Nipun Kwatra +1-650-619-5898
physbam.stanford.edu/~kwatra *kwatra@graphics.stanford.edu*

Research Interests

Physically based simulation with focus on computational fluid dynamics and solid mechanics. Recent work includes development of algorithms for compressible flow, solid-fluid coupling, incompressible flow and deformable solid simulation.

Education

Stanford University, GPA 4.007/4.0 — Stanford, CA
Ph.D, Computer Science — Sep. 2006 - Present

Georgia Institute of Technology, GPA 4.0/4.0 — Atlanta, GA
M.S., Computer Science — Aug. 2004 - May 2006

Indian Institute of Technology, GPA 8.93/10 — Delhi, India
B.Tech., Computer Science — Jul. 2000 - May 2004

Work Experience

Google Inc. — Mountain View, CA
Summer Intern — Jun. 2010 - Sep. 2010
Worked in the Android team on camera and media framework.

Stanford University — Stanford, CA
Graduate Research Assistant — Sep. 2006-Sep. 2007, Jan. 2008-Present
Developed a semi-implicit method for compressible flow simulation and extended it for implicit solid-compressible flow coupling. Worked on asynchronous time evolution for deformable solids and high resolution fluid simulation techniques to simulate small scale phenomena like spray and foam.

Stanford University — Stanford, CA
Teaching Assistant — Sep. 2007 - Dec. 2007
Course assistant for Mathematical Methods for Computer Vision, Robotics, and Graphics.

University of North Carolina — Chapel Hill, NC
Summer Intern — Summer 2006
Worked on interaction of articulated characters with fluids.

Georgia Institute of Technology — Atlanta, GA
Graduate Research Assistant — Aug. 2004 - May 2006
Did research in motion capture and physical simulation. Developed a finger tracking application and a system for document tracking.

INRIA Rhône-Alpes — Grenoble, France
Summer Intern — Summer 2003
Analyzed the performance of various supervised and semi-supervised learning techniques on the problem of classifying images according to their indoor or outdoor location, given a small set of training images taken at each location.

Publications

C. Schroeder, N. Kwatra, W. Zheng, R. Fedkiw, "Asynchronous Evolution for Implicit Time Integration," Pacific Graphics, 2011.

J.T. Grétarsson, N. Kwatra and R. Fedkiw, "Numerically Stable Fluid-Structure Interactions Between Compressible Flow and Solid Structures," Journal of Computational Physics, Vol. 230, Issue 8, 3062-3084, 2011.

N. Kwatra, J.T. Grétarsson and R. Fedkiw, "Practical Animation of Compressible Flow for Shock Waves and Related Phenomena," SCA 2010.

N. Kwatra, C. Wojtan, M. Carlson, I. Essa, P.J. Mucha and G. Turk, "Fluid Simulation with Articulated Bodies," IEEE TVCG, Vol. 16, No. 1, 2010.

N. Kwatra, J. Su, J. Gretarsson and R. Fedkiw, "A Method for Avoiding the Acoustic Time Step Restriction in Compressible Flow," Journal of Computational Physics, Vol. 228, Issue 11, 4146-4161, 2009.

F. Losasso, J.O. Talton, N. Kwatra, R. Fedkiw, "Two-way Coupled SPH and Particle Level Set Fluid Simulation," IEEE TVCG, Vol. 14, No. 4, 2008.

V. Kwatra, D. Adalsteinsson, T. Kim, N. Kwatra, M. Carlson, M. Lin, "Texturing Fluids," IEEE TVCG, Vol. 13, No. 5, 2007.

V. Kwatra, D. Adalsteinsson, N. Kwatra, M. Carlson, M. Lin, "Texturing Fluids," In *Technical Sketches* Program, ACM SIGGRAPH 2006.

V. Kwatra, I. Essa, A. Bobick, and N. Kwatra, "Texture Optimization for Example-based Synthesis," Proc. ACM Transactions on Graphics, SIGGRAPH 2005, 795-802, August 2005.

D. Mahajan, N. Kwatra, S. Jain, P. Kalra, and S. Banerjee, "A Framework for Activity Recognition and Detection of Unusual Activities," Proc. Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP 2004), December 16-18, 2004.

Academic Awards

Bronze medal in the 31^{st}International Physics Olympiad'2000, Leicester, England.

Gold Medal in the National Physics Olympiad'2000, Mumbai, India.

Institute Merit Award for being among the top 3 in the Computer Science and Engineering Department, IIT Delhi, in Fall 2003, Spring 2003, Fall 2002, Fall 2001 and Fall 2000.

INRIA-IIT scholarship for the year 2003.

Secured all India rank 56 in JEE 2000 for admission to the Indian Institutes of Technology among 150,000 aspirants.

Secured all India rank 1 in CET 2000 for entrance to Panjab Engineering College among approximately 30,000 aspirants.

Software and Hardware Skills and Experience

Language Skills : *Fluent:* C++, C, Python. *Experience:* MATLAB, JAVA, Perl, SML

OS Skills : Linux, WinXP/Vista, Mac OS X, Solaris