Guest Editor’s Introduction to the Special Section on I3D

Chris Wyman and Cem Yuksel

In this special issue of IEEE Transactions on Visualization and Computer Graphics (TVCG), we are pleased to bring you extended versions of four papers from the 2017 ACM Symposium on Interactive 3D Graphics and Games (I3D), the 21st conference in a series starting in 1986. I3D 2017 was held February 25th to 27th, 2017 in San Francisco, California, USA at the Intercontinental Mark Hopkins Hotel.

I3D’s main focus is disseminating novel techniques in interactive computer graphics and human-computer interaction, emphasizing practical applications such as digital games. Published work at I3D covers many areas of graphics, including rendering, animation, imaging, simulation, interaction, and deep learning. Many of the research techniques presented at I3D find practical applications, often in the game industry. The 2017 conference received 45 paper submissions, which were reviewed by an international papers committee including 46 experts from across academia and industry. Papers were evaluated independently on their own merits, without a target acceptance ratio. After rigorous review, 16 papers were accepted for presentation. Papers receiving the highest reviewer scores were invited to submit extended versions to TVCG. These papers, presented in this issue, each underwent significant revisions to include additional new work and have been accepted after a full TVCG review process.

“Compressing Color Data for Voxelized Surface Geometry,” the winner of this year’s Best Paper Award, by Dan Dolonius, Erik Sintorn, Viktor Kämpe, and Ulf Assarsson, proposes a method for compressing large voxelized scenes that decouples color and geometric data and can be accelerated by modern hardware compression techniques. “Feature-based Volumetric Terrain Generation and Decoration,” by Michael Becher, Michael Krone, Guido Reina, and Thomas Ertl, shows how to use 3D curve primitives to create a workflow and volumetric representation that allows efficient and interactive modeling of large-scale terrain features, including overhangs. “Real-Time Cloth Rendering with Fiber-level Detail,” by Kui Wu and Cem Yuksel, proposes a procedural, GPU-accelerated method for generating and rendering fiber details, plus a corresponding level-of-detail strategy that avoids costs where fibers have little impact on the final image. “Improved Alpha Testing Using Hashed Sampling,” by Chris Wyman and Morgan McGuire, addresses a longstanding problem where alpha-tested geometry disappears as it recedes into the distance using a stable, hash-based sampling to stochastically select the alpha threshold.

In addition to the papers program, I3D 2017 also included a posters and demos session, industry talks by Jihun Yu, Babis Koniaris, Mahesh Ramasubramanian, and Sheldon Andrews, and keynotes from Marc Olano and Matt Pharr. We are extremely grateful to the program committee and everyone involved in conference organization, ACM SIGGRAPH for the continuing support and sponsorship, and financial backing from Samsung, Activision, Oculus, Unreal Engine, Disney Research, Intel, and NVIDIA. Finally, we would like to thank IEEE Transactions on Visualization and Computer Graphics, especially Associate Editor-in-Chief Shi-Min Hu, for continuing to provide an opportunity to extend I3D’s top papers, providing further exposure to the conference’s top innovations.

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Cem Yuksel received the PhD degree in computer science from Texas A&M University, in 2010. He is a faculty member in the School of Computing at the University of Utah. Previously, he was a postdoctoral fellow with Cornell University. His research interests include computer graphics and related fields, including physically-based simulations, rendering techniques, global illumination, sampling, GPU algorithms, graphics hardware, knitted structures, and hair modeling, animation, and rendering.

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