

# I3D 2011 Conference Schedule

## Friday, February 18

- 8:00am Breakfast and Registration (Golden Gate Ballroom)
- 8:45am Welcome
- 9:00am Keynote by **Rick Szeliski**  
*Image-Based Rendering: A 15-Year Retrospective*
- 10:30am Coffee Break (with fruits)
- 11:00am Paper Session – **Filtering and Reconstruction** (Chair: Li-Yi Wei)
- A Local Image Reconstruction Algorithm for Stochastic Rendering  
*Peter Shirley, Timo Aila, Jonathan Cohen, Eric Enderton, Samuli Laine, David Luebke, Morgan McGuire*
- Subpixel Reconstruction Antialiasing  
*Matthäus G. Chajdas, Morgan McGuire, David Luebke*
- High Quality Elliptical Texture Filtering on GPU  
*Pavlos Mavridis, Georgios Papaioannou*
- 12:15pm Lunch Break
- 1:45pm Paper Session – **Lighting in Participating Media** (Chair: Chris Wyman)
- Transmittance Function Mapping  
*Cyril Delalandre, Pascal Gautron, Jean-Eudes Marvie, Guillaume Francois*
- Real-Time Volumetric Shadows using 1D Min-Max Mipmaps  
*Jiawen Chen, Ilya Baran, Fredo Durand, Wojciech Jarosz*
- Real-Time Volume Caustics with Adaptive Beam Tracing  
*Gabor Liktör, Carsten Dachsbacher*
- 3:00pm Coffee Break (with cookies)
- 3:20pm Paper Session – **Collision and Sound** (Chair: Sung-Eui Yoon)
- Sound Synthesis for Impact Sounds in Video Games  
*D. Brandon Lloyd, Nikunj Raghuvanshi, Naga K. Govindaraju*
- Collision-Streams: Fast GPU-based Collision Detection for Deformable Models  
*Min Tang, Dinesh Manocha, Jiang Lin, and Ruofeng Tong*
- Fast Continuous Collision Detection using Parallel Filter in Subspace  
*Chen Tang, Sheng Li, Guoping Wang*
- 4:35pm Short Break
- 4:50pm Paper Session – **TVCG Session 1** (Chair: Amitabh Varshney)
- Interactive Visualization of Rotational Symmetry Fields on Surfaces  
*Jonathan Palacios, Eugene Zhang*
- Real-Time Ray-Tracing of Implicit Surfaces on the GPU  
*Jag Mohan Singh, P. J. Narayanan*
- 5:30pm Adjourn for the evening

## Saturday, February 19

- 8:00am Breakfast and Registration (Golden Gate Ballroom)
- 8:30am Industry Session (Chair: Marc Olano)  
**Dan Baker:** *From Papers to Pixels: How research finds (or often doesn't) its way into Games*  
**Chris Hecker:** *A Game Developer's Wishlist for Reseachers*
- 10:00am Coffee Break (with fruits)
- 10:30am Paper Session – **Shadows** (Chair: Peter-Pike Sloan)  
Shadow Caster Culling for Efficient Shadow Mapping  
*Jiri Bittner, Oliver Mattausch, Ari Silvennoinen, Michael Wimmer*  
Hardware-Accelerated Colored Stochastic Shadow Maps  
*Morgan McGuire, Eric Enderton*  
Sample Distribution Shadow Maps  
*Andrew Lauritzen, Marco Salvi, Aaron Lefohn*
- 11:45am Lunch Break
- 1:15pm Paper Session – **Refraction and Global Illumination** (Chair: Morgan McGuire)  
Voxel-based Global Illumination  
*Sinje Thiedemann, Niklas Henrich, Thorsten Grosch, Stefan Muller*  
Real-Time Rough Refraction  
*Charles De Rousiers, Adrien Bousseau, Kartic Subr, Nicolas Holzschuch, Ravi Ramamoorth*  
Screen-Space Bias Compensation for High Quality Rendering with Virtual Point Lights  
*Jan Novak, Thomas Engelhardt, Carsten Dachsbacher*
- 2:30pm Coffee Break (with brownies)
- 2:50pm Paper Session – **TVCG Session 2** (Chair: Amitabh Varshney)  
Simulating Multiple Character Interactions with Collaborative and Adversarial Goals  
*Hubert P. H. Shum, Taku Komura, Shuntaro Yamazaki*  
Directing Crowd Simulations Using Navigation Fields  
*Sachin Patil, Jur van den Berg, Sean Curtis, Ming. C. Lin, Dinesh Manocha*
- 3:30pm Poster Fastforward (Chair: Sung-Eui Yoon)
- 4:00pm Poster Session (Napa Ballroom)
- 6:30pm Banquet Dinner (Golden Gate Ballroom)  
NVIDIA Banquet Talk by **David Luebke**  
*GPU Computing: Past, Present, and Future*
- 9:00pm Adjourn for the evening

