ*

Best Practice of Visual Design. A Hands-on Tutorial for Data Explorers and Visual Makers

Contributors: Ana Florescu, James Godwin

Visual design is a broad discipline that deals with the organisation of visual content in a meaningful, accessible and engaging way. In this interdisciplinary tutorial students will learn the basics of visual design. The goal of the tutorial is to provide students with knowledge and practical experience necessary to create clear, coherent and accessible visualisations that make an impact. The tutorial will provide a unique opportunity to combine theory with practice in an intensive, illuminating and fun 4-hour-long format.

Workshop (14:00–17:55) *Scene B*

business|vis|14

Contributors: Rahul C. Basole, Steven Drucker, Jörn Kohlhammer, Jack J. van Wijk

Enterprises across all industries are inundated by an accelerating tsunami of business data. Converting these data and insights into better business outcomes is a pressing and strategic challenge for many managers, decision makers, and executives. While there is a growing interest in business analytics, advanced information visualization and visual analytic tools have lagged behind. This is in part explained by the plethora and complexity of design and implementation challenges presented by diverse business users, data, and contexts. This workshop aims to bring together researchers and practitioners interested in in presenting, exploring, and understanding complex business issues through visualization and visual analytics.

Recommended by the Practitioner Experiences Track

Tutorial (14:00–17:55) *Forum ABC*

Everything Except the Chart: Developing Complex Web-based Visualizations

Contributors: Dominikus Baur, Moritz Stefaner

The recent improvements in web-based technologies have made browsers a suitable platform for visualizations. However, once one moves beyond simple charts and aims to implement novel visualization techniques—as is often the case in research—the architecture around the vis becomes vital. In this tutorial, we present an overview of the scaffolding around the visualization. With several years of experience as freelance visualization developers, we overview considerations when building a successful web-based visualization.

Tutorial (14:00–17:55) *Scene DEF*

Introduction to Tensor Field Visualization: Concepts, Processing and Visualization

Contributors: Ingrid Hotz, Anna Vilanova, Thomas Schultz, Eugene Zhang

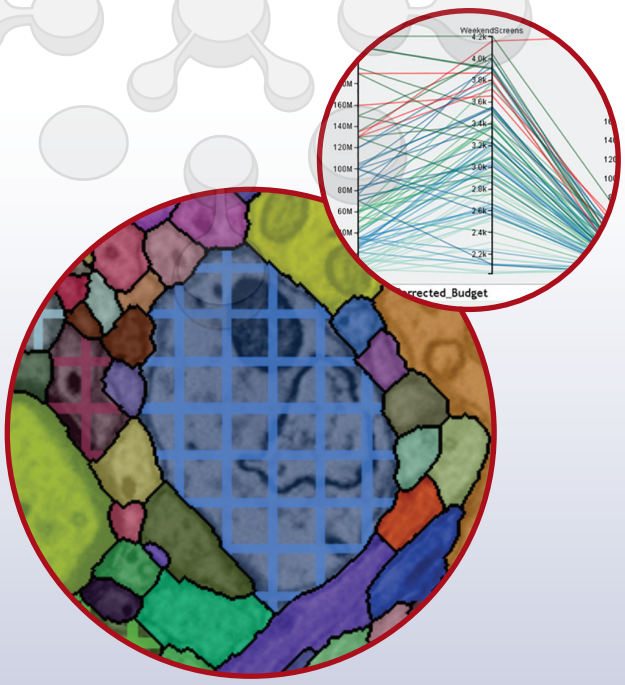
Tensors provide a powerful language to describe physical phenomena. Consequently, they play a fundamental role in physics and engineering. The intention of the tutorial is to motivate more visualization scientists to get involved in this field. The tutorial provides: An introduction to the fundamental concepts of tensors and presentation of the different view on tensor fields; an introduction of the main application areas; A list of major challenges when processing tensor data; An overview of existing visualization methods.

Tutorial (14:00–17:55) *Forum GHIJ*

Answering Questions We Did Not Know How to Ask

Contributor: Alfred Inselberg

Parallel coordinates (||-coords) were presented at the first Visualization Conference and have been widely accepted ever since for visual cue exploration. In tandem and independently, research on the geometry induced by ||-coords has made major breakthroughs. Many patterns corresponding to multivariable relations have been discovered. Here we embark on a program to transform these results into powerful tools for our exploration and data mining arsenal. They revolutionize the power of modern ||-coords.



LDAV Symposium

8:30–8:40

LDAV Day 2 Fast Forward *Scene A*

Speaker: Anders Ynnerman

8:40–10:10

LDAV Papers: *Scene A*

Foundational Techniques for Large and Complex Data

Data-Parallel Halo Finding with Variable Linking Lengths, Wathsala Widanagamaachchi, Peer-Timo Bremer, Christopher Sewell, Li-Ta Lo, James Ahrens, Valerio Pascucci

Multivariate Volume Visualization through Dynamic Projections, Shusen Liu, Shusen Liu, Jayaraman J. Thiagarajan, Peer-Timo Bremer, Valerio Pascucci

ADR Visualization: A Generalized Framework for Ranking Large-Scale Scientific Data using Analysis-Driven Refinement, Boonthanome Nouanesengsy, Jonathan Woodring, Kary Myers, John Patchett, James Ahrens

10:10–10:40

Coffee Break

10:40–12:10

LDAV Papers *Scene A*

In Situ Visualization of Large Data

In-situ multi-resolution and temporal data compression for visual exploration of large-scale scientific simulations, Henry Lehmann, Bernhard Jung

Space-Time Volumetric Depth Images for In-Situ Visualization, Oliver Fernandes, Steffen Frey, Filip Sadlo, Thomas Ertl

Improved Post Hoc Flow Analysis Via Lagrangian Representations, Alexy Agranovsky, David Camp, Christoph Garth, E. Wes Bethel, Kenneth I. Joy, Hank Childs

12:10–14:00

Lunch Break

14:00–15:30

LDAV Papers *Scene A*

Applications to Very Large Data Sets

Visual Analysis of Large Dental Imaging Data in Caries Research, Guangchen Ruan, Hui Zhang

Visual Analytics of Large-Scale Climate Model Data, Pak Chung Wong, Han-Wei Shen, Ruby Leung, Samson Hagos, Teng-Yok Lee, Xin Tong, Kewei Lu

Out-of-Core Visualization of Time-Varying Hybrid-Grid Volume Data, Min Shih, Yubo Zhang, Kwan-Liu Ma, Jayanarayanan Sitaraman, Dimitri Mavriplis

15:30–15:40

LDAV Awards and Closing *Scene A*

18:00–19:00

Symposium & Workshops Posters Viewing *Various Ballrooms*

Tuesday, 11 November

8:00–9:30

VIS Welcome *Scene ABC*

Keynote: The Island of Knowledge and the Shorelines of Wonder. Visualization and Infographics for an Enlightned World

Speaker: Alberto Cairo

Journalist, designer, and Professor of Visualization, Infographics & Data Journalism, School of Communication, University of Miami

To say that giving data a visual shape helps us humans comprehend the increasing complexity of the world isn't particularly surprising nowadays. Or is it? Are we really working to transform visualization into a tool that all citizens can use? Are we building bridges to connect the multitude of disciplines that deal with visualization and information graphics today, in many cases without being aware of what goes on beyond their boundaries? Perhaps we aren't. It may be time to face that challenge head-on.

Alberto Cairo is a journalist, designer, and professor of visualization, infographics, and data journalism at the School of Communication of the University of Miami. He is also the head of the visualization program at UM's Center for Computational Science. He has been director of interactive graphics at El Mundo newspaper (Spain, 2000-2005), a professor at the University of North Carolina-Chapel Hill (2005-2009), and director of multimedia and infographics at Editora Globo (Brazil, 2009-2012).

Cairo is the author of the book 'The Functional Art: An Introduction to Information Graphics and Communication'. He has taught courses and workshops in two dozen countries, and run four editions of a Massive Open Online Course (MOOC) about visualization for communication that has attracted 14,000 people from more than 100 countries. He tweets as @albertocairo and his website is www.thefunctionalart.com.

9:30–10:00

VIS Papers Fast Forward *Scene ABC*

10:00–10:30

Coffee Break

10:30–12:10

VAST Introduction *Scene C*

VAST Papers

Fundamentals of Visual Analytics

Chair: Patricia Crossno

Knowledge Generation Model for Visual Analytics, Dominik Sacha, Andreas Stoffel, Florian Stoffel, Bum Chul Kwon, Geoffrey Ellis, Daniel Keim

INFUSE: Interactive Feature Selection for Predictive Modelling of High Dimensional Data, Josua Krause, Adam Perer, Enrico Bertini

Transforming Scagnostics to Reveal Hidden Features, Tuan Dang, Leland Wilkinson

[Conference Paper] Towards Interactive, Intelligent, and Integrated Multimedia Analytics, Jan Zahálka, Marcel Worring

InfoVis Introduction *Scene B*

InfoVis Papers (ends at 12:20)

Techniques

Chair: Nathalie Henry-Riche

UpSet: Visualization of Intersecting Sets, Alexander Lex, Nils Gehlenborg, Hendrik Strobelt, Romain Vuillemot, Hanspeter Pfister

OnSet: A visualization technique for large-scale binary set data, Ramik Sadana, Timothy Major, Alistair Dove, John Stasko

DimpVis: Exploring Time-varying Information Visualizations by Direct Manipulation, Brittany Kondo, Christopher Collins

Axis Calibration for Improving Data Attribute Estimation in Star Coordinates Plots, Manuel Rubio-Sánchez, Alberto Sanchez

[INFOVIS HONORABLE MENTION AWARD] Domino: Extracting, Comparing, and Manipulating Subsets across Multiple Tabular Datasets, Samuel Gratzl, Nils Gehlenborg, Alexander Lex, Hanspeter Pfister, Marc Streit

SciVis Introduction *Scene A*

SciVis Papers

Volume Visualization Systems

Chair: Chris Johnson

Predicate-based Focus-and-Context Visualization for 3D Ultrasound, Christian Schulte zu Berge, Maximilian Baust, Nassir Navab, Ankur Kapoor

ViSlang: A System for Interpreted Domain-Specific Languages for Scientific Visualization, Peter Rautek, Stefan Bruckner, Eduard Gröller, Markus Hadwiger

Interactive Progressive Visualization with Space-Time Error Control, Steffen Frey, Filip Sadlo, Kwan-Liu Ma, Thomas Ertl

