

Thorsten P. Scheuermann

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Publications

- Computing Per-Pixel Object Thickness in a Single Render Pass.** Oat, Scheuermann. *ShaderX6, Charles River Media (to appear)*.
- Efficient Histogram Generation Using Scattering on GPUs.** Scheuermann, Hensley. *Symposium on Interactive 3D Graphics and Games 2007*.
- Fast HDR Image-Based Lighting using Summed-Area Tables.** Hensley, Scheuermann. Poster at *Symposium on Interactive 3D Graphics and Games 2007*.
- Using a Commodity GPU in an Undergraduate Parallel Computing Course.** Steinhurst, Scheuermann. Poster at *SIGCSE 2007*.
- Dynamic Glossy Environment Reflections Using Summed-Area Tables.** Hensley, Scheuermann. *ShaderX4, Charles River Media, 2005*.
- Fast Summed-Area Table Generation and its Applications.** Hensley, Scheuermann, Coombe, Singh, Lastra. *Proceedings of Eurographics 2005*.
- A Simple Method for Rendering Gemstones.** Scheuermann. *Game Programming Gems 5, Charles River Media, 2005*.
- Practical Real-Time Hair Rendering and Shading.** Scheuermann. *SIGGRAPH Sketch, 2004*.
- Hair Rendering and Shading.** Scheuermann. *ShaderX3, Charles River Media, 2004*.
- Advanced Depth of Field Rendering.** Scheuermann, Tatarchuk. *ShaderX3, Charles River Media, 2004*.
- Simulation of Cloud Dynamics on Graphics Hardware.** Harris, Baxter, Scheuermann, Lastra. *Proceedings of Graphics Hardware 2003*.
- Physically-Based Visual Simulation on Graphics Hardware.** Harris, Coombe, Scheuermann, Lastra. *Proceedings of Graphics Hardware 2002*.

Conference Presentations

- The Art and Technology of Whiteout.** *SIGGRAPH 2007 Tech Talk*
- Efficient Histogram Generation Using Scattering on GPUs.** *I3D Symposium 2007*
- Render to Vertex Buffer With D3D9.** *SIGGRAPH 2006 Course: GPU Shading and Rendering*
- Porting Between Xbox 360 and PC.** *XFest 2006, Seattle*
- Summed-Area Tables For Real-Time Glossy Environment Reflections.** *Game Developer's Conference 2005*
- Cubemap Filtering.** *Game Developer's Conference 2005*
- Practical Real-Time Hair Rendering and Shading.** *SIGGRAPH 2004*
- Advanced Depth of Field.** *Game Developer's Conference 2004*
- Hair Rendering and Shading.** *Game Developer's Conference 2004*

Work Experience

- Lead Programmer for Graphic Demo Engine, ATI/AMD, 3D Application Research Group (February 2007 - present)**
- Lead Programmer of new cross-platform graphics engine and asset pipeline used for next-generation demos
 - Engine supports DX10, DX9, OpenGL, OpenGL/ES, and has been used for all Radeon HD 2900 launch demos
 - Designed and implemented shader effects system – similar to D3D's FX files, but cross-platform
 - Coordinated team of three engineers working on various parts of the engine
 - Radeon HD 2900 launch demo: “Whiteout”
 - Particle system shading, particle and hair self-shadowing, GPU-based facial animation, HDR tone-mapping
- Senior Software Engineer, ATI / AMD, 3D Application Research Group (October 2004 - February 2007)**
- Radeon X1800 demo: “Toyshop” (featured in the Eurographics 2006 Animation Festival and SIGGRAPH 2007 Electronic Theater)
 - Prototyped GPU-based water surface simulation, particles, blurry street reflections
 - Radeon X1800 demo: “The Assassin” (featured in the Eurographics 2006 Animation Festival)
 - Took over project lead responsibilities midway through project
 - Our team ported this demo from PC to Xbox 360 in three weeks, for use in Microsoft's Xbox 360 press briefing tour
 - Radeon X850 demo: “Ruby: Dangerous Curves”
 - Implemented dynamic cubemap reflections, optimized motion blur, shader programming, engine optimizations
 - Added GUI system to demo engine to allow for convenient control of shader and script parameters

Software Engineer, ATI Research, 3D Application Research Group (April 2003 - October 2004)

