Guest Editors' Introduction: Special Section on the ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA)

Theodore Kim and Robert Summer

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THIS special section presents expanded versions of three of the best papers from the 12th Annual ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), which was held in Anaheim, CA from July 19 to 21, 2013. Now in its dozenth year, SCA has become firmly established as the premiere forum for innovations in the software and technology of computer animation.

This year, SCA received 57 submissions, which were reviewed by the 72 members of the international program committee. Of these, the committee decided to accept 20 full papers, and continuing the highly successful short papers program from SCA 2012, also accepted four short papers. These papers are of a uniformly high quality, and cover a wide breadth of animation topics, such as motion capture, fluid simulation, character animation, sound synthesis, hair simulation, and motion planning, to name just a few. Each paper was reviewed by at least three committee members, and further discussed on an online discussion forum until a consensus was reached. Without all of the diligent and conscientious work by the committee members, SCA would not be possible. We are pleased to bring you three out of the six very best papers of SCA 2013 that were invited to this special section. Each of the invited papers contains a minimum of 30 percent new material and received another round of rigorous reviews.

The first paper, "Diverse Motions and Diverse Characters for Simulated Skills" presents a method of producing a wide range of physics-based character motions, as opposed to the usual approach of finding a single optimal motion. This is accomplished by performing an optimization on purposefully underconstrained problems, and results in what is surely the first-ever instance of a bird robot attempting to emulate Monty Python's "Ministry of Silly Walks."

The second paper, "Control of Rotational Dynamics for Ground and Aerial Behaviors" examines the commonly overlooked phenomenon of whole-body rotational motion when designing physics-based controllers. As opposed to the usual walking, running, or balancing motions, it addresses phenomena such as flips and handsprings by introducing and analyzing "rotation indices" that are analogous to the more familiar "balance indices."

The third paper, "Geodesic Binding for Degenerate Character Geometry Using Sparse Voxelization" presents a robust and automatic new way of computing skinning weights for arbitrary meshes. The voxelization-based method handles non-manifold and self-intersecting meshes, and does not require any of the optimizations or parameter tunings of previous methods. To boot, the algorithm is amenable to GPU acceleration.

We wish to thank all of the committee members again for their diligent and thorough reviews, especially given the short reviewing schedule, as well as Stefanie Behnke, for all of her timely help with the submission and review management system. We would also like to thank the other members of the organizing committee, Jinxiang Chai, Yizhou Yu, Ladislav Kavan and Bernhard Thomaszewski for helping make SCA 2013 a success.

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Guest Editors

Theodore Kim received the PhD degree in computer science from the University of North Carolina, Chapel Hill in 2006, and subsequently held post-doctoral positions at IBM TJ Watson Research Center and Cornell University. He is an assistant professor in the Media Arts and Technology Program at the University of California, Santa Barbara. His research investigates the aesthetic and engineering possibilities of simulated physics, such as fluid dynamics, virtual humans, snowflake growth, and lightning formation. He received the Scientific and Technical Academy Award, an SCA Best Paper Award, and an US National Science Foundation (NSF) CAREER Award.

Robert Sumner received the BS degree in computer science from the Georgia Institute of Technology in 1998 and the MS and PhD degrees from the Massachusetts Institute of Technology in 2001 and 2005, respectively. He is the associate director of Disney Research Zurich and an adjunct professor at ETH Zurich. At DRZ, he leads the lab's research on animation and interactive graphics. His research group strives to bypass technical barriers in the animation production pipeline with new algorithms that expand the designer's creative toolbox in terms of depiction, movement, deformation, stylization, control, and efficiency. He spent three years as a postdoctoral researcher at ETH Zurich before joining Disney. At ETH, he teaches a course called the Game Programming Laboratory in which students work in small teams to design and implement novel video games.

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