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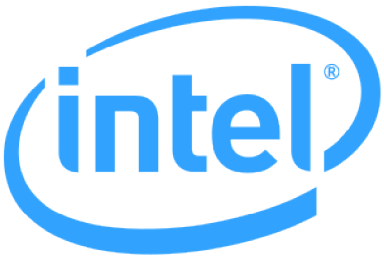

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Preface

EuroVis 2017, the 19th Eurographics / IEEE VGTC Conference on Visualization, was held in Barcelona, Spain, on June 12-16, 2017.

The proceedings are published as a special issue of the Eurographics Computer Graphics Forum journal. The conference, which started in 1990 as the Eurographics Workshop on Visualization in Scientific Computing and was called VisSym after 1999, has been known as EuroVis since 2005. EuroVis attracts contributions that broadly cover the field of visualization. Topics include visualization techniques for spatial data, such as volumetric, tensor, and vector field datasets, and for non-spatial data, such as graphs, text, and high-dimensional datasets. EuroVis also covers the theory of visualization, hardware acceleration, large datasets, perception, interaction, user studies, information visualization, visual analytics, and many application areas of visualization.

After the submission deadline in early December 2016, 170 manuscripts were reviewed in a two-stage process that resulted in 46 accepted papers and an acceptance rate of 27.1%. During the first review cycle, each paper was reviewed by at least four reviewers. The 83 primary and secondary reviewers were members of the International Program Committee (IPC) and each selected at least one additional tertiary reviewer from outside the IPC. The IPC meanwhile represents the global visualization community quite well, including members from Australia, Brazil, Asia, US, and Europe. The IPC at EuroVis is a rather dynamic committee with regular rotations after a three-year period.

The review process was double-blind for tertiary reviewers: only the members of the IPC and the chairs knew the identity of the authors. A great effort was made to identify and prevent conflicts of interest at all levels, and all reviewers were asked to read and agree to the IEEE Visualization and Graphics Technical Committee (VGTC) ethics guidelines.

After all the reviews were completed, the primary reviewer led an online discussion among all reviewers and was responsible for writing a summary review and recommendation. These discussions were lively, significantly helping to find a consensus. Based on the reviewers' recommendations, the individual reviews, the online discussions, and after a thorough deliberation by the paper chairs, 46 papers were conditionally accepted. Two additional papers were deemed to have substantial potential after major revisions, and were invited for a fast-track review process to Computer Graphics Forum for possible publication in a future issue. In the second review cycle, the revised papers were again carefully reviewed by the primary reviewers, and due to the significant improvements all 46 were finally accepted for publication. We helped to shape the reviews to be as constructive as possible to also provide the authors of rejected papers with substantial feedback for their further research.

We are thankful to everybody who helped to make the event possible. We thank the IPC members for their careful and timely work in all stages of the reviewing process and the tertiary reviewers for providing in-depth assessments of the submissions.

We thank our invited speakers Fernanda Viégas & Martin Wattenberg, and Helwig Hauser.

We thank the chairs of the short paper track, Barbora Kozlíková, Tobias Schreck, and Thomas Wischgoll, the chairs of the STARs, Miriah Meyer, Shigeo Takahashi, and Anna Vilanova, and the chairs of the Posters track, Tobias Isenberg and Anna Puig, for their great efforts in their corresponding tracks that make the EuroVis such a successful conference. We also thank the chairs of the co-located workshops: Janine Bennett, Fernando Cucchietti, Kai Lawonn, Karsten Rink, Michael Sedlmair, Noeska Smit, Alexandru Telea, Christian Tominski, and Dirk Zeckzer. We also thank Stefanie Behnke, who has been very helpful throughout all the process of publication of this journal. We also would like to thank the authors of all submitted papers and all conference attendees.

Finally, we thank our supporters and sponsors for their important financial contributions: Everis, Intel, Nvidia, KAUST, BBVA, EuroGraphics Spanish Section, and VRVis. We also want to thank the Universitat Politècnica de Catalunya and the ViRVIG group for helping organizing the conference. We hope that you enjoy reading this collection of high-quality visualization papers.

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Invited Talk
The Secret Weapon for Machine Learning

Martin Wattenberg ***Fernanda Viégas***

Google, Inc.

Abstract

Machine learning is playing an increasingly influential role in the world, due to dramatic technical leaps in recent years. But these new developments bring their own questions. What is the best way to train models and to debug them? How can we understand what is going on under the hood of deep neural networks? It turns out that visualization can play a central role in answering these questions. We'll discuss recent work that shows how interactive exploration can help people use, interpret, and learn about machine intelligence. This talk will be an invitation, aimed at visualization experts, to the field of machine learning.

Short Biography

Fernanda Viégas and Martin Wattenberg are the leaders of Google's "Big Picture" data visualization group, part of Google Brain. Their work in machine learning focuses on transparency and interpretability, as part of a broad agenda to improve human/AI interaction. They are well known for their contributions to social and collaborative visualization, and the systems they've created are used daily by millions of people. Their visualization-based artwork has been exhibited worldwide, and is part of the permanent collection of Museum of Modern Art in New York.

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Capstone
From One to Many in Visualization

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Abstract

A lot of interesting development has been happening in visualization research in the past 25 years. Certain topics, like medical visualization, flow visualization, tabular data visualization, and network visualization have attracted continued interest over many years and every year fascinating new findings are presented. We focus on the important work of optimizing our solutions and maturing the field. Every now and then, however, we also see promising chances for radical innovation, for new pioneering research in visualization. In this talk, we take a look at one of these chances, i.e., to transition from the visualization of individual datasets to visually studying large sets of datasets, for example from medical cohort studies or from numerical ensemble simulations. It seems that relevant new visualization challenges arise, when hundreds or thousands of datasets are studied simultaneously–in particular, when these are sets of multi-aspect spatiotemporal datasets. This talk brings up some of the related major questions (for example: how to map to the 2D/3D visualization space), together with examples of related work, and hopefully inspires some bright minds to conduct more visualization research on this topic of increasing relevance.

Short Biography

Helwig Hauser graduated in 1995 from Vienna University of Technology in Austria and in 1998 he finished his PhD project on the visualization of complex dynamical systems (flow visualization). In 2003, he got his Habilitation at TU Wien, entitled "Generalizing Focus+Context Visualization"- in 2006 this work was awarded with the Heinz-Zemanek Award by OCG. Already in 2004, his work on the interactive visual analysis of simulation data won the IEEE Visualization Contest in Austin. In 2013, Helwig Hauser then received the Dirk Bartz Prize for Visual Computing in Medicine from Eurographics (medical ultrasound data visualization). With $>$ 190 refereed publications and $>$ 7500 citations (h-index $\approx$ 50), he is an active and respected member of the international visualization research community. Recently, he chaired/hosted several important visualization conferences, including EuroVis 2011, PacificVis 2012, IEEE InfoVis 2013 & 2014, and VCBM 2016 in Bergen, and he has been serving as associate editor for three of the central journals (including IEEE TVCG, CGF, and C&G). After first working for TU Wien as assistant and later as assistant professor (1994 –), he changed to the new VRVis Research Center in 2000 (having been one of the founding team, also). There, he led the basic research group on interactive visualization (until 2003) before he became the scientific director of VRVis (– 2007). Since then, he is professor in visualization at the University of Bergen in Norway, where he built up a new research group on visualization.