

HUAMIN WANG

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RESEARCH INTERESTS

Computer graphics, computer animation, computer vision, related numerical and image processing techniques: developing efficient graphics and vision algorithms to generate realistic natural phenomena animations for entertainment and scientific purposes.

EDUCATION

- 2004 – Present Georgia Institute of Technology, Atlanta, GA
Ph.D. in Computer Science (expected, spring 2009)
Ph.D. advisor: Greg Turk
- 2002 – 2004 Stanford University, Stanford, CA
M.S. in Computer Science (degreed conferred 2004)
M.S. advisor: Leo Guibas
- 1998 – 2002 Zhejiang University, Hangzhou, China
B.Eng. in Computer Science with highest honors (Mixed Class)
Thesis topic: Interactive Rendering and Modeling in Collaborative CAD systems

DISSERTATION

“Practical Water Animation using Physics and Image Based methods” *A study of several modeling techniques to produce water animations with efficiency and realism, including: a virtual surface method to represent small scale surface tension at the liquid-solid interface, a General Shallow Wave Equation model to efficiently animate water drops using graphics hardware, and a spatio-temporal reconstruction framework that generates realistic fluid animations from stereo video input. This work explores the possibility of combining video-based reconstruction techniques with physically based animation, illustrating a prosperous trend in natural phenomena modeling by combining computer graphics with computer vision algorithms.*

Advisor: Greg Turk

Committee: Jarek Rossignac, Irfan Essa, C. Karen Liu, Peter J. Mucha

HONORS AND AWARDS

- 2006 – 2007 NVIDIA Fellowship
- 2003 Image Synthesis Rendering Competition, First Prize, Stanford University
- 2001 *Challenging Cup* Undergraduate Research Paper Competition, Second Prize
Zhejiang, China
- 2001 Design Innovation Scholarship, Zhejiang University, China
- 1999 – 2001 Excellent Student Scholarship, Zhejiang University, China
- 1998 Freshman Scholarship, Zhejiang University, China

RESEARCH EXPERIENCE

- 2004 – Present Research assistant, Georgia Institute of Technology, Atlanta, GA
Worked on various research projects in both graphics and vision, including physically based fluid animation, space-time light field rendering, texture and image synthesis.
- Fall 2007 Research Intern, Microsoft Research Asia, Beijing, China
Studied shape deformation techniques and video-based reconstruction algorithms for deformable objects, under the guidance of Dr. Kun Zhou.
- Summer 2007 Research Intern, Microsoft Research, Seattle, WA
Invented algorithms for automatically factorizing one or more images with repeated contents, under the guidance of Dr. Hugues Hoppe.
- Summer 2006 Research Intern, Adobe Systems Incorporated, San Jose, CA
Developed algorithms for efficiently generating small-scale fluid simulations using graphics hardware, supervised by Dr. Gavin Miller.
- 2004 Research assistant, Stanford University, Stanford, CA
Worked on photo-realistic ray tracing methods for rendering complex animations, including human skin, fluid animation, and rigid body fraction, supervised by Prof. Ron Fedkiw.
- 2001 – 2002 Research Assistant, Zhejiang University, Hangzhou, China
Participated in the rendering component of a collaborative CAD system for building interior design, supervised by Prof. Jinxiang Dong.

TEACHING EXPERIENCE

- Spring 2006 Teaching Assistant: Computer Graphics, Georgia Institute of Technology
Graded assignments and exams, held regular office hours and led discussion sessions.
- Spring 2005 Teaching Assistant: Digital Video Special Effects, Georgia Institute of Technology
Held regular office hours, organized laboratory equipment, monitored laboratory work and offered tutorial lectures in OpenCV and Matlab.
- Fall 2004 Teaching Assistant: Computer Graphics, Georgia Institute of Technology
Graded assignments and exams, held regular office hours and led discussion sessions.

PUBLICATIONS

Huamin Wang. 2009. Practical Water Animation Using Physics and Image Based Methods, Ph.D. thesis, Georgia Institute of Technology, 2009.

Miao Liao, Qing Zhang, Huamin Wang, Ruigang Yang and Minglun Gong. 2009. Modeling Deformable Objects from a Single Depth Camera, to appear in proceedings of ICCV 2009 (Oral Presentation).

Huamin Wang, Miao Liao, Qing Zhang, Ruigang Yang and Greg Turk. 2009. Physically Guided Liquid Surface Modeling from Videos, in Proceedings of ACM SIGGRAPH 2009.

Nicolas Ray, Bruno Levy, Huamin Wang, Greg Turk and Bruno Vallet. 2009. Material-Space Texturing. to appear in Computer Graphics Forum 2009.

Huamin Wang, Yonatan Wexler, Eyal Ofek, and Hugues Hoppe. 2008. Factoring Repeated Content Within

and Among Images, in Proceedings of ACM SIGGRAPH 2008 (ACM Transaction on Graphics, vol. 27, no. 3, pp. 1–10, 2008).

Huamin Wang, Gavin Miller, and Greg Turk. 2007. Solving General Shallow Wave Equations on Surfaces, in ACM SIGGRAPH/Eurographics, Symposium on Computer Animation, SCA 2007, August 3–4.

Huamin Wang, Mingxuan Sun, and Ruigang Yang. 2007. Space-Time Light Field Rendering, in IEEE Transactions on Visualization and Computer graphics (TVCG), vol. 13, no. 4, pp. 697–710, 2007.

Huamin Wang, Peter Mucha, and Greg Turk. 2005. Water Drops on Surfaces, in Proceedings of ACM SIGGRAPH 2005 (ACM Transaction on Graphics, vol. 24, no. 3, pp. 921–929, 2005).

Huamin Wang and Ruigang Yang. 2005. Towards Space-Time Light Field Rendering, in ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games, I3D 2005.

ACADEMIC ACTIVITIES

2005 – Present	ACM student member
2006 – present	IEEE student member
2005, 2007	Technical paper reviewer, ACM SIGGRAPH
2007	Reviewer, Computer Graphics International
2006	Paper reviewer, Eurographics
2007	Reviewer, Eurographics Symposium on Rendering
	Reviewer, Computer Graphics Forum

PATENTS

Miller, Gavin S. P., Wang, Huamin. System and Method for Simulating Shallow Wave Effects on Arbitrary Surfaces. United States Patent 20080177519.

Assignee: Adobe Systems Incorporated, Miller, Gavin S. P., Wang, Huamin.

Hoppe, H., Wexler, Y., Ofek, E., and Wang. H. Factoring Repeated Content Within and Among Images, filed on Feb 14, 2008.

Assignee: Microsoft Corporation.

TEACHING INTERESTS

- Introduction to Computing
- Discrete Mathematics
- Computer Graphics
- Advanced Image Synthesis
- Computer Animation
- Video Game Design
- Numerical Analysis
- Computational Photography

REFERENCES

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