- Developer for real-time 3D demo engine and real-time shader writer
- Designed and implemented flexible Lua-based scripting system
- Designed and implemented an extensible particle system, including GUI particle editor with real-time preview
- Radeon X800 demo: *"Ruby: The Double Cross"* (featured in the SIGGRAPH 2004 Computer Animation Festival)
 - Developed many of the shaders used in the demo, including most of the high-profile shading techniques: Depth of field rendering, Hair rendering, Gemstone rendering
- Radeon X800 demo: *"Crowd"* - showcases rendering massive amounts of characters
 - Designed and implemented technique for character shadows, added post-processing effects

Research Assistant, UNC Effective Virtual Environments Group (Spring 2001 - April 2003)

- Ported main research demo from SGI to PC using a 3D game engine and extended this engine to VR-specific needs
- Designed and implemented a handheld PDA interface to wirelessly control VR applications
- Assisted with set-up and operation of VR demo and running a large user study (about 200 participants) in the Emerging Technologies section at SIGGRAPH 2002
- Set up a source code control server (CVS) for the group, provided maintenance and support

Graphics Architecture Intern, NVIDIA (Summer 2002)

- Evaluated options for integrating scripting capabilities into a new testing framework for graphics processors
- Integrated Lua scripting engine and ported GPU display engine tests to run in new scripting environment

Programmer, SSM Testronik GmbH (Germany, 1996 - 2000, part-time)

- Created new application modules for a computer-controlled material testing system and made customer-specific changes to existing code
- Worked on porting the system from the QNX platform to Linux

Education

University of North Carolina at Chapel Hill: Ph.D. Student, Fall 2001 – Spring 2003

Master's degree in Computer Science awarded in December 2002

University of North Carolina at Chapel Hill: Exchange Student, Fall 2000 - Spring 2001

University of Karlsruhe, Germany: Equivalent of B.S. in Computer Science, Fall 1997 - Spring 2000

Technical Skills

APIs and Applications: DX10, DX9/HLSL, OpenGL/GLSL/Cg, Scaleform Gfx, Qt, Maya, 3D Studio Max, GIMP, Photoshop

Software Development: C/C++, Lua, lex/yacc, Java, Perl, Vtune, CVS, Perforce

Platforms: Windows, Linux, Xbox 360, Mac OS X, QNX

Hardware: Experience with various 3D tracking devices and head-mounted displays

Foreign language: German (native speaker)

Other Achievements

- Entered the Qtopia Worldwide Developer Contest with *"Froot"* (a Bust-a-Move clone running on a Sharp Zaurus PDA), which was voted best in the Games category and won a runner-up prize (Summer 2002)
- DaimlerChrysler Research & Technology scholarship (Spring 2000)
- Award for an outstanding Vordiplom examination from sd&m AG (Fall 1999)

Work Samples



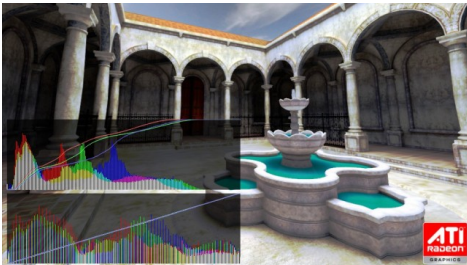
Whiteout (2007)



Whiteout (2007)



Whiteout (2007)



Real-Time Histogram Demo (2007)



The Assassin (2006)



The Assassin (2006)



Toystore (2006)



Dangerous Curves (2005)



Dangerous Curves (2005)



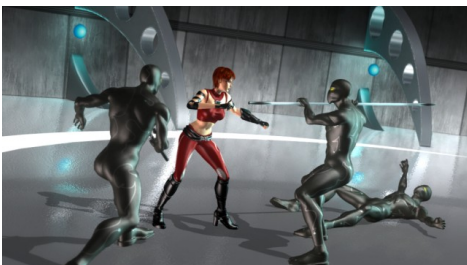
Subsurface Scattering (2004)



Ruby: The Double-Cross (2004)



Ruby: The Double-Cross (2004)



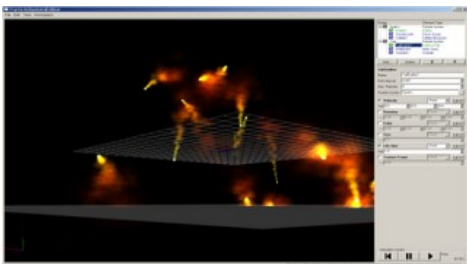
Ruby: The Double-Cross (2004)



Ruby: The Double-Cross (2004)



Crowd (2004)



Particle Editor (2003)



Physically-Based Simulation on GPUs Demo (2001)



Virtual Reality Cow Defender (University project, 2001)