

# **EUROVIS 2007**

## **Eurographics / IEEE VGTC Symposium on Visualization**

**Norrköping, Sweden  
May 23th–25th, 2007**

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## Table of Contents

Table of Contents .....	3
Preface .....	7
Keynote .....	9
Capstone .....	10
<b>Time-Series Visualization</b>	
Multiscale Visualization of Dynamic Software Logs .....	11
<i>Sergio Moreta and Alexandru Telea</i>	
Relevance Driven Visualization of Financial Performance Measures .....	19
<i>Hartmut Ziegler, Tilo Nietzsche, and Daniel A. Keim</i>	
Multi-Resolution Techniques for Visual Exploration of Large Time-Series Data .....	27
<i>Ming Hao, Umeshwar Dayal, Daniel Keim, and Tobias Schreck</i>	
Depth Cues and Density in Temporal Parallel Coordinates .....	35
<i>Jimmy Johansson, Patric Ljung, and Matthew Cooper</i>	
<b>Text and Document Visualization</b>	
KeyStrokes: Personalizing Typed Text with Visualization .....	43
<i>Petra Neumann, Annie Tat, Torre Zuk, and Sheelagh Carpendale</i>	
Visualization of Uncertainty in Lattices to Support Decision-Making .....	51
<i>Christopher Collins, Sheelagh Carpendale, and Gerald Penn</i>	
Manual Clustering Refinement using Interaction with Blobs .....	59
<i>Christian Heine and Gerik Scheuermann</i>	
<b>Graph Visualization</b>	
Grouse: Feature-Based, Steerable Graph Hierarchy Exploration .....	67
<i>Daniel Archambault, Tamara Munzner, and David Auber</i>	
BEST PAPER:	
Online Dynamic Graph Drawing .....	75
<i>Yaniv Frishman and Ayellet Tal</i>	
Path Visualization for Adjacency Matrices .....	83
<i>Zeqian Shen and Kwan-Liu Ma</i>	

## Table of Contents

### Interaction Design

- Story Telling for Presentation in Volume Visualization ..... 91  
*Michael Wohlfart and Helwig Hauser*
- Dimensional Congruence for Interactive Visual Data Mining and Knowledge Discovery ..... 99  
*Sebastian Baumgärtner, Achim Ebert, and Matthias Deller*
- TrustNeighborhoods: Visualizing Trust in Distributed File Sharing Systems ..... 107  
*Niklas Elmqvist and Philippos Tsigas*

### Multivariate Visualization and Rendering

- A Tri-Space Visualization Interface for Analyzing Time-Varying Multivariate Volume  
Data ..... 115  
*Hiroshi Akiba and Kwan-Liu Ma*
- Interactive Visualization of Multi-Field Medical Data Using Linked Physical and  
Feature-Space Views ..... 123  
*Jorik Blaas, Charl P. Botha, and Frits H. Post*
- Design of Multi-dimensional Transfer Functions Using Dimensional Reduction ..... 131  
*Francisco de Moura Pinto and Carla M. D. S. Freitas*
- Subdivision Volume Splatting ..... 139  
*Kevin T. McDonnell, Neophytos Neophytou, Klaus Mueller, and Hong Qin*

### Visualization Systems for Applications

- The CoMIRVA Toolkit for Visualizing Music-Related Data ..... 147  
*Markus Schedl, Peter Knees, Klaus Seyerlehner, and Tim Pohle*
- Sonar Explorer: A New Tool for Visualization of Fish Schools from 3D Sonar Data ..... 155  
*Jean-Paul Balabanian, Ivan Viola, Egil Ona, Ruben Patel, and Eduard Gröller*
- See What You Know: Analyzing Data Distribution to Improve Density Map Visualization .... 163  
*Enrico Bertini, Alessio Di Girolamo, and Giuseppe Santucci*
- Integrating Local Feature Detectors in the Interactive Visual Analysis of  
Flow Simulation Data ..... 171  
*Raphael Bürger, Philipp Muigg, Martin Ilčík, Helmut Doleisch, and Helwig Hauser*