Vivaldi: A Domain-Specific Language for Volume Processing and Visualization on Distributed Heterogeneous Systems, HyungSuk Choi, Woohyuk Choi, Tran Minh Quan, David Hildebrand, Hanspeter Pfister, Won-Ki Jeong

12:10–14:00

Lunch Break

Digital Compass Lunch

14:00–15:40

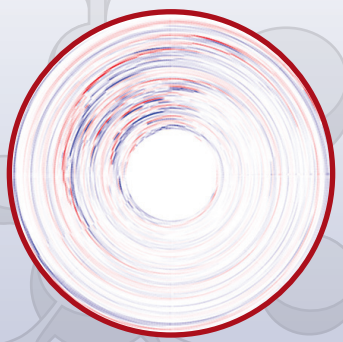
VIS Panel *Auditorium*

Data with a cause: Visualization for policy change

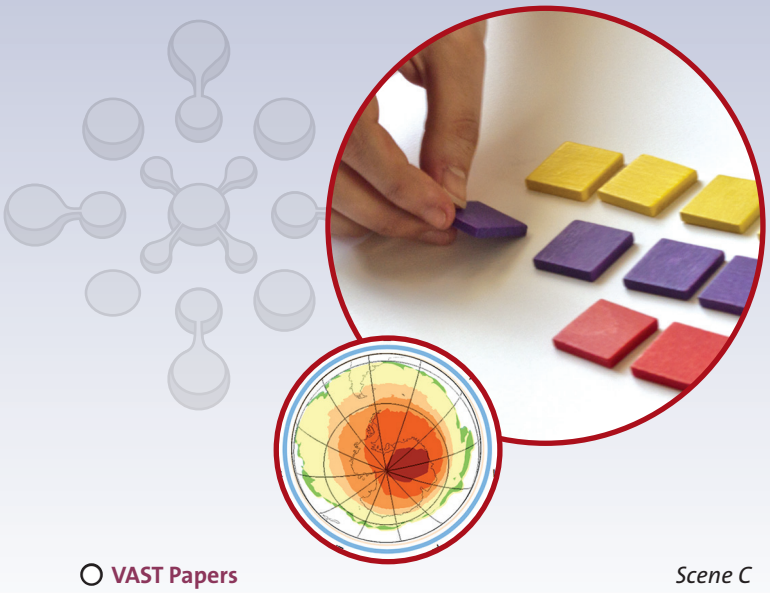
Moderator: Moritz Stefaner

Panelists: Greg McInerny, Scott David, Toby Green, Tariq Khokhar

We experience an increasing demand for data visualization in the context of NGOs, policy making and open data. What are the specific challenges that organizations like the World Bank, OECD, or the World Economic Forum face when publishing reports and data sets? What is the role that data visualization can play in these contexts? And how can we make an actual difference in important questions, with data visualization?



Recommended by the Practitioner Experiences Track



○ **VAST Papers** *Scene C*
Empowering Users in Visual Analytics
Chair: Jonathan Roberts

❊**[VAST BEST PAPER AWARD] Supporting Communication and Coordination in Collaborative Sensemaking,** Narges Mahyar, Melanie Tory

Opening the Black Box: Strategies for Increased User Involvement in Existing Algorithm Implementations, Thomas Mühlbacher, Harald Piringer, Samuel Gratzl, Michael Sedlmair, Marc Streit

Progressive Visual Analytics: User-Driven Visual Exploration of In-Progress Analytics, Charles D. Stolper, Adam Perer, David Gotz

Finding Waldo: Learning about Users from their Interactions, Eli T. Brown, Alvitta Ottley, Jieqiong Zhao, Quan Lin, Richard Souvenir, Alex Endert, Remco Chang

Interactive Visual Analysis of Image-Centric Cohort Study Data, Paul Klemm, Steffen Oeltze, Kai Lawonn, Kathrin Hegenscheid, Henry Völzke, Bernhard Preim

○ **InfoVis Papers** *Scene B*
Maps & Trees
Chair: Remco Chang

Attribute Signatures: Dynamic Visual Summaries for Analyzing Multivariate Geographical Data, Cagatay Turkay, Aidan Slingsby, Helwig Hauser, Jo Wood, Jason Dykes

Origin-Destination Flow Data Smoothing and Mapping, Diansheng Guo, Xi Zhu

Stenomaps: Shorthand for Shapes, Arthur van Goethem, Andreas Reimer, Bettina Speckmann, Jo Wood

Nmap: A Novel Neighborhood Preservation Space-filling Algorithm, Felipe S. L. G. Duarte, Fabio Sikansi, Francisco M. Fatore, Samuel G. Fadel, Fernando V. Paulovich

Tree Colors: Color Schemes for Tree-Structured Data, Martijn Tennekes, Edwin de Jonge

○ **SciVis Papers** *Scene A*
Scalar Analysis and Volume Rendering
Chair: Hammish Carr

Sparse PDF Volumes for Consistent Multi-Resolution Volume Rendering, Ronell Sicat, Jens Krueger, Torsten Möller, Markus Hadwiger

Multiscale Symmetry Detection in Scalar Fields by Clustering Contours, Dilip Thomas, Vijay Natarajan

Low-Pass Filtered Volumetric Shadows, Marco Ament, Filip Sadlo, Carsten Dachsbacher, Daniel Weiskopf

Boundary Aware Reconstruction of Scalar Fields, Stefan Lindholm, Daniel Jönsson, Charles Hansen, Anders Ynnerman

[*TVCG*] Direct Isosurface Ray Casting of NURBS-based Isogeometric Analysis, Andre Schollmeyer, Bernd Froehlich

15:40–16:15

○ **Coffee Break**

16:15–17:55

○ **VAST Papers** *Scene C*
Clustering and Classification
Chair: Jimmy Johansson

Visual Abstraction and Exploration of Multi-class Scatterplots, Haidong Chen, Wei Chen, Honghui Mei, Zhiqi Liu, Kun Zhou, Weifeng Chen, Wentao Gu, Kwan-Liu Ma

Cupid: Cluster-based Exploration of Geometry Generators with Parallel Coordinates and Radial Trees, Michael Beham, Wolfgang Herzner, Eduard Gröller, Johannes Kehrer

Visual Methods for Analyzing Probabilistic Classification Data, Bilal Alsallakh, Allan Hanbury, Helwig Hauser, Silvia Miksch, Andreas Rauber

A Five-Level Design Framework for Bicluster Visualizations, Maoyuan Sun, Chris North, Naren Ramakrishnan

VarifocalReader -- In-Depth Visual Analysis of Large Text Documents, Steffen Koch, Markus John, Michael Wörner, Andreas Müller, Thomas Ertl

○ **InfoVis Papers** *Scene B*
Networks
Chair: Tim Dwyer

❊**[INFOVIS BEST PAPER AWARD] Multivariate Network Exploration and Presentation: From Detail to Overview via Selections and Aggregations,** Stef van den Elzen, Jarke J. van Wijk

GLO-STIX: Graph-Level Operations for Specifying Techniques and Interactive eXploration, Charles D. Stolper, Minsuk Kahng, Zhiyuan Lin, Florian Foerster, Aakash Goel, John Stasko, Duen Horng Chau

[*TVCG*] A Modular Degree-of-Interest Specification for the Visual Analysis of Large Dynamic Networks, James Abello, Steffen Hadlak, Heidrun Schumann, Hans-Jörg Schulz

[*TVCG*] GraphDiaries: Animated Transitions and Temporal Navigation for Dynamic Networks, Benjamin Bach, Emmanuel Pietriga, Jean-Daniel Fekete

[*TVCG*] Visual Adjacency Lists for Dynamic Graphs, Marcel Hlawatsch, Michael Burch, Daniel Weiskopf

[*TVCG*] How to Display Group Information on Node-Link Diagrams: an Evaluation, Radu Jianu, Adrian Rusu, Yifan Hu, Douglas Taggart

○ **SciVis Papers** *Scene A*
Perception and Evaluation
Chair: Daniel F. Keefe

[*TVCG*] An Evaluation of Depth Enhancing Perceptual Cues for Vascular Volume Visualization in Neurosurgery, Marta Kersten-Oertel, Sean J. Chen, D. Louis Collins

[*TVCG*] Perceptually Uniform Motion Space, Asmund Birkeland, Cagatay Turkay, Ivan Viola

[*TVCG*] A Metric for the Evaluation of Dense Vector Field Visualizations, Victor Matvienko, Jens Kruger

Attractive Flicker: Guiding Attention in Dynamic Narrative Visualizations, Manuela Waldner, Mathieu Le Muzic, Matthias Bernhard, Werner Purgathofer, Ivan Viola

Design and Evaluation of Interactive Proofreading Tools for Connectomics, Daniel Haehn, Seymour Knowles-Barley, Mike Roberts, Johanna Beyer, Narayanan Kasthuri, Jeff W. Lichtman, Hanspeter Pfister

18:00–20:30

○ **Compass: Meet the Candidates** *Forum ABC*

Wednesday, 12 November

8:00–08:30

VIS Papers Fast Forward — *Scene B*

8:30–12:10

VISAP Papers — *Auditorium*

Art+Interpretation

Chair: Angus Forbes, Fanny Chevalier

The IEEE VIS 2014 Arts Program (VISAP'14) showcases high-quality artwork and research that explores the increasingly prominent intersections between art and visualization. This morning's session features ten papers that introduce new perspectives on a range of topics that will facilitate discussion and collaboration between artists, designers, technologists, visualization scientists, and others working at the intersection of these fields. More information is available at http://visap.uic.edu.

