Yuting Ye

CONTACT INFORMATION

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RESEARCH INTERESTS

Physics-based simulation and motion control, hand manipulation, motion planning, motion retargeting, optimal control algorithms, numerical optimization, dimension and model reduction, performance capture, machine learning.

EDUCATION

Georgia Institute of Technology — Atlanta, Georgia, USA
Ph.D. Candidate in Computer Science (GPA 4.0) — Fall 2007 - Fall 2011 (expected)
- Dissertation: "Enhancing Kinematically Controlled Characters with Physically Simulated Responses"
- Advisor: Dr. C. Karen Liu

University of Southern California — Los Angeles, California, USA
Ph.D. student in Computer Science (GPA 4.0) — Fall 2006 - Summer 2007
- Advisor: Dr. C. Karen Liu

University of Virginia — Charlottesville, Virginia, USA
M.CS. in Computer Science (GPA 3.73) — Fall 2004 - Spring 2006
- Master's project: "A Momentum-Based Bipedal Balance Controller"
- Advisor: Dr. David C. Brogan

Peking University — Beijing, China
B.S. in Computer Science (GPA 3.66) — Fall 2000 - Spring 2004
- Bachelor thesis: "A $2D$ Vector Graphics Editing System With Elaborate Rendering"
- Advisor: Dr. Guoping Wang

RESEARCH EXPERIENCES

Georgia Institute of Technology — Atlanta, GA
Graduate Research Assistant, Advisor: Dr. C. Karen Liu — Fall 2007 - present
- Developed a generic framework for synthesizing detailed dexterous object manipulation motions from incomplete motion capture data.
- Developed a generic balance controller to simulate responses of characters following reference motions using a sophisticated optimal control algorithm on a novel abstract dynamic model.
- Developed both linear and nonlinear dimensional reduction techniques for learning and synthesizing responsive behaviors of human characters in a simulated environment.
- Developed a physics-based simulation framework for articulated rigid bodies.
- Developed motion capturing and data post-processing pipelines for both full-body locomotion and close-range hand manipulation tasks.
- Assisted in writing two NIH proposals.

USC Information Sciences Institute (ISI) — Marina del Rey, CA
Research Intern, Advisor: Dr. Stacy Marsella — Summer 2007
- Developed a physics-based simulation and control framework for the SmartBody system. SmartBody is a layered kinematic control system for simulation of conversational behaviors. Incorporation of dynamic effects improved the realism and believability of the system.

University of Southern California — Los Angeles, CA
Graduate Research Assistant, Advisor: Dr. C. Karen Liu — Fall 2006 - Spring 2007
- Developed and integrated a numerical optimization framework with physics-based simulation for high-level controls of virtual characters.

University of Virginia Charlottesville, VA

Graduate Research Assistant, Advisor: Dr. David C. Brogan Spring 2005 - Spring 2006

- Developed a balance controller for articulated characters to counteract unexpected perturbations by regulating the full body angular momentum.
- Developed a hierarchical neural network for learning the dynamics of an articulated structure. The neural network could simplify the system dynamics at different detail levels for efficient online simulations.

Teaching Experiences

Teaching Assistantship

CSCI 101 Fundamentals of Computer Science, USC Fall 2006, Spring 2007

- Designed lab assignments in both C++ and the Alice programming environment, and lectured in the 3-hour lab every two weeks.
- Hosted office hours every week.
- Graded exam papers of about 50 students.

CS 660 Theory of Computation, UVA Spring 2006

- Graded homework assignments and exam papers for about 20 students.

CS 201 Software Development Methods (in Java), UVA Fall 2004 -Spring 2006 (4 terms)

- Designed lab assignments in Java and lectured in the 2-hour lab every week.
- Hosted office hours every week.
- Graded programming assignments of over 200 students.

Guest Lectures

- "Inverse Kinematics", CS 4496: Character Animation, Georgia Tech. Spring 2011
- "3D Rotations", CS 4496: Character Animation, Georgia Tech. Fall 2010
- "Articulated Rigid Body Dynamics", CS 7496: Character Animation, Georgia Tech. Fall 2009
- "Articulated Rigid Body Dynamics", CS 7496: Character Animation, Georgia Tech. Spring 2008

Student Mentorship

(with Dr. C. Karen Liu)

- Sehoon Ha, Ph.D. student, 2011, Landing control for human characters.
- Pradeep Jayaraman, Master student, 2008, Close-range hand manipulation capturing.

Publications

Y. Ye, C. K. Liu. 2010. "Optimal feedback control for character animation using an abstract model". *ACM Transactions on Graphics (SIGGRAPH)* 29(4) Article 74.

Y. Ye and C. K. Liu. 2010. "Synthesis of responsive motion using a dynamic model". *Computer Graphics Forum (Eurographics)* 29(2) Pages 555-562.

S. Jain, **Y. Ye**, C. K. Liu. 2009. "Optimization-based interactive motion synthesis". *ACM Transactions on Graphics (TOG)* 28(1) Article 10.

Y. Ye, C. K. Liu. 2008. "Animating responsive characters with dynamic constraints in near-unactuated coordinates". *ACM Transactions on Graphics (SIGGRAPH Asia)* 27(5) Article 112.

S. Jain, **Y. Ye**, C. K. Liu. 2007. "Optimization-based interactive motion synthesis for virtual characters". In *ACM SIGGRAPH 2007 sketches* Article 39.

Honors and Awards

Third place in Student Research Competition (SRC), ACM SIGGRAPH	2007
Mingde Fellowship, Peking University	2000 - 2004
First class Freshmen Scholarship, Peking University	2000
Rank first over 180,000 in the College Entrance Exam. Guangdong Province, China	2000

Skills

Languages: C/C++, Java, Javascript, LaTeX.
Tools: OpenGL, GLUT, Open Dynamic Engine (ODE), Bullet physics engine, Eigen library, Computational Geometry Algorithms Library (CGAL), Fast Light Toolkit (FLTK), Cocoa, MOSEK, SNOPT, gnuplot.
Softwares: MATLAB, SVN, Mercurial, Autodesk Maya, Adobe Photoshop, Illustrator, and Premiere, Vicon IQ and Blade.
Platforms: Mac OSX, Linux, Windows.

Professional Activities

Reviewer
SIGGRAPH Asia 2009, 2010, 2011
Eurographics 2009, 2010
Computer Graphics International 2010
Motion in Games 2010, 2011

Editor
Papers preview video, SIGGRAPH 2008

Membership
ACM SIGGRAPH student member, since 2006