EuroVis 2019
Eurographics / IEEE VGTC Conference on Visualization 2019

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Preface

EuroVis 2019, the 21th Eurographics / IEEE VGTC Conference on Visualization, was held in Porto, Portugal, on June 3-7, 2019. 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 2018, 189 manuscripts were reviewed in a two-stage process that resulted in 59 accepted papers and an acceptance rate of 31.2%. During the first review cycle, each paper was reviewed by at least four reviewers. The 77 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. During the discussion phase, the reviews were also made available to the authors, who had the opportunity to write a response to the papers chairs. Both exchange formats, discussions and review response, were lively used and significantly helped to find a consensus. Based on the reviewers' recommendations, the individual reviews, the online discussions, the authors' review response, and after a thorough deliberation by the paper chairs, 59 papers were conditionally accepted. Three additional papers 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 58 papers were finally accepted for publication. One paper opted for a major revision. 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 Paul A. Navrátil and Jeffrey Heer. We thank the chairs of the short paper track, Jimmy Johansson, Filip Sadlo, G. Elisabeta Marai, the chairs of the STARs, Robert S. Laramee, Steffen Oeltze, Michael Sedlmair, and the chairs of the Posters track, João Madeiras Pereira, Renata Raidou, for their great efforts in their corresponding tracks that make EuroVis such a successful conference. We also thank all the chairs of the co-located workshops, and 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, a special thanks goes to Alfredo Ferreira, Joaquim A. Jorge, António Coelho, Luís Paulo Santos for the entire organization of EuroVis 2019.

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Invited Talk: Keynote

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Let Me Tell You a Story: Enabling Effective and Scalable Communication of Scientific Insights

Paul A. Navrátil

Abstract

From time before history, humans have used imagery to shape ideas and communicate important concepts to their communities. Visualization harnesses this fundamental mode through transforming raw data into images that present actionable insights and discoveries to advance human understanding. Yet, even as techniques in scivis, infovis, and vis analytics progress, the effective application of these techniques to solve analysis problems remains very much an art plied by specialized visualization experts who understand both the tools and how to best wield them. As our data sources multiply, and the commensurate need for analysis of those data expand, relying solely on vis experts will not scale. The visualization community will need to provide simple, reliable, and expressive tools so that domain scientists can generate high-quality visualizations sooner in their discovery pipelines, challenging visualization experts to expand the state of the art in translating research to practice. This talk will present challenges to this vision and potential transformative solutions in the context of work at the Texas Advanced Computing Center and peer institutions world-wide.

Short Biography

Dr. Paul A. Navrátil is a Research Scientist and Director of Visualization at the Texas Advanced Computing Center (TACC) at the University of Texas at Austin. He is an expert in high-performance visualization technologies, accelerator-based computing and advanced rendering techniques. His research seeks to improve analytic capacity and insight communication across scientific workflows, including efficient algorithms for large-scale parallel visualization and data analysis (VDA) and innovative design for immersive VDA systems. Dr. Navrátil's recent work includes algorithms for large-scale distributed-memory ray tracing, including the GraviT and Galaxy ray tracing frameworks, which enable photo-realistic rendering of the largest datasets produced on supercomputers today. His team provisions TACC's two visualization labs and the remote visual analytic environments on TACC's advanced computing systems, including the US NSF leadership-class systems Stampede2 and Frontera. Dr. Navrátil's work has been featured in numerous venues, both nationally and internationally, including the New York Times, Discover, and PBS News Hour. He holds BS, MS and Ph.D. degrees in Computer Science and a BA degree in Plan II Interdisciplinary Honors from the University of Texas at Austin.

Invited Talk: Capstone

Visualization is Not Enough

Jeffrey Heer

Abstract

We are witnessing both increased application and public skepticism of data-driven methods for decision making and automation. Within this regime, data visualization — as a technology — seems well-poised to provide valuable insight and oversight. Though arguably a *necessary* component in the appropriate use of data, visualization by itself is far from *sufficient*. Data visualization — as a community of practice — sits at the confluence of many "source" disciplines, including cartography, computer science, graphic design, psychology, and statistics. The practice of principled interdisciplinary thinking is perhaps our greatest asset, suggesting avenues for our community to have outsized, beneficial impact in the world. In this talk I will consider the obvious yet potentially contrarian view that *visualization is not enough* — and why this realization is liberating for both research and practice. I will point to vanguards and future prospects in "visualization" research that I believe exemplify real-world relevance and require rich intellectual integration: accessibility, interactive visualization systems, reasoning under uncertainty, and interactions with machine learning models. One guiding heuristic we might consider is the degree to which we not only benefit from, but successfully contribute back to, the adjacent disciplines that fuel our endeavors. Our community is uniquely positioned to contribute to issues of critical importance to society. Let's consider how we should rise to the challenge!

Short Biography

Jeffrey Heer is a Professor of Computer Science & Engineering at the University of Washington, where he directs the Interactive Data Lab and conducts research on data visualization, human-computer interaction and social computing. The visualization tools developed by Jeff and his collaborators (Vega, D3.js, Protovis, Prefuse) are used by researchers, companies, and data enthusiasts around the world. Jeff's research papers have received awards at the premier venues in Human-Computer Interaction and Visualization (ACM CHI, UIST, CSCW, IEEE InfoVis, VAST, EuroVis). Honors include MIT Technology Review's TR35 (2009), a Sloan Fellowship (2012), an Allen Distinguished Investigator Award (2014), a Moore Foundation Data-Driven Discovery Investigator Award (2014), the ACM Grace Murray Hopper Award (2016), and the IEEE Visualization Technical Achievement Award (2017). Jeff received B.S., M.S., and Ph.D. degrees in Computer Science from UC Berkeley, whom he then "betrayed" to join the Stanford faculty (2009–2013). He is also a co-founder of Trifacta, a provider of interactive tools for scalable data transformation.