8:30–10:10

VAST Papers — *Scene C*

Visual Analytics in Societal Applications

Chair: Daniel Keim

[VAST HONORABLE MENTION AWARD] LoyalTracker: Visualizing Loyalty Dynamics in Search Engines, Conglei Shi, Yingcai Wu, Shixia Liu, Hong Zhou, Huamin Qu

VAET: A Visual Analytics Approach for E-transactions Time-series, Cong Xie, Wei Chen, Xinxin Huang, Yueqi Hu, Scott Barlowe, Jing Yang

EvoRiver: Visual Analysis of Topic Coopetition on Social Media, Guodao Sun, Yingcai Wu, Shixia Liu, Tai-Quan Peng, Jonathan Zhu, Ronghua Liang

OpinionFlow: Visual Analysis of Opinion Diffusion on Social Media, Yingcai Wu, Shixia Liu, Kai Yan, Mengchen Liu, Fangzhao Wu

[VAST HONORABLE MENTION AWARD] #FluxFlow: Visual Analysis of Anomalous Information Spreading on Social Media, Jian Zhao, Nan Cao, Zhen Wen, Yale Song, Yu-Ru Lin, Christopher Collins

InfoVis Papers — *Scene B*

Interaction & Authoring

Chair: Bongshin Lee

Revisiting Bertin matrices: New Interactions for Crafting Tabular Visualizations, Charles Perin, Pierre Dragicevic, Jean-Daniel Fekete

iVisDesigner: Expressive Interactive Design of Information Visualizations, Donghao Ren, Tobias Höllerer, Xiaoru Yuan

Constructing Visual Representations: Investigating the Use of Tangible Tokens, Samuel Huron, Yvonne Jansen, Sheelagh Carpendale

PanoramicData: Data Analysis through Pen & Touch, Emanuel Zgraggen, Robert Zeleznik, Steven Drucker

[*TVCG*] Munin: A Peer-to-Peer Middleware for Ubiquitous Analytics and Visualization Spaces, Sriram Karthik Badam, Eli Raymond Fisher, Niklas Elmqvist

SciVis Papers — *Scene A*

Biomedical and Molecular Visualization

Chair: Johanna Beyer

Characterizing Molecular Interactions in Chemical Systems, David Guenther, Roberto Alvarez Boto, Julia Contreras Garcia, Jean-Philip Piquemal, Julien Tierny

Ligand Excluded Surface : A New Type of Molecular Surface, Norbert Lindow, Daniel Baum, Hans-Christian Hege

ADR - Anatomy-Driven Reformation, Jan Kretschmer, Grzegorz Soza, Christian Tietjen, Michael Suehling, Bernhard Preim, Marc Stamminger

Combined Visualization of Wall Thickness and Wall Shear Stress for the Evaluation of Aneurysms, Sylvia Glasser, Kai Lawonn, Thomas Hoffmann, Martin Skalej, Bernhard Preim

[SCIVIS BEST PAPER AWARD] Visualization of Brain Microstructure through Spherical Harmonics Illumination of High Fidelity Spatio-Angular Fields, Sujal Bista, Jiachen Zhou, Rao Gullapalli, Amitabh Varshney

10:10–10:30

Coffee Break

10:30–12:10

VAST Papers — *Scene C*

Visual Analytics of Spatiotemporal Activities

Chair: Alex Endert

[Conference Paper] Feature Driven Visual Analytics of Soccer Data, Halldór Janetzko, Dominik Sacha, Manuel Stein, Tobias Schreck, Oliver Deussen, Daniel Keim

[Conference Paper] Baseball4D: A Tool for Baseball Game Reconstruction & Visualization, Carlos Dietrich, David Koop, Huy Vo, Claudio Silva

[Conference Paper] A System for Visual Analysis of Radio Signal Data, Tarik Crnovrsanin, Chris Muelder, Kwan-Liu Ma

[Conference Paper] Feedback-Driven Interactive Exploration of Large Multidimensional Data Supported by Visual Classifier, Michael Behrisch, Fatih Korkmaz, Lin Shao, Tobias Schreck

[Conference Paper] An Integrated Visual Analysis System for Fusing MR Spectroscopy and Multi-Modal Radiology Imaging, Miguel Nunes, Benjamin Rowland, Matthias Schlachter, Soleakhena Ken, Krešimir Matković, Anne Laprie, Katja Bühler

InfoVis Papers — *Scene B*

Exploratory Data Analysis

Chair: Adam Perer

The Effects of Interactive Latency on Exploratory Visual Analysis, Zhicheng Liu, Jeffrey Heer

Visualizing Statistical Mix Effects and Simpson's Paradox, Zan Armstrong, Martin Wattenberg

Error Bars Considered Harmful: Exploring Alternate Encodings for Mean and Error, Michael Correll, Michael Gleicher

Four Experiments on the Perception of Bar Charts, Justin Talbot, Vidya Setlur, Anushka Anand

Visual Parameter Space Analysis: A Conceptual Framework, Michael Sedlmair, Christoph Heinzl, Harald Piringer, Stefan Bruckner, Torsten Möller

SciVis Papers — *Scene A*

Feature Extraction and Flows

Chair: Chaoli Wang

[SCIVIS HONORABLE MENTION AWARD] A Robust Parity Test for Extracting Parallel Vectors in 3D, Tao Ju, Minxin Cheng, Xu Wang, Ye Duan

[*TVCG*] Exploring Flow Fields Using Space-filling Analysis of Streamlines, Abon Chaudhuri, Teng-Yok Lee, Han-Wei Shen, Rephael Wenger

Vortex Cores of Inertial Particles, Tobias Günther, Holger Theisel

Recommended by the Practitioner Experiences Track

The Natural Helmholtz-Hodge Decomposition For Open-Boundary Flow Analysis, Harsh Bhatia, Valerio Pascucci, Peer-Timo Bremer

FLDA: Latent Dirichlet Allocation Based Unsteady Flow Analysis, Fan Hong, Chufan Lai, Hanqi Guo, Xiaoru Yuan, Enya Shen, Sikun Li

12:10–14:00

○ Lunch Break

14:00–15:40

○ **VIS Panel** *Scene C*

Funding Opportunities for V.I.S. Research in Horizon 2020

Moderator: Jörn Kohlhammer

Panelists: Philippe Quevauviller, Teresa de Martino, William Wong, Daniel Keim, Brian Fisher

IEEE VIS comes to Europe for the first time in 25 years. In the same year, the new framework program for research in the EU, called Horizon 2020, had its first calls targeting a wide range of topics related to ICT, including visualization. The breadth of calls and sub-programs can be truly overwhelming, and it is hard to get an overview of the opportunities for researchers in information visualization, visual analytics, and scientific visualization. There is also the possibility to include partners from outside the EU, called international collaboration in Horizon 2020, which should be of interest for participants of VIS beyond Europe. This panel aims to give an overview of the current EU funding opportunities in visualization. Two EU representatives from Brussels, Belgium, will present, who are or were overlooking projects with a visualization and visual analytics emphasis. They will introduce two areas of EU funding in Horizon 2020: the specific security research unit, and the broader, basic research-oriented FET area. In addition, invited project coordinators of EU projects will give examples for successful collaboration or potential pitfalls during projects. In addition to the panelists representatives of international funding agencies will give their views as part of the discussion on international collaboration.

InfoVis Papers *Scene B*

Design Process & Persuasion

Chair: Michael Sedlmair

Attribute Signatures: Dynamic Visual Summaries for Analyzing Moving beyond sequential design: Reflections on a rich multi-channel approach to data visualization, Jo Wood, Roger Beecham, Jason Dykes

❇ **[INFOVIS HONORABLE MENTION AWARD] An Algebraic Process for Visualization Design,** Gordon Kindlmann, Carlos Scheidegger

Design Activity Framework for Visualization Design, Sean McKenna, Dominika Mazur, James Agutter, Miriah Meyer

Activity Sculptures: Exploring the Impact of Physical Visualizations on Running Activity, Simon Stusak, Aurélien Tabard, Franziska Sauka, Rohit Ashok Khot, Andreas Butz

The Persuasive Power of Data Visualization, Anshul Vikram Pandey, Anjali Manivannan, Oded Nov, Margaret Satterthwaite, Enrico Bertini

○ **SciVis Papers** *Scene A*

Flowline Tracing, Clustering, and Visualization

Chair: Tino Weinkauf

Advection-Based Sparse Data Management for Visualizing Unsteady Flow, Hanqi Guo, Jiang Zhang, Richen Liu, Lu Liu, Xiaoru Yuan, Jian Huang, Xiangfei Meng, Jingshan Pan

Trajectory-based Flow Feature Tracking in Joint Particle/Volume Datasets, Franz Sauer, Hongfeng Yu, Kwan-Liu Ma

[*TVCG*] Interpolation-Based Pathline Tracing in Particle-Based Flow Visualization, Jennifer Chandler, Harald Obermaier, Ken Joy

[*TVCG*] Blood Flow Clustering and Applications in Virtual Stenting of Intracranial Aneurysms, Steffen Oeltze, Dirk J. Lehmann, Alexander Kuhn, Gábor Janiga, Holger Theisel, Bernhard Preim

[*TVCG*] A Deformation Framework for Focus + Context Flow Visualization, Jun Tao, Chaoli Wang, Ching-Kuang Shene, Seung Hyun Kim

15:40–16:15

○ Coffee Break

16:15–17:55

○ **VAST Papers** *Scene C*

Visual Analysis of Relationships

Chair: Margit Pohl

[Conference Paper] An Insight- and Task-based Methodology for Evaluating Spatiotemporal Visual Analytics, Steven Gomez, Hua Guo, Caroline Ziemkiewicz, David H. Laidlaw

[Conference Paper] Weaving a Carpet from Log Entries: a Network Security Visualization Built with Co-Creation, Johannes Landstorfer, Ivo Herrmann, Jan-Erik Stange, Marian Dörk, Reto Wettach

[Conference Paper] Analyzing High-dimensional Multivariate Network Links with Integrated Anomaly Detection, Highlighting and Exploration, Sungahn Ko, Shehzad Afzal, Simon Walton, Yang Yang, Junghoon Chae, Abish Malik, Yun Jang, Min Chen, David Ebert

[Conference Paper] Visual Analysis of Patterns in Multiple Amino Acid Mutation Graphs, Olav Lenz, Frank Keul, Sebastian Bremm, Kay Hamacher, Tatiana von Landesberger

[Conference Paper] A Visual Reasoning Approach for Data-driven Transport Assessment on Urban Roads, Fei Wang, Wei Chen, Feiran Wu, Ye Zhao, Han Hong, Tianyu Gu, Long Wang, Ronghua Liang, Hujun Bao

VIS Panel *Scene B*

Challenges in Financial Visualization

Moderator: Richard Brath

Panelists: Lancelot Comrie, David Keller, Elaine Knuth, Eugene Sorenson

Financial visualization has existed for more than 100 years. Ongoing growth of financial markets increases the frequency, complexity and scale of data while users need to discern meaningful insights for many different types of tasks and objectives. This panel brings together four established practitioners from the financial industry from the firms of Bloomberg, Fidelity Investments, Morgan Stanley and Davenport Advisors and who use visualization tools every day. Each works with a different type of financial firm (buy-side, sell-side, advisory, information provider) bringing a unique perspective to their challenges. This panel represents an opportunity for VisWeek participants to learn more about the challenges of financial visualizations; understand real-world constraints, tasks and usecases; and identify new potential application areas.