## Sunday, February 20

- 8:00am Breakfast and Registration (Golden Gate Ballroom)
- 8:30am Keynote by **Kari Pulli**  
*Mobile Computational Photography*
- 10:00am Coffee Break
- 10:30am Paper Session – **Human Animation** (Chair: Peter-Shirley)
- Motion Rings for Interactive Gait Synthesis  
*Tomohiko Mukai*
- Realtime Human Motion Control with A Small Number of Inertial Sensors  
*Huajun Liu, Xiaolin Wei, Jinxiang Chai, Inwoo Ha, Taehyun Rhee*
- A Modular Framework for Adaptive Agent-Based Steering  
*Shawn Singh, Mubbasir Kapadia, Glenn Reinman, Petros Faloutsos*
- 11:45am Lunch Break
- 1:15pm Paper Session – **Geometric and Procedural Modeling** (Chair: M. Gopi)
- Editable Polycube Map for GPU-based Subdivision Surfaces  
*Jiazhi Xia, Ismael Garcia, Ying He, Shi-Qing Xi, Gustavo Patow*
- GPU Surface Curvature Estimation on Deformable Meshes  
*Wesley Griffin, Yu Wang, David Berrios, Marc Olano*
- Urban Ecosystem Design  
*Bedrich Benes, Michel Abdul Massih, Philip Jarvis, Daniel G. Aliaga, Carlos A. Vanegas*
- 2:30pm Short Break
- 2:50pm Paper Session – **Interactivity and Interaction** (Chair: Naty Hoffman)
- Data Management for SSDs for Large-Scale Interactive Graphics Applications  
*Behzad Sajadi, Shan Jiang, Jae-Pil Heo Sung-Eui Yoon, M. Gopi*
- Coherent Image-Based Rendering of Real-World Objects  
*Stefan Hauswiesner, Matthias Straka, Gerhard Reitmayr*
- Slice WIM: A Multi-Surface, Multi-Touch Interface for Overview+Detail Exploration of Volume Datasets in Virtual Reality  
*Dane Coffey, Nicholas Malbraaten, Trung Le, Iman Borazjani, Fotis Sotiropoulos, Daniel F. Keefe*
- 4:05pm Awards and Concluding Remarks
- 4:30pm I3D 2012 Planning Session

## **I3D 2011 Poster Presentation Schedule**

### **Poster Session: Saturday (Feb 19) 4:00pm at Napa Ballroom**

- Using Perceptual Features to Prioritize Ray-based Image Generation  
*B. Kainz, M. Steinberger, S. Hauswiesner, R. Khlebnikov, D. Kalkofen, D. Schmalstieg*
- Stochastic Modeling of Light-weight Floating Objects  
*Zhi Yuan, Fan Chen, Ye Zhao*
- Efficient Adaptive Tiling for Programmable Rendering  
*Stanley Tzeng, Anjul Patney, John D. Owens*
- Footstep Navigation for Dynamic Crowds  
*Shawn Singh, Mubbasir Kapadia, Glenn Reinman, Petros Faloutsos*
- Interactive Indirect Illumination Using Voxel Cone Tracing  
*Cyril Crassin, Fabrice Neyret, Miguel Sainz, Simon Green, Elmar Eisemann*
- Supporting Internal Visualization of Biomedical Datasets via 3D Rapid Prototypes and Sketch-based Gestures  
*Vamsi Konchada, Bret Jackson, Trung Le, Iman Borazjani, Fotis Sotiropoulos, Daniel F. Keefe*
- Poisson Disk Ray-Marched Ambient Occlusion  
*Gaël Sourimant, Pascal Gautron, Jean-Eudes Marvie*
- gHull: A Three-dimensional Convex Hull Algorithm for Graphics Hardware  
*Mingcen Gao, Thanh-Tung Cao, Tiow-Seng Tan, Zhiyong Huang*
- Flexible Editing of Style, Identity and Content of Human Motion  
*Zhiying He, Xiaohui Liang, Jian Wang, Yiming Yue*
- Image-space Constraints for Controlling Camera Interpolation  
*Ross Sowell, Tom Erez, Emily Feder, Cindy Grimm, Jianqi Xing, Leon Barrett*
- Behavior Authoring for Crowd Simulations  
*Mubbasir Kapadia, Shawn Singh, Glenn Reinman, Petros Faloutsos*
- Interactive Construction of 3D Mathematical Visualization Models  
*Carlo H. Sequin*
- Level-of-Detail and Streaming Optimized Irradiance Normal Mapping  
*Ralf Habel*
- Chronos Tennis: an online Tennis game better than Wii  
*Chi Cui, Kun Qian*
- The Research and Realization of Parameterized Three-dimensional Plant Simulation Based on Fractal Theory  
*Junfeng Yao, Hui Zhang, Bin Wu, Fengchun Lin, Binxing Wang*
- Multi-pass Rendering of Stereoscopic Video on Consumer Graphics Cards  
*Jonas Schild, Sven Seele, Jonas Fischer, Maic Masuch*
- Programming by Sketch for Scientific Computing  
*Hanyu Liu, Andrew Bragdon, Attila Bergou, Jian Chen*

