

Jonathan B. Su

1508 Pine Grove Way
San Jose, CA 95129

jonathansu@gmail.com
<http://physbam.stanford.edu/~jonsu>

EDUCATION

2006 - 2011

Stanford University, Stanford, CA

Ph.D. in Computer Science

Advised by Prof. Ron Fedkiw

Efficient and Scalable Simulation of Solids and Fluids

My research interests include computer graphics, with a focus on physics-based simulation. I am also interested in parallelization and optimization of simulation for performance critical applications.

2002 - 2006

University of Washington, Seattle, WA

Bachelor of Science in Computer Engineering

Advised by Prof. Richard Anderson

Cumulative GPA: 3.97/4.00, Summa Cum Laude

RESEARCH AND INDUSTRY EXPERIENCE

Research Scientist, *Intel Corporation*, Santa Clara, CA

January 2011 - Present

Working with the Throughput Computing Lab, porting various physics-based simulation algorithms to the latest Intel architectures, both as benchmarks for new hardware as well as to understand what is involved in achieving real-time simulations.

Graduate Research Assistant, *Stanford Computer Science Dept.*, Stanford, CA

June 2006 - Present

Research on developing a high-fidelity multiphysics simulator, with a focus on scalable, efficient, and stable algorithms. Investigating phenomena such as cloth, compressible and incompressible flow, solid-fluid coupling, and rigid bodies, and how MPI, multithreading and scalable algorithms can enhance these simulations.

Graduate Technical Research Intern, *Intel Corporation*, Santa Clara, CA

June 2007 - December 2010

Working with the Throughput Computing Lab, porting various physics-based simulation algorithms to the latest Intel architectures, both as benchmarks for new hardware as well as to understand what is involved in achieving real-time simulations.

Undergraduate Research Assistant, *UW Dept. of Comp. Sci. & Eng.*, Seattle, WA

June 2003 - June 2006

Development of the Classroom Presenter presentation software advised by Prof. Richard Anderson, in collaboration with Microsoft Research's ConferenceXP project. Investigating methods for recognition of annotational marks (circles, underlines, etc.) to extrapolate key points from lecture content. Also, implemented mechanisms for real-time student-instructor interaction using TabletPCs.

Research Intern, *Microsoft Research Asia*, Beijing, China

June 2005 - December 2005

Explored problems in the intersection of graphics and systems, studying z-buffer precision loss considering all operations in the graphics pipeline. The results can be used by systems designers to understand the effective precision their systems will have, as well as by application developers to get a tight estimate of minimum separation distance needed for correct rendering.

PUBLICATIONS

J. Su, R. Sheth, R. Fedkiw. *Energy Conservation for the Simulation of Deformable Bodies*, in press.

J. Su, C. Schroeder, R. Fedkiw. *Energy Stability and Fracture for Frame Rate Rigid Body Simulations*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), edited by Eitan Grinspun and Jessica Hodgins, pp. 155-164 (2009).

N. Kwatra, J. Su, J. Gretarsson, R. Fedkiw. *A Method for Avoiding the Acoustic Time-Step Restriction in Compress-*

ible Flow. Journal of Computational Physics 228, 4146-4161 (2009).

A. Robinson-Mosher, T. Shinar, J. Gretarsson, J. Su, R. Fedkiw. *Two-way Coupling of Fluids to Rigid and Deformable Solids and Shells*, SIGGRAPH 2008, ACM TOG 27, 46.1-46.9 (2008).

A. Selle, J. Su, G. Irving, R. Fedkiw. *Robust High-Resolution Cloth Using Parallelism, History-Based Collisions, and Accurate Friction*, IEEE TVCG 15, 339-350 (2009).

K. Akeley and J. Su. *Minimum Triangle Separation for Correct Z-Buffer Occlusion*. In Proceedings of ACM Siggraph/Eurographics Workshop on Graphics Hardware, pp. 27-30, August 2006.

R. Anderson, R. Anderson, C. Hoyer, C. Prince, J. Su, F. Videon, S. Wolfman. *A Study of Diagrammatic Ink in Lecture*. In Computers and Graphics, 29(4), pp. 480-489, August 2005.

R. Anderson, R. Anderson, C. Hoyer, C. Prince, J. Su, F. Videon, S. Wolfman. *Understanding Digital Ink in Lecture*. In Proceedings of AAAI Fall Symposium 2004 Workshop on Making Pen-Based Interaction Intelligent and Natural, Washington D.C., October 2004.

R. Anderson, C. Hoyer, C. Prince, J. Su, F. Videon, S. Wolfman. *Speech, Ink, and Slides: The Interaction of Content Channels*. In Proceedings of ACM Multimedia 2004, New York, October 2004.

B. Simon, R. Anderson, C. Hoyer, and J. Su. *Preliminary Experiences with a Tablet PC Based System to Support Active Learning in Computer Science Courses*. In Proceedings of the 9th Annual Conference on Innovation and Technology in Computer Science Education, Leeds, UK, June 2004.

TECHNICAL SKILLS

C++/C, Java, C#

Familiar with Perl, Python

Developed in both Windows and Linux

HONORS

- 2006, National Science Foundation Graduate Research Fellowship
- 2006, University of Washington College of Engineering Dean's Medalist
- 2005, Finalist, CRA Outstanding Undergraduate Award
- 2004-06, Barry M. Goldwater National Scholar
- 2003-06, Emerging Leaders in Engineering Scholar, UW College of Engineering
- 2002-05, University of Washington Annual Dean's List
- 2005, Microsoft Technical Scholar, Microsoft Corp.
- 2004, WRF Research Fellowship for Advanced Undergraduates, Washington Research Foundation
- 2004, Microsoft Scholarship, UW Dept. of Computer Science & Engineering
- 2004, Undergraduate Research Travel Grant to attend ITiCSE 2004 in Leeds, UK, University of Washington
- 2003, Mary Gates Undergraduate Research Training Grant, University of Washington
- 2003, Honors Program Scholarship (top 2 students in Natural Sciences), UW Honors
- 2002-06, NASA Space Grant Scholarship, Washington Space Grant Consortium
- 2002-06, National Merit Scholarship
- 2002-06, Robert C. Byrd Honors Scholarship
- 2002-06, Washington State Scholar
- 2002-04, University of Washington Undergraduate Scholar
- University of Washington Honors Program
- Elected to Eta Kappa Nu, Tau Beta Pi, and Golden Key honor societies

TEACHING

Teaching Assistant Winter 2011, *CS 154, Introduction to Automata and Complexity Theory*, Stanford University.

Teaching Assistant Fall 2009, *CS 205A, Introduction to Numerical Analysis*, Stanford University.

Teaching Assistant Spring 2006, *CSE 457, Introduction to Computer Graphics*, University of Washington.

SERVICE

Chair (2005-06), **Vice-Chair** (2004-05), *University of Washington Chapter of the ACM*

Tutor for programming and math courses (2004-present), *UW Women in Science and Engineering*

Tutor for programming courses (2004), *NASA Space Grant program*

Volunteer (2002-present), *UW Dept. of Comp. Sci. & Eng.*

PERSONAL

United States citizen.

Born May 16, 1985 in Memphis, Tennessee.