○ **SciVis** *Scene A*

IEEE Scientific Visualization Contest

Chairs: David Feng, Bernd Hentschel

Each year, the VisContest presents researchers from the vis community an opportunity to transfer the latest developments in visual data analysis to a challenging application scenario.

This year, the contest targets data from atmospheric research that captures volcanic eruptions and their atmospheric aftermath. We challenge participants to create a comprehensive visualization of the provided data that enables domain experts to gain a deeper understanding of the volcanic eruption events and helps them better understand the consequences for atmosphere and climate.

18:00–19:00

○ **VIS Poster + Art Program Viewing** *Scene ABC, Forum GHIJ*

19:30–21:30

○ **VIS Banquet** *Scene ABC*

Velo Club de VIS

Saturday 15th November

After a few enjoyable bike rides with VIS colleagues over the years we are marking the 25th Anniversary and IEEE VIS' own Tour de France by establishing an open and informal road cycling club as a post-VIS tradition.

The Velo Club de VIS is a lightweight (dis)organization that aims to encourage IEEE VIS participants to ride together on a pre-determined route on the weekend following the conference.

The Petit Depart of Le Tour de VIS 2014 will be outside the conference hotel at 9:30 on Saturday 15th November.

If you'd like to ride, follow the links.

http://j.mp/visVelo

@veloclubdevis #LeTourdeVIS

Les Randonneurs du Velo Club de VIS
Jason Dykes, Jo Wood, Miriah Meyer, Ross Whitaker, Danyel Fisher, Wesley Willett

Vis 2015

11th IEEE VAST Conference
22nd IEEE InfoVis Conference
26th IEEE Scientific Visualization Conference

Call for Participation

VIS 2015 will be the year's premier forum for advances in scientific and information visualization. The weeklong event will convene an international community of 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 Visual Analytics Science and Technology (VAST), IEEE Information Visualization (InfoVis), and IEEE Scientific Visualization (SciVis), by sharing your research, insights, experience, and enthusiasm.

In 2015, IEEE VIS will be held in the City of Chicago, a world-class city located on the shore of Lake Michigan. The Chicago metropolitan area is home to over 9.5 million people, several world-renowned universities, two national laboratories, numerous corporate headquarters, and five major American professional sports teams. The city also promotes year-round cultural activities, which include Millennium Park, The Field Museum of Natural History, Adler Planetarium, Chicago Symphony Orchestra, Shedd Aquarium, the Magnificent Mile, music festivals, theater districts, and exceptional restaurants. Two international airports serve Chicago. The conference venue is also conveniently located downtown and accessible from the city's airports and public transportation.

**Chicago photo credits: Choose Chicago, http://www.choosechicago.com*

www.ieeevis.org

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

Questions? Email info@ieeevis.org

VIS 2015 General Chairs:
Michael E. Papka, *Argonne National Laboratory / Northern Illinois University*
Maxine Brown, *University of Illinois at Chicago*

Thursday, 13 November

8:00–8:30

VIS Papers Fast Forward *Scene B*

10:30–12:10

VIS Panel *Auditorium*

Bridging the Gap: Translating Perception and Cognition Expertise into Visualization Research and Practice

Moderator: Georges-Pierre Bonneau

Panelists: Rita Borgo, Brian Fisher, Michael Gleicher, Timo Ropinski, Colin Ware

In principle, perceptual and cognitive science form an important foundation for visualization and visual analytics. However, while some basic principles (e.g. color contrast, pre-attentive popout) have had significant impact on visualization practice, the application of the sciences of perception and cognition has been slow. A simplistic view might expect that the visualization community should be able to mine the extensive literature of perceptual and cognitive science for ideas to influence and improve our work. In practice, such direct translation seems rare. There are many potential causes of this. For example, there may be differences in goals (understanding people vs. making visualizations), differences in methodology (reductionist empiricism vs. wanting realistic applications), etc. In this panel, we propose to explore why the translation of perceptual and cognitive science into visualization research and practice is so challenging.

8:30–10:10

VAST Papers *Scene C*

Searching and Tracking

Chair: William Pike

DecisionFlow: Visual Analytics for High-Dimensional Temporal Event Sequence Data, David Gotz, Harry Stavropoulos

Footprints: A Visual Search Tool that Supports Discovery and Coverage Tracking, Ellen Isaacs, Kelly Domico, Shane Ahern, Eugene Bart, Mudita Singhal

Visual Analytics for Complex Engineering Systems: Hybrid Visual Steering of Simulation Ensembles, Krešimir Matković, Denis Gračanin, Rainer Splechtna, Mario Jelović, Benedikt Stehno, Helwig Hauser, Werner Purgathofer

Visual Exploration of Sparse Traffic Trajectory Data, Zuchao Wang, Tangzhi Ye, Min Lu, Xiaoru Yuan, Huamin Qu, Jacky Yuan, Qianliang Wu

DIA2: Web-based Cyberinfrastructure for Visual Analysis of Funding Portfolio, Krishna Madhavan, Niklas Elmqvist, Mihaela Vorvoreanu, Xin Chen, Yuet Ling Wong, Hanjun Xian, Zhihua Dong, Aditya Johri

InfoVis Papers *Scene B*

Evaluation

Chair: Heidi Lam

Comparative Eye Tracking Study on Node-Link Visualizations of Trajectories, Rudolf Netzel, Michael Burch, Daniel Weiskopf

Node, Node-Link, and Node-Link-Group Diagrams: An Evaluation, Bahador Saket, Paolo Simonetto, Stephen Kobourov, Katy Borner

The Not-so-Staggering Effect of Staggered Animated Transitions on Visual Tracking, Fanny Chevalier, Pierre Dragicevic, Steven Franconeri

The Influence of Contour on Similarity Perception of Star Glyphs, Johannes Fuchs, Petra Isenberg, Anastasia Bezerianos, Fabian Fischer, Enrico Bertini

Order of Magnitude Markers: An Empirical Study on Large Magnitude Number Detection, Rita Borgo, Joel Dearden, Mark W. Jones

SciVis Papers *Scene A*

Maps and Topology

Chair: Shigeo Takahashi

Visualizing 2-dimensional manifolds with curve handles in 4D, Hui Zhang, Jianguang Weng, Guangchen Ruan

Fast and Memory-Efficient Topological Denoising of 2D and 3D Scalar Fields, David Guenther, Alec Jacobson, Jan Reininghaus, Hans-Peter Seidel, Olga Sorkine-Hornung, Tino Weinkauf

Conforming Morse-Smale Complexes, Attila Gyulassy, David Guenther, Joshua A. Levine, Julien Tierny, Valerio Pascucci

Escape Maps, Gustavo Mello Machado, Filip Sadlo, Thomas Müller, Thomas Ertl

Visualization of Regular Maps: The Chase Continues, Jarke J. van Wijk

10:10–10:30

Coffee Break

10:30–12:10

VAST Papers *Scene C*

Visual Analytics in Infrastructural and Environmental Applications

Chair: Laura McNamara

Visualizing Mobility of Public Transportation System, Wei Zeng, Chi-Wing Fu, Stefan Müller Arisona, Alexander Erath, Huamin Qu

Visual Analysis of Public Utility Service Problems in a Metropolis, Jiawan Zhang, Yanli E, Jing Ma, Yahui Zhao, Binghan Xu, Liting Sun, Jinyan Chen, Xiaoru Yuan

VASA: Interactive Computational Steering of Large Asynchronous Simulation Pipelines for Societal Infrastructure, Sungahn Ko, Jieqiong Zhao, Jing Xia, Xiaoyu Wang, Greg Abram, Niklas Elmqvist, Shaun Kennedy, Kelly Gaither, William Tolone, William Ribarsky, David Ebert

Proactive Spatiotemporal Resource Allocation and Predictive Visual Analytics for Community Policing and Law Enforcement, Abish Malik, Ross Maciejewski, Sherry Towers, Sean McCullough, David Ebert

Run Watchers: Automatic Simulation-Based Decision Support in Flood Management, Artem Konev, Jürgen Waser, Bernhard Sadransky, Daniel Cornel, Rui A. P. Perdigão, Zsolt Horváth, Eduard Gröller

InfoVis Papers *Scene B*

Applications

Chair: Miriah Meyer

LiveGantt: Interactively Visualizing a Large Manufacturing Schedule, Jaemin Jo, Jaeseok Huh, Jonghun Park, Bohyoung Kim, Jinwook Seo

TenniVis: Visualization for Tennis Match Analysis, Tom Polk, Jing Yang, Yueqi Hu, Ye Zhao

Combing the Communication Hairball: Visualizing Large-Scale Parallel Execution Traces using Logical Time, Katherine Isaacs, Peer-Timo Bremer, Ilir Jusufi, Todd Gamblin, Abhinav Bhatele, Martin Schulz, Bernd Hamann

MovExp: A Versatile Visualization Tool for Human-Computer Interaction Studies with 3D Performance and Biomechanical Data, Gregorio Palmas, Myroslav Bachynskyi, Antti Oulasvirta, Hans-Peter Seidel, Tino Weinkauf

❊**[INFOVIS HONORABLE MENTION AWARD] NeuroLines: A Subway Map Metaphor for Visualizing Nanoscale Neuronal Connectivity,** Ali Al-Awami, Johanna Beyer, Hendrik Strobelt, Narayanan Kasthuri, Jeff W. Lichtman, Hanspeter Pfister, Markus Hadwiger

SciVis Papers *Scene A*
Visual Integration and Design
Chair: Xiaoru Yuan

❊**[SCIVIS HONORABLE MENTION AWARD] City Forensics: Using Visual Elements to Predict Non-Visual City Attributes,** Sean Arietta, Alexei Efros, Ravi Ramamoorthi, Maneesh Agrawala

Using Topological Analysis to Support Event-Guided Exploration in Urban Data, Harish Doraiswamy, Nivan Ferreira, Theodoros Damoulas, Juliana Freire, Claudio Silva

[*TVCG*] Activity Detection in Scientific Visualization, Sedat Ozer, Deborah Silver, Karen Bemis, Pino Martin

Trend-Centric Motion Visualization: Designing and Applying a new Strategy for Analyzing Scientific Motion Collections, David Schroeder, Fedor Korsakov, Carissa Mai-Ping Knipe, Lauren Thorson, Arin M. Ellingson, David Nuckley, John Carlis, Daniel F. Keefe

Curve Boxplot: Generalization of Boxplot for Ensembles of Curves, Mahsa Mirzargar, Ross Whitaker, Mike Kirby

