Column

Changes at CG&A

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Editor-in-Chief Torsten Möller introduces what is in store for IEEE CG&A in 2019, introduces the new issue and thanks those who are departing, and introduces those coming aboard.

■ **THERE IS LOTS** in store for 2019, contentwise. We have not one but two special issues coming up on deep learning in visual computing. There is a great issue being put together on immersive analytics as well as an issue on visual data science, which is highlighting the best work of the recently held Visual Data Science Symposium as part of IEEE VIS. If you have ideas for special issues and topics you would like to read about, feel free to contact us.

While 2018 saw the inauguration of a new department (People in Practice), we are currently working on yet another new department. It will highlight the emergence of the field of graphics and its applications from personal stories and anecdotes to interviews of the pioneers of our field. Stay tuned.

2018 has been a challenging year for *IEEE Computer Graphics and Applications*. We have seen a lot of turnover in Computer Society staff. We lost our Managing Editor, Brian Brannon, who was a tremendous help for all the volunteers and we miss him greatly. Also, Hilda Carmen left the Computer Society and we wish her all the best in the future. Further, our production process changed from the Computer Society to the production

pipeline of the IEEE mothership. Hence, we are also premiering a new layout in the current issue, which has lots of great features, such as editor notes, sidebars, and a two-column layout.

There are also a lot of changes happening behind the scenes. We are preparing new guidelines for authors and special issue editors as well as a better navigation of our website. In addition, and even more important, we are preparing new ways of staying in touch with our readership. The importance of this is signified by introducing a new Associate Editor-in-Chief. Petra Isenberg joined recently to take on this challenge. I am excited to welcome her to the team. One first step is the establishment of an email list. If you subscribe to cga-news@computer.org, you will be receiving our table of contents right after our new issue hits the electronic shelves, any calls for papers for special issues, as well as other updates or news. This together with a face-lift of our Facebook page and our Twitter account will be part of the newly emerging face of CG&A.

IN THIS ISSUE

Our regular readers will know that most of our six issues per year revolve around special topics. However, once or twice a year, we publish an issue filled with papers that have been submitted, reviewed, and accepted over the

past months. We call these also *regular queue issues*. Our January issue is such an issue and, hence, presents a broad variety of applications of computer graphics in the broadest sense. "Visualization of Clouds and Atmospheric Air Flows" by Rimensberger, Gross, and Günther is a visualization paper that has been the contest winner of the IEEE Scientific Visualization Contest 2017. In this paper, the authors and contest organizers introduce the problem that was posed as well as their particular solution that has been chosen to deal with the posed problem. It, therefore, is a very application-driven paper that exposes the complexity and challenges of meteorological data analysis.

VTK is a widely used open-source visualization toolkit. Because of its history, and the need for backward compatibility, some of its aspects have not been as efficient as they could be. In its paper "Cross-Platform Ubiquitous Volume Rendering Using Programmable Shaders in VTK for Scientific and Medical Visualization," the Kitware team, Chaudhary, Jhaveri, Sanchez, Avila, Martin, Vacanti, Hanwell, and Schroeder, introduces a new volume rendering module that does take advantage of graphics hardware that a user might have installed and, hence, increases its performance tremendously.

A completely different aspect of computer graphics applications is being highlighted by researchers from Renault. In their paper "Evaluation of Spatial Filtering Algorithms for Visual Interactions in CAVEs," Lassagne, Kemeny, Posselt, and Merienne present some new ideas on how to improve the interaction within immersive environments. While their intent is to improve the virtual car experience, the applicability of their techniques is going beyond the very specific goal of their employer.

Gaya and his team are addressing a classical image processing application in their paper "Single Image Restoration for Participating Media Based on Prior Fusion." While image restoration has been a challenge for some time, their paper constraints the problem by dealing with only a single (corrupted) image being used in the restoration process.

Last, but not the least, PUMA-V is a system that supports the development of efficient parallel code. Papenhausen, Langston, Meister, Lethin, and Mueller created visual interfaces that support a code developer. They evaluated their system with three expert programmers as well as three nonexpert programmers and report their results in their paper "PUMA-V: Optimizing Parallel Code Performance Through Interactive Visualization."

