

Guest Editors' Introduction: Special Section on the IEEE Pacific Visualization Symposium 2015

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THIS special section of *IEEE Transactions on Visualization and Computer Graphics (TVCG)* presents extended versions of three selected papers from the 2015 IEEE Pacific Visualization Symposium (PacificVis'15). Past PacificVis symposia were held in Kyoto (2008), Beijing (2009), Taipei (2010), Hong Kong (2011), Songdo (2012), Sydney (2013), and Yokohama (2014). In 2015, PacificVis was back to China, and held in Hangzhou from April 14 to 17, 2015.

To guarantee the quality of accepted papers, full paper selection was made by a formal two-stage review process. We also organized a special track for short papers called "Visualization Notes". The notes track was primarily intended to encourage younger researchers to present new work. As such, it was also peer-reviewed, but in a single stage.

Fundamental strategies for the review process remained consistent with previous years. The selected papers were organized into seven full paper sessions: Flow Visualization, Visualization of Graphs and Trees, Visualization Applications, Visual Exploration and Perception, Advanced Rendering for Visualization, Topological Visualization and Volume Rendering, and Multivariate and High-Dimensional Visualization, as well as four notes sessions: Graph and Tree Visualization, InfoVis Techniques and Applications I, InfoVis Techniques and Applications II, and Scalar and Topology Analysis. Among them, we carefully selected three best papers and invited the respective authors to submit their extended versions to this special section of *IEEE TVCG*. In what follows, we briefly describe each paper included in this special section.

In the paper "View-Dependent Streamline Deformation and Exploration," a new technique for the exploration of bundles of streamlines, which is based on the Focus+Context concept, was introduced. The idea is to deform unimportant streamlines in order to see the important streamlines behind them. Two deformation templates

were presented: point and open blinds. Users can specify several layers of streamlines to deform and each layer can have its own focus region shape. The major feature of the proposed approach is to maintain the overall integrity of the fields and expose previously hidden structures. In addition, the developed system supports both mouse and direct-touch interactions to manipulate the viewing perspectives and visualize the streamlines in depth.

The paper "A Study of Layout, Rendering, and Interaction Methods for Immersive Graph Visualization" develops a graph visualization tool for a 3D immersive environment, focusing on cheaper wearable devices such as the Oculus Rift. In particular, the authors introduced several considerations of layout, rendering, and interaction methods for visualizing graphs in an immersive environment. The graph was presented using a spherical layout. The system also presents rendering, edge-bundling and mouse-interaction methods to support the visualization. A user study was conducted to compare visualizations: 2D, 3D with and without depth routing in the immersive environment and the results are generally favorable.

The paper "Can Twitter Save Lives? A Broad-scale Study on Visual Social Media Analytics for Public Safety" presents a two-stage design study on visual analytics systems of social media for crisis intelligence. The first field study, ScatterBlogs was used to derive discussions and collect feedback from experts. In the second lab study, the Event Digest system, which was built based on the feedback from the first study, was employed to compare with the old system, ScatterBlogs. The authors also developed a new system based on the comments of the interviewed domain experts in the first study. They compared the new system with ScatterBlogs to demonstrate the pros and cons of each system under different tasks.

The previous seven PacificVis symposia were successfully organized among a variety of countries, with the objective to foster greater exchange between visualization researchers and practitioners, and to draw more researchers in the Asia-Pacific region to enter this rapidly growing area of research. We are striving to enhance the PacificVis symposia series to serve as another important opportunity to discuss the state-of-the-art techniques in visualization in cooperation with other top-conferences.

We would like to thank Leila de Floriani, the Editor-in-Chief, for her strong and continued support, and the editorial staff of *IEEE TVCG* for their dedicated efforts in preparing this special section. Our thanks are also extended to anonymous reviewers for their timely and valuable feedback, which greatly helped us to maintain the high-quality

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of the final papers. We sincerely hope that you will enjoy the extended versions of the top papers presented in PacificVis 2015.

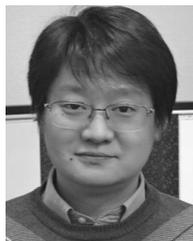
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Shixia Liu received the BS and MS degrees from the Harbin Institute of Technology, and the PhD degree from Tsinghua University. She is an associate professor at Tsinghua University. Her research interests include visual text analytics, visual social analytics, and text mining. She was a research staff member and a research manager at IBM China Research Lab and a lead researcher at Microsoft Research Asia. Since 2014, she has served as an associate editor of *IEEE Transactions on Visualization and Computer Graphics*. Since 2015, she is on the editorial board of *Information Visualization*. She served as a papers cochair for VINCI 2011, PacificVis 2015, IEEE VAST 2016 and 2017. She is a senior member of the IEEE.



Gerik Scheuermann received the BS and MS degrees in mathematics in 1995 from the University of Kaiserslautern. In 1999, he received the PhD degree in computer science, from the University of Kaiserslautern. During 1995 to 1997, he conducted research at the Arizona State University for about a year. He worked as a postdoctoral researcher at the Center for Image Processing and Integrated Computing (CIPIIC) at the University of California, Davis, in 1999 and 2000. Between 2001 and 2004, he was an assistant professor for computer science at the University of Kaiserslautern. Currently, he is a full professor in the Computer Science Department of the University of Leipzig. His research topics include computational topology, Clifford algebra, image processing, scientific visualization, information visualization, and visual analytics. He published about 200 scientific papers. He served as a paper cochair for EuroVis 2008, IEEE SciVis 2011, IEEE SciVis 2012, and PacificVis 2015. He was main organizer of EuroVis 2013. He is a member of the IEEE and GI.



Shigeo Takahashi received the BS, MS, and PhD degrees in computer science from the University of Tokyo in 1992, 1994, and 1997, respectively. He is currently a professor in the Department of Computer Science and Engineering at the University of Aizu, Japan. His research interests include scientific visualization, geospatial visualization, visual perception modeling, and geometric modeling. He served as an associate editor of *IEEE Transactions on Visualization and Computer Graphics* from 2011 to 2015, and as a program committee member for more than 50 visualization and graphics conferences. He received the Most Cited Paper Award for Graphical Models (2004-2006) from Elsevier in 2007. He is a member of the IEEE.



Tim Dwyer received the PhD degree on "Two and a Half Dimensional Visualisation of Relational Networks" from the University of Sydney in 2005. He was a post-doctoral research fellow at Monash University from 2005 to 2008, then a visiting researcher at Microsoft Research from 2008 to 2009. From 2009 to 2012, he was a senior software development engineer with the Visual Studio product group at Microsoft. A highlight of this period was shipping the Code Map software dependency visualisation tool with Visual Studio 2012. In late 2012, he returned to Monash University as a Larkins fellow, where he now codirects the Immersive Analytics Initiative and is a founding member of the Monash Adaptive Visualisation Lab.



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