12:10–14:00

Lunch Break

14:00–15:40

VAST Papers *Scene C*
Visual Analysis of Changes
Chair: Zhicheng Liu

[Conference Paper] Using Visualizations to Monitor Changes and Harvest Insights from a Global-Scale Logging Infrastructure at Twitter, Krist Wongsuphasawat, Jimmy Lin

[Conference Paper] HydroQual: Visual Analysis of River Water Quality, Pierre Accorsi, Mickaël Fabrègue, Arnaud Sallaberry, Flavie Cernesson, Nathalie Lalande, Agnès Braud, Sandra Bringay, Florence Le Ber, Pascal Poncelet, Maguelonne Teisseire

[Conference Paper] Vismate: Interactive Visual Analysis of Station-Based Observation Data on Climate Changes, Jie Li, Kang Zhang, Zhao-Peng Meng

[Conference Paper] BoundarySeer: Visual Analysis of 2D Boundary Changes, Wenchao Wu, Yixian Zheng, Huamin Qu, Wei Chen, Eduard Gröller, Lionel Ni

[Conference Paper] YMCA - Your Mesh Comparison Application, Johanna Schmidt, Reinhold Preiner, Thomas Auzinger, Michael Wimmer, Eduard Gröller, Stefan Bruckner

Industry Presentations *Scene B*
The Future of Visualization: Research and Industry
Chair: Danyel Fisher
Speakers: Edouard Audit *(CEA)*, Steven Drucker *(Microsoft Research)*, Jean-Daniel Fekete *(Inria)*, Dieter W. Fellner *(Fraunhofer IGD)*, Jock Mackinlay *(Tableau)*, Merry Wang *(Autodesk)*

The sponsors of IEEE Vis are organizations that care deeply about the way the visualization field will be shaped in the future. Come hear major players discuss their vision of the next years of information, data, and scientific visualization. We'll gain an industry perspective on important issues, upcoming challenges; both research opportunities and industry directions.

SciVis Papers *Scene A*
Data Transformation and Comparative Visualization
Chair: Hans-Christian Hege

Volume-Preserving Mapping and Registration for Collective Data Visualization, Jiaxi Hu, Guangyu Jeff Zou, Jing Hua

Fixed-Rate Compressed Floating-Point Arrays, Peter Lindstrom

Decomposition and Simplification of Multivariate Data using Pareto Sets, Lars Huettenberger, Christian Heine, Christoph Garth

Multi-Charts for Comparative 3D Ensemble Visualization, Ismail Demir, Christian Dick, Rüdiger Westermann

Stent maps – Comparative visualization for the prediction of adverse events of transcatheter aortic valve implantations, Silvia Born, Simon Sündermann, Christoph Russ, Raoul Hopf, Carlos Ruiz, Volkmar Falk, Michael Gessat

15:40–16:15

Coffee Break

16:15–17:55

VAST Papers *Scene C*
Visual Analysis of Semantic Meanings
Chair: Jörn Kohlhammer

[Conference Paper] Multi-Model Semantic Interaction for Text Analytics, Lauren Bradel, Chris North, Leanna House, Scotland Leman

[Conference Paper] Serendip: Topic Model-Driven Visual Exploration of Text Corpora, Eric Alexander, Joe Kohlmann, Michael Witmore, Robin Valenza, Michael Gleicher

[Conference Paper] TopicPanorama: a Full Picture of Relevant Topics, Shixia Liu, Xiting Wang, Jianfei Chen, Jun Zhu, Baining Guo

[Conference Paper] Integrating Predictive Analytics and Social Media, Yafeng Lu, Robert Krueger, Dennis Thom, Feng Wang, Steffen Koch, Thomas Ertl, Ross Maciejewski

[Conference Paper] PEARL: An Interactive Visual Analytic Tool for Understanding Personal Emotion Style Derived from Social Media, Jian Zhao, Liang Gou, Fei Wang, Michelle Zhou

InfoVis Papers *Scene B*
Perception & Design
Chair: Petra Isenberg

Learning Perceptual Kernels for Visualization Design, Çağatay Demiralp, Michael Bernstein, Jeffrey Heer

Ranking Visualization of Correlation Using Weber's Law, Lane Harrison, Fumeng Yang, Steven Franconeri, Remco Chang

The Relation Between Visualization Size, Grouping, and User Performance, Connor Gramazio, Karen Schloss, David Laidlaw

A Principled Way of Assessing Visualization Literacy, Jeremy Boy, Ronald Rensink, Enrico Bertini, Jean-Daniel Fekete

Reinforcing Visual Grouping Cues to Communicate Complex Informational Structure, Juhee Bae, Benjamin Watson

VIS Panel *Scene A*
2D vs 3D
Moderator: Robert S. Laramee
Panelists: Chuck Hansen, Silvia Miksch, Klaus Mueller, Bernhard Preim, Colin Ware

Most of us agree that visualization design is a critical aspect of any visualization research. There are many different aspects to the topic of visualization design including: data characteristics and type, data enhancement, visualization mapping, e.g., choice of shape, color, opacity, and texture etc. Another critical aspect is the spatial domain in which the final visualization is presented. In general, 1, 2, or 3 spatial dimensions are used when designing a visualization. The vast majority of visualizations in the literature reside in 2 or 3 spatial dimensions. However, there are differing opinions as to what constitutes an ideal spatial dimensionality when it comes to visualization design. Some believe that 3D space is preferable since it may convey more information than 2D. However, others believe that 2D is preferable because it may result in less occlusion and complexity.

Friday, 14 November

8:00–8:30

○ **VIS Papers Fast Forward** *Scene B*

8:30–10:10

○ **VIS Panel** *Auditorium*

For Young Visualization Researchers: Words of Wisdom

Moderator: Georges Grinstein

Panelists: Sheelagh Carpendale, Alfred Inselberg, Jim Foley, Ari Kaufman, Theresa-Marie Rhyne, Bernice Rogowitz, Ben Shneiderman

This panel is motivated by Christopher Hutchins' letters to a young contrarian. Each panelist will discuss their views on research. Some will suggest-high impact areas; some will discuss how to select a mentor; some will provide guidance on path choices. Each will offer words of wisdom. This panel will be slightly different than other panels. The panelists and moderator are quite diverse and together bring over 350 years of experience. We want to inspire you as an evolving researcher to choose a path that leads you not just to challenging and impacting research but also to an extremely satisfying, engaging and impacting life.

○ **VAST Papers** *Scene C*

Visual Analytics in Scientific Applications

Chair: Andreas Kerren

ConTour: Data-Driven Exploration of Multi-Relational Datasets for Drug Discovery, Christian Partl, Alexander Lex, Marc Streit, Hendrik Strobelt, Anne-Mai Wassermann, Hanspeter Pfister, Dieter Schmalstieg

Visual Analytics for Comparison of Ocean Model Output with Reference Data: Detecting and Analyzing Geophysical Processes Using Clustering Ensembles, Patrick Köthur, Mike Sips, Henryk Dobslaw, Doris Dransch

Genotet: An Interactive Web-based Visual Exploration Framework to Support Validation of Gene Regulatory Networks, Bowen Yu, Harish Doraiswamy, Xi Chen, Emily Miraldi, Mario Luis Arrieta-Ortiz, Christoph Hafemeister, Aviv Madar, Richard Bonneau, Claudio Silva

The Spinel Explorer - Interactive Visual Analysis of Spinel Group Minerals, M. Luján Ganuza, Gabriela R. Ferracutti, M. Florencia Gargiulo, Silvia M. Castro, Ernesto A. Bjerg, Eduard Gröller, Krešimir Matković

Visual Reconciliation of Alternative Similarity Spaces in Climate Modeling, Jorge Poco, Aritra Dasgupta, Yaxing Wei, William Hargrove, Christopher Schwalm, Deborah Huntzinger, Robert Cook, Enrico Bertini, Claudio Silva

○ **InfoVis Papers** *Scene B*

Documents, Search & Images

Chair: Martin Wattenberg

Overview: The Design, Adoption, and Analysis of a Visual Document Mining Tool For Investigative Journalists, Matthew Brehmer, Stephen Ingram, Jonathan Stray, Tamara Munzner

How Hierarchical Topics Evolve in Large Text Corpora, Weiwei Cui, Shixia Liu, Zhuofeng Wu, Hao Wei

Exploring the Placement and Design of Word-Scale Visualizations, Pascal Goffin, Wesley Willett, Jean-Daniel Fekete, Petra Isenberg

[*TVCG*] Similarity Preserving Snippet-Based Visualization of Web Search Results, Erick Gomez-Nieto, Frizzi San Roman, Paulo Pagliosa, Wallace Casaca, Elias S. Helou, Maria Cristina Ferreira de Oliveira, Luis Gustavo Nonato

Effects of Presentation Mode and Pace Control on Performance in Image Classification, Paul van der Corput, Jarke J. van Wijk

○ **SciVis Papers** *Scene A*

Video and High Dimensional Data

Chair: Wei Chen

[*TVCG*] A Structure-Based Distance Metric for High-Dimensional Space Exploration with Multi-Dimensional Scaling, J. Lee, K. McDonnell, A. Zelenyuk, D. Imre, K. Mueller

[*TVCG*] An Approach to Supporting Incremental Visual Data Classification, Jose Gustavo S. Paiva, William Robson Schwartz, Helio Pedrini, Rosane Minghim

[*TVCG*] Glyph-Based Video Visualization for Semen Analysis, Brian Duffy, Jeyarajan Thiyagalingam, Simon Walton, David J. Smith, Anne Trefethen, Jackson C. Kirkman-Brown, Eamonn A. Gaffney, Min Chen

[*TVCG*] The Impact of Interactivity on Comprehending 2D and 3D Visualizations of Movement Data, Fereshteh Amini, Sébastien Rufiange, Zahid Hossain, Quentin Ventura, Pourang Irani, Michael J. McGuffin

[*TVCG*] GazeVis: Interactive 3D Gaze Visualization for Contiguous Cross-sectional Medical Images, Hyunjoo Song, Jihye Yun, Bohyoung Kim, Jinwook Seo

10:10–10:30

○ **Coffee Break**

10:30–11:30

○ **VIS Capstone** *Scene ABC*

Understanding and Conveying Events

Speaker: Barbara Tversky, *Professor of Psychology Emerita at Stanford University, Professor of Psychology at Columbia Teachers College*

The world presents us with an overwhelming continuous multi-media flow of information to all the senses. From that we carve discrete chunks, events. Events can be analyzed as kinds and as parts. Our research on segmenting everyday events like making a bed shows a confluence of top-down (goal-completion) and bottom-up (local maxima of information change) features at event segment boundaries that allow inferences from one to the other. The flip side of understanding events is communicating them, using a range of linguistic diagrammatic, and pictorial devices. Analysis of research and examples from history, diagrams, and comics will illustrate ways to convey events visually.