## Table of Contents

### Feature Extraction

- Flexible And Topologically Localized Segmentation ..... 179  
*Gunnar Johansson, Ken Museth, and Hamish Carr*
- Segmentation of DT-MRI Anisotropy Isosurfaces ..... 187  
*Thomas Schultz, Holger Theisel, and Hans-Peter Seidel*
- Feature Identification and Extraction in Function Fields ..... 195  
*John C. Anderson, Luke J. Gosink, Mark A. Duchaineau, and Kenneth I. Joy*
- Parametric Visualization of High Resolution Correlated Multi-spectral  
Features Using PCA ..... 203  
*Alexander Broersen, Robert van Liere, and Ron M. A. Heeren*

### Flow Visualization

- Visualization Methods for Vortex Rings and Vortex Breakdown Bubbles ..... 211  
*Ronald Peikert and Filip Sadlo*
- Animation of Orthogonal Texture-Based Vector Field Visualization ..... 219  
*Sven Bachthaler and Daniel Weiskopf*
- Priority Streamlines: A context-based Visualization of Flow Fields ..... 227  
*Michael Schlemmer, Ingrid Hotz, Bernd Hamann, Florian Morr, and Hans Hagen*

### GPU Techniques

- Hardware-accelerated Stippling of Surfaces derived from Medical Volume Data ..... 235  
*Alexandra Baer, Christian Tietjen, Ragnar Bade, and Bernhard Preim*
- Multiresolution MIP Rendering of Large Volumetric Data Accelerated on  
Graphics Hardware ..... 243  
*Wladimir J. van der Laan, Andrei C. Jalba, and Jos B. T. M. Roerdink*
- Interactive Visual Exploration of Unsteady 3D Flows ..... 251  
*Kai Bürger, Jens Schneider, Polina Kondratieva, J. Krüger, and Rüdiger Westermann*

### Visualization in Medicine

- Functional Unit Maps for Data-Driven Visualization of High-Density EEG Coherence ..... 259  
*Michael ten Caat, Natasha M. Maurits, and Jos B. T. M. Roerdink*
- Viewpoint Selection for Intervention Planning ..... 267  
*Konrad Mühler, Mathias Neugebauer, Christian Tietjen, and Bernhard Preim*

## Table of Contents

Feature Emphasis and Contextual Cutaways for Multimodal Medical Visualization .....	275
<i>Michael Burns, Martin Haidacher, Wolfgang Wein, Ivan Viola, and Eduard Gröller</i>	
Model-free Surface Visualization of Vascular Trees .....	283
<i>Christian Schumann, Steffen Oeltze, Ragnar Bade, Bernhard Preim, and H.- O. Peitgen</i>	
Cover Image Credits .....	291
International Program Committee .....	292
Reviewers .....	294
Author Index .....	296

## Preface

Welcome to the proceedings of the 9th Eurographics/IEEE VGTC Symposium on Visualization, which was held in Norrköping, Sweden from the 23rd to the 25th of May 2007. This year's symposium has continued the tradition of a high standard of contributions and a high level of international interest in this European event, with submissions and attendees from all over the world. There were a total of 93 manuscripts submitted of which 35 full papers were selected for inclusion in the symposium, an acceptance rate of 38%.

We are happy to report that EuroVis is succeeding in attracting interest and submissions from all the diverse areas of visualization this year. As previous years we have received many good submissions in areas such as Medical Visualization, Flow Visualization, Multi-variate Visualization and Rendering as well as GPU techniques. However, this year we were very pleased to see an increase in submissions from areas of visualization that are traditionally under-represented at EuroVis. This includes areas such as Graph Visualization, Text- and Document Visualization, Interaction Design and Time-Series Visualization. This leads us to a well-balanced program, bringing together people with diverse backgrounds and one goal - improving the visual presentation of complex data.

This balance of ideas is also well reflected in the winner of the newly instated best paper award - "Online Dynamic Graph Drawing" by Yaniv Frishman and Ayellet Tal of Technion - Israel Institute of Technology. This paper presents a solution to a difficult problem - the real-time update of graphs that are changing on-the-fly. The challenge is to update a graph-layout while still making it easy for the user to comprehend the changes. The speed is gained via a clever implementation exploiting modern graphics hardware. The selection process was facilitated by the papers co-chairs in strong consultation with the primary reviewers. Given the long list of outstanding submissions, this was not an easy task.

