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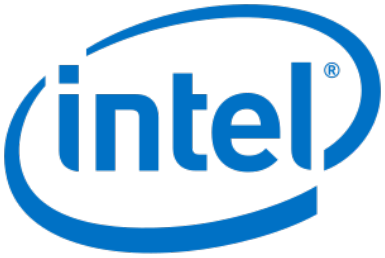

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Preface

EuroVis 2018, the 20th Eurographics / IEEE VGTC Conference on Visualization, was held in Brno, Czech Republic, on June 4-8, 2018. 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 2017, 162 manuscripts were reviewed in a two-stage process that resulted in 47 accepted papers and an acceptance rate of 29.0%. 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, 47 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 47 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 Drew Berry and Daniel Sýkora. We thank the chairs of the short paper track, Jimmy Johansson, Filip Sadlo, Tobias Schreck, the chairs of the STARs, Robert S. Laramee, G. Elisabeta Marai, Michael Sedlmair, and the chairs of the Posters track, Anna Puig, 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 Barbora Kozlikova, for the entire organization of EuroVis 2018.

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Invited Talk: Keynote
Your Respiration Engines: Real-time Visualisations of Dynamic Molecular Landscapes

Drew Berry

Abstract

After 20 years of generating animations with slow, expensive rendering pipelines for movie production, WEHI.TV has switched to the extraordinary power of GPU hardware and accelerated game engines for generating vast, detailed molecular and membrane landscapes inside our living cells. Drew Berry will present the latest experiments producing cinematic movie sequences and real-time interactive '3D diorama' open-world scenes of mitochondria membranes and molecular engines that underlie the conversion of the food we eat into chemical energy for our cells. From 2017 WEHI.TV adopted and expanded upon the cellVIEW system to create a custom Maya to Unity pipeline that efficiently delivers real-time, multi-scale animated molecular worlds, to create interactive storytelling and meaningful experiences.

Short Biography

Drew Berry is a biomedical animator who creates beautiful, accurate visualisations of the dramatic cellular and molecular action that is going on inside our bodies. Beginning his career as a cell biologist, his raw materials are technical reports, research data and models from scientific journals. As an artist he works as a translator, from abstract and complicated scientific concepts into vivid and meaningful visual journeys. Since 1995 he has been a biomedical animator at the Walter and Eliza Hall Institute of Medical Research, Australia. His animations have exhibited at venues such as the Guggenheim Museum, Museum of Modern Art, the Royal Institute of Great Britain and the University of Geneva. In 2010 he received a MacArthur Fellowship "Genius Grant".

Eurographics Conference on Visualization (EuroVis) 2018
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(Guest Editors)

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Invited Talk: Capstone
Artistic Style Transfer Demystified

Daniel Sýkora

Abstract

Example-based style transfer became recently popular thanks to significant advances made by neural-based approaches as well as guided patch-based synthesis. The hype around deep neural networks is so intense that it makes many people believe neural-based techniques will soon replace traditional patch-based methods. However, the situation is not as optimistic as it might look like on the first sight. In this talk, we analyze in detail pros and cons of both directions and reveal fundamental limitations which might not be directly apparent. Those will lead us to an observation that a promising avenue for further investigation lies in a careful combination of both approaches. We demonstrate first promising attempts in this new direction.

Short Biography

Daniel Sýkora is an Associate Professor at the Department of Computer Graphics and Interaction, Faculty of Electrical Engineering, Czech Technical University in Prague where he also received his MS (2003) and Ph.D. (2007). He gained further research experience abroad at Trinity College Dublin, Walt Disney Animation Studios, and the University of Utah. Daniel's scientific career stems from his long-standing passion for traditional artistic techniques. He developed numerous algorithms that can eliminate repetitive and time-consuming tasks while still being able to preserve the uniqueness of handcrafted artwork and provide full creative freedom to the artist. Daniel and his team at CTU in Prague intensively cooperate with renowned industrial partners such as Adobe, Disney, or TVPaint Development. Some of the techniques they developed were already integrated into professional products and used in production. For his contribution, Daniel received numerous scientific awards including prestigious Günter Enderle Best Paper Award and The Neuron Award for Promising Young Scientists. More information about Daniel and his work can be found here.