Barbara Tversky is a cognitive scientist who has worked on memory, categorization, spatial language and thinking, event perception and cognition, diagrammatic reasoning, creativity, and gesture. She has enjoyed collaborating with computer scientists, linguists, philosophers, engineers, educators, biologists, chemists, geographers, artists, and designers on a range of projects. She is Professor of Psychology Emerita at Stanford University and Professor of Psychology at Columbia Teachers College. She is a member of the American Academy of Arts and Sciences and a Fellow of the Cognitive Science Society, the Society for Experimental Psychology, the Psychonomic Society, and the Association for Psychological Science.

11:30–12:00

○ **VIS Closing** *Scene ABC*

VIS Posters & Contests

VAST Posters

Visual Exploratory Tool for Storyline Generation, Erk Ediz Akyigit, Tugkan Cengiz, Onur Burak Yildirim, Selim Balcisoy

TimeGraph: a data management framework for Visual Analytics of large multivariate time-oriented networks, Albert Amor-Amoros, Paolo Federico, Silvia Miksch

Detecting and Tracking Dynamic Clusters of Spatial Events, Natalia Andrienko, Gennady Andrienko, Georg Fuchs, Hendrik Stange

A multidimensional brush for scatterplot data analytics, Michael Aupetit, Nicolas Heulot, Jean-Daniel Fekete

TimeFork: Mixed-Initiative Time-Series Prediction, Sriram Karthik Badam, Jieqiong Zhao, Niklas Elmqvist, David Ebert

Towards a User-Defined Visual-Interactive Definition of Similarity Functions for Mixed Data, Jurgen Bernard, David Sessler, Michael Behrisch, Marco Hutter, Tobias Schreck, Jörn Kohlhammer

Visual Process Mining: Event Data Exploration and Analysis, Peter Bodesinsky, Bilal Alsallakh, Theresia Gschwandtner, Silvia Miksch

Interactive Visualization for Optimal Placement of Public-Access AEDs, Bryan Bonnet, Keith Kraus, Jose Emmanuel Ramirez-Marquez

Interactive Visual Support for Metagenomic Contig Binning, Bertjan Broeksema, Fintan McGee, Magdalena Calusinska, Mohammad Ghoniem

Emoticons and Linguistic Alignment: How Visual Analytics Can Elicit Storytelling, Nan-Chen Chen, Laurie Beth Feldman, Judith F. Kroll, Cecilia R. Aragon

MovementFinder: Visual Analytics of Origin-Destination Patterns from Geo-tagged Social Media, Siming Chen, Cong Guo, Xiaoru Yuan, Jiawan Zhang, Xiaolong (Luke) Zhang

Balanced Layouts Using the Composite Data-Variable Matrix, Shenghui Cheng, Bing Wang, Zhiyuan Zhang, Klaus Mueller

❇**[VAST BEST POSTER AWARD] PIVE: Per-Iteration Visualization Environment for Supporting Real-time Interactions with Computational Methods,** Jaegul Choo, Changhyun Lee, Hannah Kim, Hanseung Lee, Chandan Reddy, Barry Drake, Haesun Park

VisIRR: Visual Analytics for Information Retrieval and Recommendation with Large-Scale Document Data, Jaegul Choo, Changhyun Lee, Hannah Kim, Hanseung Lee, Zhicheng Liu, Ramakrishnan Kannan, Charles Stolper, John Stasko, Barry Drake, Haesun Park

3DArcLens: A Technique for the Exploration of Geographical Networks, Alberto Debiasi, Bruno Simoes, Raffaele De Amicis

Linea: Tailoring Timelines by Visual Exploration of Temporal Text, Tiago Etiene, Paulo Pagliosa, Luis Gustavo Nonato

Extracting and Visualizing Insights from Real-Time Conversations Around Public Presentations, Nicolas Garcia Belmonte

Visualizing the Effects of Scale and Geography in Multivariate Comparison, Sarah Goodwin, Jason Dykes, Aidan Slingsby

Segmentation-Free Quantification of Spots on a Homogeneous Background, Max Hermann, Reinhard Klein, Thomas Schultz

VisAdapt-Increasing Nordic Homeowners' Adaptive Capacity to Climate Change, Jimmy Johansson, Carlo Navarra, Tina Neset, Erik Glaas, Tomasz Opach, Bjorn-Ola Linnor

❇**[VAST HONORABLE MENTION AWARD] Visual Analysis of Missing Data - To See What Isn't There,** Sara Johansson Fernstad, Robert C. Glen

I-VEST: Intelligent Visual Email Search and Triage, Jay Koven, Enrico Bertini, Nasir Memon, R. Luke Dubois

Visual Analysis of Stance Markers in Online Social Media, Kostiantyn Kucher, Andreas Kerren, Carita Paradis, Magnus Sahlgren

StretchPlot: Interactive Visualization of Multi-Dimensional Trajectory Data, Paul Murray, Angus Forbes

Analyzing Parameter Influence on Time-Series Segmentation and Labeling, Martin Rohlig, Martin Luboschik, Heidrun Schumann, Markus Bogl, Bilal Alsallakh, Silvia Miksch

Visual Analytics for the Exploration of Multiparametric Cancer Imaging, Renata Georgia Raidou, Marta Paes Moreira, Wouter van Elmpt, Marcel Breeuwer, Anna Vilanova

A Sketch+Fisheye Interface for Visual Analytics of Large Time-Series, Lei Ren, Yi Du

Visualizing Statistical Analysis of Curve Datasets in ParaView, Alejandro Ribes, Joachim Pouderoux, Anne-Laure Popelin, Bertrand Iooss

Towards a Tighter Coupling of Visualization and Public Policy Making, Tobias Ruppert, Jurgen Bernard, Hendrik Locke-Tieke, Jörn Kohlhammer

Exploiting History to Reduce Interaction Costs in Collaborative Analysis, Ali Sarvghad, Melanie Tory

mailVis: Visualizing Emailbox for Re-finding Emails, Baris Serim, Thanh Tung Vuong, Tuukka Ruotsalo, Luana Micallef, Giulio Jacucci

VisMOOC: Visualizing Video Clickstream Data from Massive Open Online Courses, Conglei Shi, Siwei Fu, Qing Chen, Huamin Qu

The Care and Condition Monitor: a Tablet Based Tool for Visualizing Informal Qualitative Health Care Data, Anne Stevens, Hudson Pridham, Steve Szigeti, Sara Diamond, Bhuvaneswari Arunachalan

Studying propagation dynamics in networks through rule-based modeling, Jason Vallet, Bruno Pinaud, Guy Mélançon

Application of Visual Analytics to Aviation Safety; Wildlife Strikes; The 5 W Questions, Margaret Varga, Albert de Hoon, Richard May, Caroline Varga, Hans van Gasteren

❇**[VAST HONORABLE MENTION AWARD] Interactive Visual Sequence Mining based on Pattern-Growth,** Katerina Vrotsou, Aida Nordman

MatchVis: A generalized visual multi-scale analysis framework for competitive sports, Wentao Wang, Jiawan Zhang, Tianshi Liu

Pantheon: Visualizing Historical Cultural Production, Amy (Zhao) Yu, Kevin Hu, Deepak Jagdish, Cesar Hidalgo

Visualization of Social Media Flows with Interactively Identified Key Players, Xiaoru Yuan, Zhenhuang Wang, Zipeng Liu, Cong Guo, Hongwei Ai, Donghao Ren

InfoVis Posters

EnergyScout: A Consumer Oriented Dashboard for Smart Meter Data Analytics, Nafees Ahmed, Klaus Mueller

Data of Interest (DOI)-Based Analysis of Eye-Tracker Data for Interactive Visualizations, Sayeed Safayet Alam, Radu Jianu

Towards a Visualization Process Model for Online Visualization, Marco Angelini, Giuseppe Santucci, Heidrun Schumann, Hans-Jorg Schulz

The Focus-Filter Widget: A Versatile Control for Defining Focus + Context in 1D, Clemens Arbesser, Oliver Rafelsberger, Harald Piringer

Dynamic Generation and Prefetching of Data Chunks for Exploratory Visualization, Leilani Battle, Remco Chang, Michael Stonebraker

Visualization of Confusion Matrix for Non-Expert Users, Emma Beauxis-Aussalet, Lynda Hardman

The CO2 Pollution Map: Lessons Learned from Designing a Visualization that Bridges the Gap between Visual Communication and Information Visualization, Jeremy Boy, Jean-Daniel Fekete

The Design Space of Typeface, Richard Brath, Ebad Banissi

MemViz: A Tool for Creating Memorable Visualizations, Darius Coelho, Sungsoo Ha, Shenghui Cheng, Salman Mahmood, Jisung Kim, Klaus Mueller

Financevis.net : A Visual Survey of Financial Data Visualizations, Maxime Dumas, Michael J. McGuffin, Victoria L. Lemieux

The Confluence Diagram: Embedding Knowledge in Interaction Constraints, Martin J. Eppler, Sebastian Kernbach, Benjamin Wiederkehr, Peter Gassner

[INFOVIS HONORABLE MENTION AWARD] Using Pupil Size as an Indicator for Task Difficulty in Data Visualization, Nahid Ferdous, Radu Jianu

Matrix Reordering Based on PQR Trees, Binarization and Smoothing, Bruno Figueiredo Medina, Celmar Guimaraes da Silva

Weighted Maps: Location-Aware Treemaps, Mohammad Ghoniem, Mael Cornil, Mickael Stefas, Benoit Otjacques

Toward Integrated Exploration and Manipulation of Data Attributes in Graphs, Stefan Gladisch, Christian Tominski

Exploring Spatio-Temporal Data as Personal Routes, Alex Godwin, Anand Sainath, Sanjay Obla Jayakumar, Vivek Nabhi, Sagar Raut, John Stasko

Isoscope - Visualizing temporal mobility variance with isochrone maps, Flavio Gortana, Sebastian Kaim, Martin von Lupin, Till Nagel

CreativeCities: Does Infrastructure Influence Creative Hotspots in Cities?, Mohammad Hadhrawi, Yu-Ann Wang, Alexander Lex, Kent Larson