The goal for a well-balanced conference extends to our keynote and capstone speakers. We are happy to present one of the leaders of the Visualization community - Ben Shneiderman of the University of Maryland - as our keynote speaker. He has been a driving force in conceptualizing the way we interact with data. On the other hand, our capstone speaker - Anders Persson of the University of Linköping - is a radiologist, who has seen visualization as a way of revolutionizing medical practice and literally saving peoples lives.

Our thanks are due to many people who have supported the process of organizing the symposium, not least the hundreds of reviewers worldwide who have carried out the extensive review process producing in total almost 500 reviews. Aided by the new Submission and Review Management system (our thanks go to EG's René Berndt, the developer of this powerful tool) it was possible to use a hierarchical scheme of reviewing to ensure that all the papers were subjected to a high level of scrutiny and we are confident that the very best of the submissions were accepted. Thanks also to Stefanie Behnke for continuous support from the Eurographics organization.

We would also like to acknowledge the tremendous help from our supporters. The generous

support from Sweden's Knowledge Foundation ([www.kks.se](http://www.kks.se)) has made it possible to print the paper version of this year's proceedings in full colour, avoiding the need for colour plates and making the proceedings a more informative and enjoyable source of information. In recognition of the rise of the ubiquitous laptop we have also decided to provide a 'micro-proceedings' in the form of a USB memory device pre-loaded with the proceedings.

We hope you will enjoy reading the 2007 EuroVis papers as much as we did.

Ken Museth - Torsten Möller - Anders Ynnerman

EuroVis 2007 co-chairs.



## Keynote

### How Visualization Supports Discovery

*Professor Ben Shneiderman*



#### Abstract

The excitement about scientific visualization has spread to information visualization, and variations such as network visualization. These multiple forms enable domain experts to make discoveries, but the design principles that make for successful creativity support tools need elaboration. When is 3D good or bad? When is animation helpful or distracting? What degree of user control is most effective?

This talk will propose foundations for a theory of discovery based on visualization. It will offer demos, suggest principles, and tell stories.

#### Short Biography

Ben Shneiderman is a Professor in the Department of Computer Science, Founding Director (1983-2000) of the Human-Computer Interaction Laboratory, and Member of the Institute for Advanced Computer Studies at the University of Maryland. He was elected as a Fellow of the Association for Computing (ACM) in 1997 and a Fellow of the American Association for the Advancement of Science (AAAS) in 2001. He received the ACM SIGCHI Lifetime Achievement Award in 2001.

Ben is the author of *Software Psychology: Human Factors in Computer and Information Systems* (1980) and *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (4th ed. 2004) (<http://www.awl.com/DTUI/>). He pioneered the highlighted textual link in 1983, and it became part of Hyperties, a precursor to the web.

His move into information visualization helped spawn the successful company Spotfire. He is a technical advisor for the HiveGroup. With S. Card and J. Mackinlay, he co-authored *Readings in Information Visualization: Using Vision to Think* (1999). His books include *Leonardo's Laptop: Human Needs and the New Computing Technologies* (MIT Press), which won the IEEE Distinguished Literary Contribution award in 2004.

## Capstone

### **Medical Visualization - Present Practise and Future Development**

*Anders Persson M.D,  
Ph.D. - Director CMIV*



#### **Abstract**

The practice of medical image diagnosis is currently undergoing a fast transformation. Vast amounts of data can be generated in standard examination and focus is shifting from improving the collection of relevant data for diagnosis to development of effective methods to analyze, visualize, navigate, and interact with medical information. It is now becoming generally accepted in the medical community that one of the most important keys to manage the increasing information flow is the use of 3D and 4D applications.

This talk will take its starting point in state-of-the-art medical visualization and then discuss the need for a research agenda that focuses on the development of the next generation of medical visualization tools, emphasizing the fact that these tools must be based on medical user requirement and workflow studies as well as on new technical developments.

#### **Short Biography**

Anders Persson M.D, Ph.D. is the Director at Center for Medical Image Science and Visualization (CMIV) at Linköping University Sweden. The mission of the center is to develop future methods and tools for image analysis and visualization within health care and medical research. Persson has been working in the field of volume rendering and medical applications for over 15 years. As a radiologist and researcher he has worked on the introduction and validation of new visualization tools for the clinical environment and he has taught medical volume rendering in the clinical practice for more than 10 years. Currently his research is focusing on specialized volume rendering algorithms for specific clinical investigations (CT and MRI) as well as on using new 3D and 4D tools in education and virtual autopsies.