NEW EDITORIAL BOARD MEMBERS

Besides the changes in the Computer Society staff, a number of Associate Editors retired because their term expired. These are exceptional individuals who have volunteered their time, completely for free, to help make this a great magazine. We are grateful to them and thank them very much for their service. We are indebted to these individuals:

- Yung-Yu Chuang, National Taiwan University;
- Aditi Majumder, University of California—Irvine;
- Michael Neff, University of California—Davis;
- Wenping Wang, The University of Hong Kong.

At the same time, I am excited to welcome the following new scholars to our roster of Associate Editors.

Welcome aboard!

Petra Isenberg (https://petra. isenberg.cc) is a research scientist (CR) at Inria, Saclay, France, in the Aviz Research Group. Her main research areas are information visualization and visual analytics with a focus on off-desktop data analysis, interaction, and evaluation. She is particularly interested in exploring how people can most effectively work together when analyzing large and complex datasets on novel display technology such as small touch-screens, wall displays, or tabletops. She is an Associate Editor for the IEEE Transactions on Visualization and Computer Graphics, has served on many organizing committee roles at IEEE VIS including as papers co-chair for Information Visualization (InfoVis), and has been the co-chair of the biennial Beliv workshop since 2012. She received the Diploma degree in computational visualistics from the

University of Magdeburg and the Ph.D. degree from the University of Calgary in 2010, working under the supervision of Sheelagh Carpendale on collaborative information visualization.

Rahul C. Basole (https://www. linkedin.com/in/basole/) is Managing Director at Accenture where he leads global efforts at the intersection of visual analytics, data science, and strategy. His primary interests are in advancing and applying novel visual analytic approaches to understanding and managing complex enterprises and ecosystems and bringing data visualization to the C-suite. His award-winning research has been published in leading computer science, engineering, and management journals and conferences, including IEEE VIS, IEEE, and ACM Transactions, IEEE CG&A, CHI, and CSCW. Prior to joining Accenture, he was a tenured professor with the School of Interactive Computing at Georgia Tech and a core faculty member of the VIS Group and led the Computational Enterprise Science Lab. He was also Director of the Institute for People and Technology, a member of the GVU Institute, and a Visiting Scholar at Stanford University. He received degrees in industrial and systems engineering from Virginia Tech, University of Michigan (Ann Arbor), and Georgia Tech. He is a senior member of the IEEE and ACM. Contact him at rahul. basole@gmail.com or on Twitter at @basole.

Chris Johnson (https://www. cs.utah.edu/~crj/) is a faculty member within the Scientific Computing and Imaging (SCI) Institute, University of Utah, where he is a Distinguished Professor of Computer Science and holds faculty appointments with the Departments of Physics and Bioengineering. His research interests are in the areas of scientific computing and scientific visualization. With Professor Rob MacLeod, he founded the SCI Research Group in 1992, which has since grown to become the SCI Institute employing over 200 faculty, staff, and students. He directed SCI until 2018. He is a Fellow of AIMBE (2004), AAAS (2005), SIAM (2009), and IEEE (2014). He has received a number of awards, including an NSF Presidential Faculty Fellow Award from President Clinton, the Governor's Medal for Science, the IEEE Visualization Career Award, the IEEE IPDPS Charles Babbage Award, the IEEE Sidney Fernbach Award, and the Rosenblatt Prize.