Profile Contour Plots: Alternative Projections of 3D Free Energy Surfaces, Kyle Hall, Peter Kusalik, Sheelagh Carpendale

Data in Everyday Life: Visualizing Time-Varying Data on a Calendar, Dandan Huang, Melanie Tory, Lyn Bartram

Visualization According To Research Paper Keywords, Petra Isenberg, Tobias Isenberg, Michael Sedlmair, Jian Chen, Torsten Moller

Reactive Data Visualizations, Curran Kelleher, Haim Levkowitz

Visual Exploration of Personal Commuting Behaviors, Tanyoung Kim

Lexichrome: Examining Word-Color Associations with Visualization, Chris K. Kim, Christopher Collins

[INFOVIS BEST POSTER AWARD] Glidgets: Interactive Glyphs for Exploring Dynamic Graphs, Brittany Kondo, Hrim Mehta, Christopher Collins

Text Visualization Browser: A Visual Survey of Text Visualization Techniques, Kostiantyn Kucher, Andreas Kerren

Information Visualization in Affective User Studies, Kyeong-An Kwon, Dvijesh Shastri, Ioannis Pavlidis

Friend Bubbles: Personal Visualization for Facebook, Paul Lapides, Sheelagh Carpendale

It Ain't Necessarily So: Checking Charts for Robustness, Aran Lunzer, Amelia McNamara

Visualizing Communities in Dynamic Mouse Brain Networks, Chihua Ma, Robert V. Kenyon, Tanya Berger-Wolf, Daniel A. Llano

s-CorrPlot: Encoding and Exploring Correlation, Sean McKenna, Miriah Meyer, Christopher Gregg, Samuel Gerber

Emotion-Weather Maps: Representation of Spatial Distributions of Mass and Complex Emotions, Kazuo Misue, Kiyohisa Taguchi

Analysis of Local Data Patterns by Local Adaptive Color Mapping, Sebastian Mittelstadt, Andreas Stoffel, Tobias Schreck, Daniel Keim

Aquaria: Integrating Sequence and Structure, Sean O'Donoghue, Kenneth Sabir, Maria Kalemanov, Christian Stolte, Nelson Perdigao, Fabian Buske, Julian Heinrich, Burkhard Rost, Andrea Schafferhans

GraphUnit: Evaluating Interactive Graph Visualizations Using Crowdsourcing, Mershack Okoe, Radu Jianu

Exploratory Visualization through Copy, Cut and Paste, Jonathan C. Roberts, Rick Walker, Lukas Roberts, Robert S. Laramee, Panagiotis D. Ritsos

[INFOVIS HONORABLE MENTION AWARD] Rationale Visualization for Decision Support, Roeland Scheepens, Steffen Michels, Huub van de Wetering, Jarke J. van Wijk

MOOClens: A Peek into MOOCs for Picking MOOCs, Gaurav Kumar Singh, Abhay Doke, Varun Kumar, Savita Bhat, Niranjan Pedanekar

Comparative Gaze Analysis Framework for Volumetric Medical Images, Hyunjoo Song, Jeongjin Lee, Tae Jung Kim, Bohyoung Kim, Jinwook Seo

A Design Space for Heterodox Methods in Information Visualization, Andrew Stamps, T.J. Jankun-Kelly

Transparent Layering for Visualizing Dynamic Graphs Using the Flip Book Metaphor, Holger Stitz, Samuel Gratzl, Stefan Luger, Nils Gehlenborg, Marc Streit

Large-scale Dynamic Visualization of Multiple Comparative Genomic Data, Balozs Tukora, Christoph Anthes, Paul Heinzlreiter, Dieter Kranzlmuller

Prioritizing Nodes in Hierarchical Visualizations with the Tree Cut Model, Rafael Veras, Christopher Collins

[INFOVIS HONORABLE MENTION AWARD] Data Sketches: An Exploratory Study, Jagoda Walny, Sheelagh Carpendale

Visualizing Time-varying Twitter Data with SentimentClock, Florence Ying Wang, Arnaud Sallaberry, Karsten Klein, Masahiro Takatsuka

Interactive 3D Force-Directed Edge Bundling on Clustered Edges, Daniel Zielasko, Benjamin Weyers, Bernd Hentschel, Torsten W. Kuhlen

Applying Heat Maps in a Web-Based Collaborative Graph Visualization, Bjorn Zimmer, Andreas Kerren

SciVis Posters

View-Dependent Coding of 3D Mesh Sequences, Semih Oelik, Ulua Bayazat

Intuition-Based Visual Modeling of Charge Transport Bottlenecks in Organic Photovoltaic Solar Cells, Amal Aboulhassan, Olga Wodo, Daniel Baum, Markus Hadwiger, Baskar Ganapathysubramanian

Piecewise Polynomial Reconstruction of Functions from Simplified Morse-Smale complex, Loo Allemand-Giorgis, Georges-Pierre Bonneau, Stefanie Hahmann

[SCIVIS BEST POSTER AWARD] VCMass: A Framework for Verification of Coronal Mass Ejection Ensemble Simulations, Alexander Bock, M. Leila Mays, Lutz Rastaetter, Anders Ynnerman, Timo Ropinski

[SCIVIS HONORABLE MENTION AWARD] Moment Invariants for 3D Flow Fields, Roxana Bujack, Ingrid Hotz, Jens Kasten, Gerik Scheuermann, Eckhard Hitzer

Adjusting the Generalized Barycentric Coordinates for More Comprehensive Layout, Shenghui Cheng, Bing Wang, Zhiyuan Zhang, Klaus Mueller

Visualizing Terrestrial and Aquatic Systems in 3D, Judith B. Cushing, Viriya Ratanasangpunth, Mike Bailey, Nik Molnar, Kendra Schmal, Robert McKane, John Bolte, Christoph Thomas, Genevieve Orr, Kirsten Winters, Denise Lach, Susan Stafford

A Novel Method for the Depiction of Multivariate Data through Flow Maps, Alberto Debiasi, Bruno Simoes, Raffaele De Amicis

StreamProbe: A Novel GPU-based Selection Technique for Interactive Flow Field Exploration, Mai El-Shehaly, Denis Gračanin, Mohamed Gad, Hicham Elmongui, Krešimir Matković

Radial Visualization for Geo-spatial Categorical Data, Diana Fernandez Prieto, John Alejandro Triana, Juan Camilo Ibarra, Isabel Cristina Arteaga, Jose Tiberio Hernandez, Hans Hagen

Multisensory Analysis of Characteristic Noise from WW2 Aircraft, Yuma Fukushima, Noriyoshi Kato, Yuriko Takeshima, Shigeru Obayashi

Comparison of interpolation methods for estimating spatially aggregated pollution exposure, Ekaterina Galkina, Georges Grinstein

Supporting Planners: Work with Uncertain Demographic Data, Amy L. Griffin, Seth E. Spielman, Nicholas N. Nagle, Jason Jurjevich, Meg Merrick, David C. Folch

Do 3D Visualizations Fail? An Empirical Discussion on 2D and 3D Representations of the Spatio-temporal Data, Erdem Kaya, M. Tolga Eren, Candemir Doger, Selim S. Balcisoy

Characterizing the Swarm Movement on Map for Spatial Visualization, Chandan Kumar, Uwe Gruenefeld, Wilko Heuten, Susanne Boll

Tablet-Based Interaction for Immersive 3D Data Exploration, David Lopez, Lora Oehlberg, Candemir Doger, Tobias Isenberg

Brain Connectome Visualization for Feature Classification, Yanhua Liang, Shiaofen Fang, Taylor Brandstatter, Chengtao Cai, Yang Wang, John West, Joaquin Goni Cortes, Andrew J. Saykin, Li Shen

Visual Interaction for Spatiotemporal Content using Zoom and Pan with Level-of-Detail, Daeil Seo, Byounghyun Yoo, Heedong Ko

Web based Interactive Visualization of Weather Radar Data, Ankit Sharma, Armand Girier, Yeonsoo Yang, Nobuyasu Nakajima

❊**[SCIVIS HONORABLE MENTION AWARD] EnsembleGraph: Visualizing Variations for Ensemble Simulations Exploration,** Qingya Shu, Hanqi Guo, Limei Che, Weicong Lyu, Xiaoru Yuan

The Online Anatomical Human: Anatomical Knowledge Exchange on the Web, Noeska Smit, Cees-Willem Hofstede, Annelot Kraima, Daniel Jansma, Marco deRuiter, Elmar Eisemann, Charl Botha, Anna Vilanova

Entropy Guided Visualization And Analysis Of Multivariate Spatio-Temporal Data Generated By Physically Based Simulation, Selcuk Sumengen, Ekrem Serin, Selim Balcisoy

The Stacked-Stacked Bar Graph: A new twist on an old visualization, Steve Szigeti, Joana Patrasc, David Schnitman, Sara Diamond

Cache-Aware Iso-Surface Volume Rendering with CUDA, Junpeng Wang, Fei Yang, Yong Cao

Doctoral Colloquium Posters

Visual Analysis Methods for the Influence Study of Adverse Weather on Urban Transportation Demands, Zuchao Wang, *Peking University*

Visualization Task Abstraction from Multiple Perspectives, Matthew Brehmer, *University of British Columbia*

Interactive Visualization of Large Scale Feature Data in Geographic Information Systems, Matthias Thöny, *University of Zürich*

Visualizing Microbiome Data for Scientific Analysis and Communication, Megan Pirrung, *University of Colorado*

Visualizations as Intermediates, Puripant Ruchikachorn, *Stony Brook University*

Practitioner Experiences Posters

Task-tailored Dashboards: Lessons Learned from Deploying a Visual Analytics System, Thomas Mühlbacher, Harald Piringer

SynerScope B.V. - From Research Prototype to Enterprise Solution, Stef van den Elzen, Danny Holten, Jorik Blaas, Niels Willems

Is there a Value in Detours? Experiences with Designing a Visual Browser for the Linked Lexical Resource UBY, Daniela Oelke, Judith Eckle-Kohler, Iryna Gurevych

Experiences with Supporting Hospital Infrastructure Planning, Dominique Brodbeck, Markus Degen

WIGA as A Bridge from Theory to Practice, Tin Seong Kam, Lian Chee Koh, Dan Wu

High-Performace Visualization in Science and Research, T. Bednarz, J.A. Taylor, W. Huang, W. Griffen, S. G. Satterfield, J. G. Hagedorn, J. E. Terrill