## **I3D 2011 Keynote Speakers**

**Richard Szeliski**, Microsoft Research

### *Image-Based Rendering: A 15-Year Retrospective*

Image-based rendering created quite a stir in computer graphics when it first came to prominence in the mid-1990s. After seminal work in representations and algorithms based on Light Fields and Lumigraphs, the field has seen steady improvements in many of the component technologies, including image-based modeling of 3D proxies, dealing with irregularly sampled data, the incorporation of video, and an interesting interplay with non-photorealistic rendering. It has also spawned widely used consumer experiences such as panoramic "VR" photography, street-level (and indoor) immersive tours, and rich 3D navigation of Internet photo collections. In this talk, I review the evolution of this field, tease out some of the common themes and techniques, and speculate on the remaining difficulties and promises in this field.

Bio:

Richard Szeliski is a Principal Researcher at Microsoft Research, where he leads the Interactive Visual Media Group. He is also an Affiliate Professor at the University of Washington, and is a Fellow of the ACM and IEEE. Dr. Szeliski pioneered the field of Bayesian methods for computer vision, as well as image-based modeling, image-based rendering, and computational photography, which lie at the intersection of computer vision and computer graphics. His most recent research on Photo Tourism and Photosynth is an exciting example of the promise of large-scale image-based rendering.

Dr. Szeliski received his Ph.D. degree in Computer Science from Carnegie Mellon University, Pittsburgh, in 1988 and joined Microsoft Research in 1995. Prior to Microsoft, he worked at Bell-Northern Research, Schlumberger Palo Alto Research, the Artificial Intelligence Center of SRI International, and the Cambridge Research Lab of Digital Equipment Corporation. He has published over 150 research papers in computer vision, computer graphics, medical imaging, neural nets, and numerical analysis, as well as the books *Bayesian Modeling of Uncertainty in Low-Level Vision* and *Computer Vision: Algorithms and Applications*. He was a Program Committee Chair for ICCV'2001 and the 1999 Vision Algorithms Workshop, served as an Associate Editor of the IEEE Transactions on Pattern Analysis and Machine Intelligence and on the Editorial Board of the International Journal of Computer Vision, and is a Founding Editor of *Foundations and Trends in Computer Graphics and Vision*.

**Kari Pulli**, Nokia Research

### *FCam: an architecture and API for computational cameras*

Smart phones with cameras form the new frontier of imaging. However, they have not traditionally been easy to program. FCam is an architecture and API for computational cameras. In this talk we discuss mobile computational photography, FCam as an answer to some of its problems, and some applications benefiting from FCam.

Bio:

Kari Pulli is Nokia Fellow at Nokia Research Center in Palo Alto, CA, USA, where he heads a research team working on mobile imaging. He joined Nokia in 1999, headed Nokia's graphics technology, research, and standardization, visited MIT 2004-06, then helped found NRC Palo Alto in 2006. He is an adjunct faculty at University of Oulu, has a PhD from University of Washington and an MBA from University of Oulu. Before Nokia Kari worked on graphics at Stanford University (on Digital Michelangelo Project), Alias|Wavefront, SGI, and Microsoft. He is in the editorial boards of "IEEE Computer Graphics & Applications" and "Computers and Graphics" and wrote a book on Mobile 3D Graphics, and has been active on mobile multimedia standardization at Khronos.

## I3D 2011 Industry Session Speakers

**Dan Baker**, Firaxis Games

*From Papers to Pixels: How research finds (or often doesn't) its way into Games*

As burritos, mountdew and ramen noodles fuel an army of graduate students feverishly working late hours on word smitthing their latest SIGGRAPH paper, we ask ourselves, how does all this sleep deprived mania find itself into games? Research finds itself into games through haphazard and bizarre journeys, often being invented and reinvented, discovered, then rediscovered. Here, we will discuss one studios approach to research, which we will extend to over-generalizations without any particular regard to scientific rigor.