Bill Lorensen (http://marching cubes.org) retired from GE Research in January 2007. His career at GE started in 1978. He was a Graphics Engineer in the Visualization and Computer Vision Lab at GE Research, Niskayuna, NY, USA. He has more than 40 years of experience in computer graphics and software engineering. He recently worked on algorithms for medical image analysis and scientific visualization. He is a co-developer of the marching cubes and dividing cubes surface extraction algorithms, two popular isosurface extraction algorithms. The 1987 Marching Cubes ACM SIGGRAPH paper continues to be the top cited SIGGRAPH paper in the ACM Digital Library. He is the author or coauthor of more than 80 technical articles on topics ranging from finite element pre/postprocessing, 3-D medical imaging, computer animation, and object-oriented design. He is a coauthor of *Object-Oriented Modeling and Design* (Prentice-Hall, 1991). He is also a coauthor with Will Schroeder and Ken Martin of the book *The Visualization Toolkit: An Object-Oriented Approach to 3D Graphics* (Kitware, 2004). He holds 31 U.S. Patents on medical and visualization algorithms. In 1991, he was named Coolidge Fellow, the highest scientific honor at GE Research. In 2004, he received the first IEEE Visualization Career Award. He was elected a Fellow of the American Institute of Medical and Biological Engineering in 2006. Before joining GE in 1978, he was a Mathematician at the U.S. Army Benet Weapons Laboratory where he worked on computer graphics software for structural analysis. Today, he remains as an active contributor to the open-source Visualization Toolkit, VTK. He received the B.S. degree in mathematics and the M.S. degree in computer science from Rensselaer Polytechnic Institute.
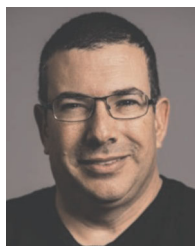
Eyal Ofek (https://www. microsoft.com/en-us/research/ people/eyalofek/) is a Senior Researcher with the Extended Perception, Interaction and Cognition Lab of Microsoft Research. Since 2012, his foremost research interests are augmented reality (AR), virtual reality (VR), and computer vision based interaction. He had lead several research groups at Microsoft Research, among them he founded the research group of Microsoft Virtual Earth (now Bing Maps), where he created the first street-side imagery mapping service (2006) and worked on

issues ranging from building cities models to text recovery from images. Between 2004 and 2005, he was a researcher with the Microsoft Research Lab, Beijing, China, where he worked in the areas of computer graphics and computer vision. He founded several companies, among them a successful 2-D and 3-D photo editing package for Amiga computers, a global illumination graphic engine, and development of the world first time-of-flight color and depth camera (Z-Cam) that was the base for depth cameras such as incorporated in Microsoft Hololens. He was a co-paper chair of ACM SIGGIS 2011, an associated chair at ACM SIGCHI, and a pc member at different vision and graphics conferences. He received the Doctorate degree in computer vision from the Hebrew University of Jerusalem, Israel, in 1996.

Nathalie Henry Riche
(https://research.microsoft.com) is a member of Microsoft Research Extended Perception, Interaction, and Cognition group, led by Ken Hinckley. Her research interests are at the intersection of human-computer interaction and information visualization. She conducts research on designing and evaluating novel interactions with pen and touch or tangibles to explore and think with data, novel experiences for crafting and communicating visual stories to a large audience. She is also passionate about visualization and information literacy and engages with education researchers and professionals to design pedagogical material and activities at the elementary school level. She published her research in over 60 articles in leading venues in human-computer interaction (e.g., ACM CHI, AVI, Interact) and information visualization (e.g., IEEE VIS, TVCG) and received several awards for her research. She has been involved in the organizing and program committees of major visualization and human-computer interaction

conferences in the past ten years. She is a strong advocate for bridging visualization and interaction research, supporting the creation of a dedicated visualization subcommittee at the ACM SIGCHI conference she subsequently co-chaired for two years. She received the Ph.D. degree in computer science from the University of Paris Sud & Inria, France, and the University of Sydney, Australia, in 2008.

Christian Theobalt
(https://people.mpi-inf.mpg.de/ ~theobalt/) is a Professor of Computer Science and the head of the research group "Graphics, Vision, and Video" at the Max-Planck-Institute (MPI) for Informatics, Saarbrücken, Germany. He is also a Professor of Computer Science with Saarland University, Germany. From 2007 until 2009, he was a Visiting Assistant Professor with Stanford University. He looks at algorithmic problems that lie at the intersection of computer graphics, computer vision, and machine learning, such as static and dynamic 3-D scene reconstruction, markerless motion and performance capture, virtual and augmented reality, computer animation, appearance and reflectance modeling, intrinsic video and inverse rendering, machine learning for graphics and vision, new sensors for 3-D acquisition, advanced video processing, as well as image- and physically-based rendering. He received several awards, including the EUROGRAPHICS Young Researcher Award in 2009, the German Pattern Recognition Award 2012, and the Karl Heinz Beckurts Award in 2017. He received an ERC Starting Grant in 2013 and an ERC Consolidator Grant in 2017. He received the M.Sc. degree in artificial intelligence from the University of Edinburgh, the Diplom (M.S.) degree in computer science from Saarland University, and the Ph.D. (Dr.-Ing.) degree from the MPI for Informatics.