VAST Challenge

Grand Challenge

AnnotatedTimeTree, Dodeca-Rings Map & Smart: A Geo-Temporal Analysis of Criminal Events, Chen Guo, Jing Xia, Jun Yu, Jieqiong Zhao, Jiawei Zhang, Qiaoying Wang, Zhenyu Cheryl Qian, Yingjie Victor Chen, Chen Wang, David Ebert

VAST 2014: Summary on Grand Challenge Work, Yang Liu

❊***Award for Effective Analysis and Presentation***

Safeguarding Abila through Multiple Data Prespectives, Parang Saraf, Patrick Butler, Naren Ramkrishnan

Mini-Challenge 1

The Kronos Incident (Mini-Challenge 1), Pilar Ávila, Amalia Guaymás, Valeria Burgos

IPM - A Framework for Visual Sense Making VAST 2014 Mini-Challenge 1, Perakath Benjamin, Karthic Madanagopal, Belita Gopal, Kannan Swaminathan

VACI: Towards Visual Analytics for Criminal Investigation, Rahul Kamal Bhaskar, Julia Paredes, Zahra Shakeri, Zahra Sahaf, Haleh Alemasoom, Craig Anslow, Frank Mauer, Mario Costa Sousa, Faramarz Samavati

VAST 2014 Mini-Challenge 1: MEAT - Multiview Event Analysis Tool of Diverse Data Sources, Zhuang Cai, Mengyao Chen, Hanqing Zhao, Ying Zhao, Fangfang Zhou, Kang Zhang

Doctoral Colloquium 2015

CALL FOR PARTICIPATION

VIS 2015 will host a Doctoral Colloquium to support the next generation of visualization researchers. Ph.D. students at any stage of their research are invited to apply to participate in the colloquium. Students who will be completing their proposal defense near the time of the colloquium are particularly encouraged to apply. It will incorporate contributions from the visualization, information visualization, and visual analytics student communities.

Colloquium participation will offer students insight and support for the framing of their research and will help them create important relationships. Financial support may be available to participants to assist in traveling to the conference. The colloquium will be run as a single day invitation-only event at the beginning of IEEE VIS.

Questions? Email info@ieeevis.org

Visual analytics support for collecting and correlating evidence for intelligence analysis, Siming Chen, Zuchao Wang, Zipeng Liu, Zhenhuang Wang, Chenglong Wang, Zhengjie Miao, Xiaoru Yuan

Exploring Anomalies in GAStech VAST 2014 Mini Challenge 1 and 2, Jaegul Choo, Yi Han, Mengdie Hu, Hannah Kim, James Nugent, Francesco Poggi, Haesun Park, John Stasko

Using Visual Analytics to Support Decision Making to Solve the Kronos Incident (VAST Challenge 2014), Fabian Fischer, Florian Stoffel, Sebastian MittelstÐdt, Tobias Schreck, Daniel A. Keim

❇ ***Honorable Mention for Effective Use of Coordinated Visualizations***

Multi-view Display Coordinated Visualization Design for Crime Solving Analysis, Ruimin Gao, Han Tao, Hui Chen, Wentao Wang, Jiawan Zhang

Summarising the structure of an organisation and reconstructing a chain of events, Rafael Henkin, Alexander Kachkaev, Aidan Slingsby

Integrated Visual Analytics Tool for Heterogenous Text Data, Jihyoun Park

Safeguarding Abila: Discovering Evolving Activist Networks VAST 2014 Mini Challenge 1: Unstructured Text and Network Data Analysis, Parang Saraf, Patrick Butler, Naren Ramkrishnan

VAST Challenge 2014: Mini-Challenge 1, Qiang Song, Rui Li, Peng Yin

Using a Knowledge Graph Data Structure to Analyze Text Documents (VAST Challenge 2014 MC1), Florian Stoffel, Fabian Fischer

Event-Based Text Visual Analytics, Ji Wang, Lauren Bradel, Chris North

Story Explorer: A Visual Analysis Tool for Heterogenous Text Data, Chenglong Wang, Zhengjie Miao, Siming Chen, Zipeng Liu, Zuchao Wang, Zhenhuang Wang, Xiaoru Yuan

AnnotatedTimeTree: Visualization and Annotation of News Text and Other Heterogeneous Document Collections, Jing Xia, Jieqiong Zhao, Isaac Sheeley, Joseph Christopher, Qiaoying Wang, Chen Guo, Jiawei Zhang, David S. Ebert, Yingjie Victor Chen, Zhenyu Cheryl Qian

VAST 2014 Mini-Challenge 1: Team Aptima, Caroline Ziemkiewicz, Adam Fouse, Gabriel Ganberg, Ryan Mullins, Stacy Pfautz

Mini-Challenge 2

Analysis of Mobility Behaviors in Geographic and Semantic Spaces, Natalie Andrienko, Gennady Andrienko, Georg Fuchs

Patterns of Life Visual Analytics Suite for analyzing GPS movement patterns, Simon Attfield, Peter Passmore, Neesha Kodagoda, Pragya Paudyal, David Neilson, George Pagiatakis, Brian Joyce, Robert Wells, William Wong, Adrian Wagstaff, James Bullock, Adam Malin, Dougie Holmes, Graham Phillips, John Marshall, Stewart Bertram

MovementFinder: A Multi-filter Visual Analytics Design for Movement, Siming Chen, Zuchao Wang, Zipeng Liu, Zhenhuang Wang, Chenglong Wang, Zhengjie Miao, Xiaoru Yuan

A Three Step Process to Design Visualisations for GeoTemporal Analysis (VAST 2014 Mini Challenge 2), Alvin Chua, Ryo Sakai, Jan Aerts, Andrew Vande Moere

UCD-Griffin-MC2 Submission Summary, Kevin S. Griffin

Dodeca-Rings Map: Interactively Finding Patterns and Events in Large Geo-temporal Data, Chen Guo, Shang Xu, Jun Yu, Hanxing Zhang, Qian Wang, Jing Xia, Jiawei Zhang, Yingjie Victor Chen, Zhenyu Cheryl Qian, Chen Wang, David Ebert

Visual Analytics for Detecting Behavior Patterns in Geo-Temporal Data, Michael Hundt, Natascha M. Siirak, Manuel Wildner

Detecting Suspicious Behavior Using a Graph-Based Approach, Lenin Mookiah, William Eberle, Lawrence Holder

❇ ***Honorable Mention for Effective Presentation***

Safeguarding Abila: Spatio-Temporal Activity Modeling, Parang Saraf, Patrick Butler, Naren Ramkrishnan

Data Mining Driven Visual Pattern Discovery RBEI-IYER-MC2, Manik Singhal, Prakash Lekkala, Shivashankar M R, Parameshwaran S Iyer

VAST 2014: Summary on Mini Challenge 2, Carlos K.F. Tse, Yang Liu

Making Sense of Daily Life Data: From Commonalities to Anomalies, Ji Wang, Lauren Bradel, Chris North

Visual analytics of GPS tracks: From location to place to behavior, Jo Wood

Regular and Unusual Data Visualization IIIT-H, P Yashaswi, Yarrabelly Navya, Veera Raghavendra Chikka

❇ ***Award for Outstanding Visualization and Analysis***

A Collaborative Visual Analytics of Trajectory and Transaction Data for Digital Forensics, Ying Zhao, Yanni Peng, Wei Huang, Yong Li, Fangfang Zhou, Zhifang Liao, Kang Zhang

Mini-Challenge 3

NStreamAware: Real-Time Visual Analytics for Data Streams (VAST Challenge 2014 MC3), Fabian Fischer, Florian Stoffel

A Platform For Collaborative Visual Analysis on Streaming Messages, Zipeng Liu, Zhenhuang Wang, Siming Chen, Zuchao Wang, Zhengjie Miao, Xiaoru Yuan

VAST 2014: Summary on Mini Challenge 3 Work, Minjing Mao

VAST Challenge MC1: An Off the Shelf Approach to Messy Data, Fintan McGee, Bertjan Broeksema, Benoît Otjacques

Visual Analytics of Text Streams Through Multiple Dynamic Frequency Matrices, Nicolas Médoc, Mickaël Stefas, Mohammad Ghoniem, Mohamed Nadif

VAST Challenge 2014 - The Kronos Incident - Mini-Challenge 3, Andrei Rukavina, Mariana Landoni, Paulina Verasay, Maria L. Traveso

Safeguarding Abila: Real-Time Streaming Analysis VAST 2014 Mini Challenge 3: Streaming Text Analysis, Parang Saraf, Patrick Butler, Naren Ramkrishnan

❇ ***Honorable Mention for Good Support for Situation Awareness***

ScatterScopes: Understanding Events in Real-time through Spatiotemporal Indication and Hierarchical Drilldown, Dennis Thom, Michael Wörner, Steffen Koch

Visual Analysis of Streaming Data with SAVI and SenseMAP, Kai Xu, Phong H. Nguyen, Bob Fields

❇ ***Honorable Mention for Good Support for Streaming & Forensic Analysis***

ClueMiner: A real-time multi-dimensional visualization system, Siqi Yang, Xinyi Jiang, Jiawan Zhang

Real-time Identification and Monitoring of Abnormal Events Based on Microblog and Emergency Call Data Using SMART, Jiawei Zheng, Shehzad Afzal, Dallas Breunig, Jing Xia, Jieqiong Zhao, Isaac Sheeley, Joseph Christopher, David S. Ebert, Chen Guo, Shang Xu, Jun Yu, Qiaoying Wang, Chen Wang, Zhenyu Qian, Yingjie Chen

SciVis Contest

VOV: Interactive 3D Geo-application for Visualization of Volcanic Eruptions via Smart Devices and LED Cube, Hyesoo An, Jisu Han

Interactive Visualization of Atmospheric Data for Eruption Events, Mai El-Shehaly, Denis Gračanin, Mohamed Gad, Hicham G. Elmongui, Krešimir Matković

Atmospheric Impact of Volcano Eruptions, W. Engelke, A. Kuhn, M. Flatken, F. Chen, H.-C. Hege, A. Gerndt, I. Hotz

Visualizing the Aftermath of Volcanic Eruptions, Tobias Günther, Maik Schulze, Anke Friederici, Holger Theisel

Space and time partitioning for efficient uncluttered scientific visualization, Iason Nikolas, Konstantinos Moustakas

SPatial Atmospheric Cloud Explorer (SPACE), Jinrong Xie, Franz Sauer, Hendrik Schroots, Chuan Wang, Shimin Wang, Kwan-Liu Ma

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