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# Ryan S. Overbeck

## Education

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COLUMBIA UNIVERSITY                      New York, NY                      September 2004 – Present

**Ph.D. Candidate in Computer Science**

Expected Graduation Date: August 2009

Research Area: Computer Graphics

Advisor: Ravi Ramamoorthi

Topic: “Accelerated Ray Tracing with Complex Secondary Effects”

**M.S. in Computer Science, 2006**

GPA: 3.9/4.0

Research Area: Computer Graphics

Advisor: Ravi Ramamoorthi

Topic: “Exploiting Temporal Coherence for Pre-computation Based Rendering”

UNIVERSITY OF ROCHESTER                      Rochester, NY                      September 1994 – May 1998

**B.A. in Physics, 1998**

## Professional Experience

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COLUMBIA UNIVERSITY                      New York, NY                      May 2005 – Present

**Graduate Research Assistant**, Rendering Lab, Department of Computer Science

Supervisor: Ravi Ramamoorthi

- Designed novel rendering algorithms to accelerate ray tracing scenes with complex secondary effects such as soft shadows, reflections, depth of field, and general global illumination.
- Developed new pre-computed radiance transfer methods for interactively editing materials and lighting.
- Created multiple real-time and offline ray tracing systems from the ground up.

INTEL CORPORATION                      Santa Clara, CA                      June 2007 – August 2007

**Graphics Research Intern**

Supervisor: Jim Hurley

- Collaborated with graphics research group to design real-time ray tracing systems for Intel’s current and future highly parallel hardware platforms.

HARVARD-SMITHSONIAN

CENTER FOR ASTROPHYSICS                      Cambridge, MA                      January 2000 – August 2004

**IT Specialist-Programmer**, Chandra X-ray Observatory

Supervisor: Mark Cresitello-Dittmar

- Developed and maintained pipeline tools and libraries for all phases of astrophysical data analysis.
- Worked with a team of 30+ programmers.

UNIVERSITY OF ROCHESTER                      Rochester, NY                      May 1998 – January 2000

**Senior Programmer/Analyst**, Near Infra-red Lab, Department of Physics and Astronomy

Supervisor: Judith Pipher

- Developed and maintained software for infra-red astronomical image analysis and camera control.

## Awards

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**Winner of Intel Fellowship 2008-2009**

## **Publications**

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- R. Overbeck, R. Ramamoorthi, W.R. Mark. *Large Ray Packets for Real-time Whitted Ray Tracing*. IEEE/EG Symposium On Interactive Ray Tracing, 2008.
- R. Overbeck, R. Ramamoorthi, W.R. Mark. *A Real-time Beam Tracer with Application to Exact Soft Shadows*. EG Symposium On Rendering, 2007.
- R. Overbeck, A. Ben-Artzi, R. Ramamoorthi, and E. Grinspun. *Exploiting Temporal Coherence for Incremental All-frequency Relighting*. EG Symposium On Rendering, 2006.
- A. Ben-Artzi, R. Overbeck, and R. Ramamoorthi. *Real-time BRDF Editing in Complex Lighting*. ACM TOG SIGGRAPH, 2006.
- R. Overbeck. *Exploiting Temporal Coherence for Pre-computation Based Rendering*. Master's Thesis, Department of Computer Science, Columbia University, Tech Report #CUCS-025-06. May, 2006.

## **Presentations/Invited Talks**

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- "Adaptive Wavelet Ray Tracing", PhD Fellowship Forum, Intel Corporation, November 2008.
- "Large Ray Packets for Real-time Whitted Ray Tracing", IEEE/EG Symposium On Interactive Ray Tracing, August 2008.
- "A Real-time Beam Tracer with Application to Exact Soft Shadows", EG Symposium On Rendering, June 2007.
- "A Real-time Beam Tracer with Application to Exact Soft Shadows", PDI/Dreamworks, July 2007.
- "Exploiting Temporal Coherence for Incremental All-frequency Relighting", EG Symposium On Rendering, June 2006.

## **Teaching Experience**

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COLUMBIA UNIVERSITY	New York, NY	
COMS 4160, Computer Graphics, Teaching Assistant		Spring 2008
COMS 6160, Visual Appearance Representations for Rendering, Teaching Assistant		Spring 2007

## **Computer Proficiencies**

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**Languages:** C/C++, GLSL, Cg, Perl, Python, Forth, Java, Javascript, SQL, PHP, HTML.

**Operating Systems:** several variants of MS Windows, Solaris, and Linux.

**Major Packages:** BOOST C++, OpenGL, DirectX, MS Visual C++, GNU programming tools.

## **Professional Activities**

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**Technical Papers Committee Member:** IEEE/EG Symposium on Interactive Ray Tracing, 2008.

**Reviewer:** ACM SIGGRAPH 2007-2009, Eurographics Symposium on Rendering 2007-2008, Eurographics Symposium on Parallel Graphics and Visualization 2009.

## **Other Interests**

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Soccer, Squash, Skiing, Hiking, Music.

*References available upon request.*