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Preface

This book represents the work published at the 9th Eurographics Symposium on Parallel Graphics and Visualization (EGPGV), which took place in Munich (Germany) on 29-30th March 2009. Parallel computing in its various guises has become ubiquitous, and any form of efficient computation has begun to require some aspect of parallelisation. This is particularly pronounced in the computationally demanding disciplines of computer graphics and visualization as witnessed by the development and rise of the largely parallel GPU and more recently with multi-core technologies. The work presented in this symposium has added to the state of the art in this field.

This year we had 27 submissions which have been reviewed by our International Programme Committee composed of 23 internationally recognised academics and the three editors. Each submission received three or more reviews. In the end 14 submissions were chosen with an acceptance rate of just short of 52%.

This year's accepted papers cover a healthy range of topics from the fields of both computer graphics and visualisation. The topics include simulation, global illumination, rendering, visualisation and general purpose computing on GPUs covering a wide variety of parallel computing platforms ranging from multi-core to grid computing.

The keynote talks serve to demonstrate the wide-acceptance of parallelism in the graphics and visualisation community. The first keynote by Peter Shirley (NVIDIA) highlights how desktop parallelism is finally allowing ray tracing to be, at the least, an alternative to the traditional status quo of rasterisation for interactive rendering. The second keynote by Matt Pharr (Intel) identifies how to harness the parallel computing power of new graphical architectures.

We would like to thank Joachim Georgii from Technische Universität München, who has handled the local organisation. We would also like to thank Alessandro Artusi and Vedad Hulusic, both from the University of Warwick, who have handled aspects of the organisation remotely.

We also thank Stefanie Behnke, who has handled the publications, managed the reviewing system and promptly responded to all our requests and e-mails.

Finally, we would like to thank all the members of the IPC, the external reviewers, the authors and the keynote speakers that have made this symposium a possibility and who continue to drive the field of parallel computing in graphics and visualisation forward.

Daniel, João and Kurt
Munich, March 2009

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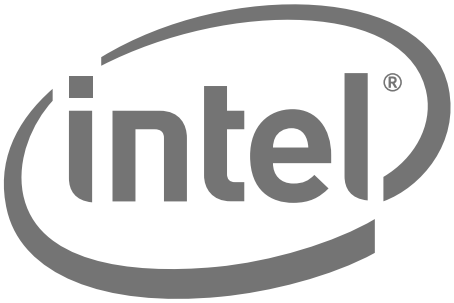

Invited Presentation - Keynote

Interactive Ray Tracing: Where Is It Now, and Where Is it Going?

Peter Shirley
Nvidia

Abstract

Ray tracing has long played a role in batch rendering for applications such as movies, product design, and visualization. It has been a niche tool for interactive visualization on supercomputers. Now that desktop systems are becoming as powerful as previous supercomputers there has been much discussion of whether ray tracing will become a prominent tool for interactive graphics. I will discuss what ray tracing techniques exist now that are useful, as well as trends that will influence ray tracing's future usefulness and adoption. More importantly I will discuss open questions that the research community can address that may determine how and where we may soon see ray tracing in everyday use.

Short Biography

Peter Shirley is a Senior Research Scientist at NVIDIA and Adjunct Professor in the School of Computing at the University of Utah. He has a B.A. in physics from Reed College and a Ph.D. in computer science for the University of Illinois at Urbana-Champaign. He is the coauthor of three books and dozens of technical articles. He spent four years as an Assistant Professor at Indiana University and two years as a Visiting Assistant Professor at the Cornell Program of Computer Graphics before moving to Utah where he was a Professor of Computer Science for twelve years. His professional interests include interactive and realistic rendering, statistical computing, visualization, and immersive environments.

Invited Presentation - Keynote

Software Rendering Redux: Back To The Future With New Graphics Architectures

Matt Pharr
Intel

Abstract

As graphics hardware has become increasingly programmable, we are approaching the point where the entire traditional graphics pipeline can be implemented in software on high-performance general purpose processors. This advance offers great opportunity to graphics researchers and software developers: the standard feed-forward graphics pipeline is no more privileged by the hardware architecture than alternative graphics pipelines, including those based on, for example, direct volume rendering, micropolygon rendering, or ray tracing.

In this talk, I will discuss both the challenges and the opportunities presented by these new architectures. High-performance parallel programming remains a challenge on all graphics architectures today; I will discuss how thoughtful choice of parallel programming models and compilation technology can enable developers to write graphics software that generally executes with very high processor utilization. I will also discuss opportunities in making the standard graphics pipeline highly extensible, allowing developers to leverage existing highly-tuned software graphics pipelines to implement new rendering algorithms rather than needing to write complete graphics pipelines themselves from scratch.

Short Biography

Matt Pharr is the lead graphics architect in the Advanced Rendering Technology group at Intel, working on interactive rendering for Larrabee. He previously co-founded Neoptica, which worked on programming models for graphics on heterogeneous CPU+GPU systems; Neoptica was acquired by Intel. Before Neoptica, Matt was in the Software Architecture group at NVIDIA, co-founded Exluna, worked in Pixar's Rendering R&D group, and received his PhD from the Stanford Graphics Lab. With Greg Humphreys, he wrote the textbook "Physically Based Rendering: From Theory to Implementation". He was also the editor of "GPU Gems 2" and the winner of the first Fantasy Graphics League.

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