Bio:

Dan Baker is a Graphics Lead at Firaxis Games. Dan has a decade of experience in the games industry, including almost 4 years at Firaxis Games where previous titles include Sid Meier's Railroads and Sid Meier's Civilization Revolution. Dan is also active in academic sphere, including recently teaching Graphics for Games at UMBC. Prior to Firaxis, Dan worked on Microsoft D3D team, where he worked on a variety of technologies, from tessellation to leading the HLSL development for D3D10.

**Chris Hecker**, definition six, inc.

*A Game Developer's Wishlist for Researchers*

Game developers have always turned to academic research for inspiration and to find approaches to technical problems. In the past, games were persona non grata in the research community, and so game developers reading research papers had to be content with merely being consuming the available information without having much influence on the direction of research, or on its presentation. That has changed in recent years, with games growing in importance as a target and even a vehicle for academic research. Now that we have your ear, this lecture discusses a variety of ways researchers could make their work more useful to game developers. Some of these will be simple formatting suggestions, and some will be completely different ways of thinking about research topics, with various stops and detours in between.

Bio:

Chris focuses on solving hard problems at the intersection of gameplay, aesthetics, and technology. He is an outspoken advocate for pushing the current boundaries of design and interactivity, in the hope that games will eventually achieve their full potential as a medium. To this end he helps organize the Indie Game Jam and the Experimental Gameplay Workshop, and his recent work has centered on using proceduralism and artificial intelligence to enhance player creativity and agency. Chris has been on the advisory board for the Game Developers Conference for many years and is a regular speaker at the GDC, Siggraph, and other conferences. A frequent contributor to Game Developer magazine, Chris was the technical columnist for the magazine for two years and the Editor-at-Large for three, and is currently on the editorial board of the computer graphics research publication, The Journal of Graphics Tools. He has worked at both ends of the development spectrum, as a one-man indie game developer with his company definition six, inc. and on a hundred-person team at Maxis/Electronic Arts. His professional goal is to help games become the preeminent art and entertainment form of the 21st century. His current project is SpyParty, an indie game about subtle human behavior and deception.

## **I3D 2011 NVIDIA Banquet Talk**

**David Luebke**, NVIDIA Research

*GPU Computing: Past, Present, and Future*

Modern GPUs have outgrown their graphics heritage in many ways to emerge as the world's most successful parallel computing architecture. The GPUs that consumers buy to play video games provide a level of massively parallel computation in a single chip that was once the preserve of supercomputers. The raw computational horsepower of these chips has expanded their reach well beyond graphics. Today's GPUs not only render video game frames, they also accelerate astrophysics, video transcoding, image processing, protein folding, seismic exploration, computational finance, radioastronomy, heart surgery, self-driving cars - the list goes on and on.

When thinking about the future of GPUs it is important to reflect on the past. How did this peripheral grow into a processing powerhouse found everywhere from medical clinics to radiotelescopes to supercomputers? Why the graphics card and not the modem, or the mouse? Have GPUs really outgrown graphics and will they thus evolve into pure HPC processors? (hint: no)

This talk is intended as a sort of "state of the union" for GPU computing. I'll briefly cover the dual heritage of GPUs, both in terms of supercomputing and the evolution of fixed function graphics pipelines. I'll discuss "computational graphics", the evolution of graphics itself into a general-purpose computational problem, and how that impacts GPU design and GPU computing. Finally I'll describe the important problems and research topics facing GPU computing practitioners and researchers.

Bio:

David Luebke helped found NVIDIA Research in 2006 after eight years on the faculty of the University of Virginia. Luebke received his Ph.D. under Fred Brooks at the University of North Carolina in 1998. His principal research interests are GPU computing and real-time computer graphics. Luebke's honors include the NVIDIA Distinguished Inventor award, the NSF CAREER and DOE Early Career PI awards, and the ACM Symposium on Interactive 3D Graphics "Test of Time Award". Dr. Luebke has co-authored a book, a SIGGRAPH Electronic Theater piece, a major museum exhibit visited by over 110,000 people, and dozens of papers, articles, chapters, and patents.

## **I3D 2011 Conference Committee**

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## I3D 2011 Conference Venue

### Marriott Fisherman's Wharf

1250 Columbus Avenue , San Francisco, CA 94133

Telephone: (415) 775-7555 (Reservations), Fax: (415) 474-2099

Main conference site: Golden Gate Ballroom

Poster session site: Napa Ballroom

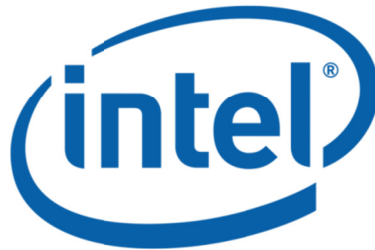
Banquet site: Golden Gate Ballroom

Wireless access: Golden Gate Ballroom AP name *Way Port Meeting* (open key)

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