Chand T. John   Curriculum Vitae

Department of Computer Science
University of Texas at Austin
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https://www.cs.utexas.edu/~chand/

Education

2012	**Ph.D.** Computer Science, Stanford University
2007	**M.S.** Computer Science, Stanford University
2003	**B.S.** Computer Science, *Dean's Honored Graduate,* University of Texas at Austin
2003	**B.S.** in Mathematics (Pure Mathematics), 4.0 GPA University of Texas at Austin

Teaching Experience

Jan 2019 -   Assistant Professor of Instruction
Teaching an expanded CS 302 (CS1-like class for non-majors) course and CS 312 (Introduction to Programming)

Nov 2018   Co-facilitator of Unconscious Bias workshop
BigCommerce, Inc., Austin, Texas
Created a new research-based unconscious bias curriculum for Breaking the Glass, an organization for increasing diversity in the tech industry

Jan-Mar 2016   Instructor of Computer Science
Foothill College, Los Altos Hills, California
Taught introductory Java course, prepared homework assignments, graded and administered all assignments and exams, conducted numerous active learning activities in computer lab classroom with hands-on programming exercises

2014-2015   Stanford Ph.D. Career Strategy Workshops
Advised and led creation of Stanford's first-ever seminar series on the Ph.D.-industry transition; created survey to obtain specific information on students' interests; secured sponsorship from Stanford Computer Forum and Stanford Career Development Center

2011	Stanford Product Management Seminar
	Created Stanford University's first-ever seminar series to teach engineers about product management; secured sponsorship and funds from Stanford Computer Forum and MobileIron Corporation

2008	BioE 485: Modeling and Simulation of Human Movement (1 quarter)
	Stanford University
	Teaching Assistant: advanced graduate course; held office hours to advise students on their class projects

2007	BioE 215: Physics-Based Simulation of Biological Structures (1 quarter)
	Stanford University
	Teaching Assistant: early graduate / advanced undergraduate course; graded assignments involving computer science and physics questions, assisted students with C++ programming for physics-based simulation

2005	CS 103B: Discrete Structures (1 quarter)
	Stanford University
	Teaching Assistant and substitute instructor for two lectures for beginning undergraduate course for computer science majors; held office hours and graded assignments and exams

2005	CS 103A: Discrete Mathematics for Computer Science (1 quarter)
	Stanford University
	Teaching Assistant and substitute instructor for two lectures for beginning undergraduate course for computer science majors; held office hours and graded assignments and exams

Professional Societies

Association for Computing Machinery Special Interest Group on Computer Science Education (ACM SIGCSE)

Advisor to Breaking the Glass (organization for increasing gender diversity in the tech industry), Austin, Texas

IEEE Robotics and Automation Society Technical Committee on Human Movement Understanding (invited as founding member, 2014)

Industry Experience

Oct 2018 -   Principal Robotics Software Engineer (Consultant)
              Verb Surgical, Mountain View, California
              Developing safety system for robotic medical device system

2016-2018   Senior Software Engineer (consulting since July 2017)
              Verb Surgical, Mountain View, California
              Senior engineer on robotic software infrastructure team; created several
              documents and delivered several presentations on robotic software;
              created foundational libraries in C++ for medical robotic device to
              perform high-speed mathematical operations, represent robotic
              components in an object-oriented framework for high-performance
              computing, handle user interaction logic, and manage asynchronous
              communication during real-time execution

2013-2016   Software Engineer
              Honda Research Institute, Mountain View, California
              Created dynamics-based inverse kinematics algorithm for musculoskeletal
              modeling of human motion from motion capture data; applied algorithm to
              create a real-time GUI application quantifying muscular effort during
              performance of manufacturing tasks, presented to Honda manufacturing
              staff; also applied algorithm to vehicle occupant packaging

2012-2013   Founder & Developer
              ZoomCat (Android App)
              Created app for managing tasks, projects, and schedules

2000   Software Engineer
              Bits & Pixels, Inc., Austin, Texas
              Developed search programs in Java for finding code in Web pages

1999   Software Engineer
              Bits & Pixels, Inc., Austin, Texas
              Developed user data storage, encoding and management system in Java

Media

Feb 2017   *ACM Inroads* journal back page comic on computer science education
              https://inroads.acm.org/article.cfm?aid=2914794

Nov 2016   TED-Ed Lessons video on sorting algorithms: >1.9 million views
              https://ed.ted.com/lessons/what-s-the-fastest-way-to-alphabetize-your-bookshelf-chand-john
              https://www.youtube.com/watch?v=WaNLJf8xzC4

Aug 20, 2008   The longest high-fidelity, physics-based musculoskeletal simulation of human walking to date, featured in *Biomedical Beat*, a publication of the National Institutes of Health
https://publications.nigms.nih.gov/biobeat/08-08-20/index.html#1

Winter 2007   Cover image, *Biomedical Computation Review*, a publication of the NIH National Center for Simulation of Biological Structures
http://biomedicalcomputationreview.org/issue-landing/114

Awards

2014-2017   OpenSim Fellowship, in recognition of computational expertise in modeling and simulation of robot and human motion
http://simtk-confluence.stanford.edu:8080/display/OpenSim/OpenSim+Fellows

2009   Summer Bioengineering Conference Semi-Finalist
The American Society of Mechanical Engineers

2008-2009   Achievement Rewards for College Scientists Fellowship

2006-2008   AAAS/Science Program for Excellence in Science
The American Association for the Advancement of Science

2005-2008   NIH (NIGMS) Predoctoral Fellowship in Biocomputation

2003-2004   School of Engineering Fellowship
Stanford University

2003   Dean's Honored Graduate in Computer Science
University of Texas at Austin

2003   Computing Research Association Undergraduate Award Finalist

2003   National Science Foundation Graduate Research Fellowship Honorable Mention

2003   George H. Mitchell Award
University of Texas at Austin

2003   University of Illinois Distinguished Fellowship offer

2003   Membership in National Society of Collegiate Scholars

2003   Tivoli Scholarship

2002	Computing Research Association Undergraduate Award Honorable Mention
2002-2003	National Science Foundation VIGRE grant for mathematics research University of Texas at Austin
2001-2002	Tivoli Scholarship
2000	Barry Goldwater Scholarship nominee University of Texas at Austin

Patent Application

C. T. John, B. Dariush, inventors; Honda Motor Co., Ltd., assignee. System and method for Interactive Vehicle Design using Performance Simulation and Prediction in Execution of Tasks. United States patent application number 14/203453, filed March 10, 2014.

Publications

Scientific Magazine Articles:
- C. T. John. What Value Could Fractals Add to Biomedical Image Analysis? *Biomedical Computation Review* Winter 2017 issue, p. 29.

Journal Papers:
- C. T. John, A. Seth, M. H. Schwartz, S. L. Delp. Contributions of Muscles to Mediolateral Ground Reaction Force over a Range of Walking Speeds. *Journal of Biomechanics* **45**: 2438-2443, 2012.
- C. T. John, F. C. Anderson, J. S. Higginson, S. L. Delp. Stabilisation of Walking by Intrinsic Muscle Properties Revealed in a Three-Dimensional Muscle-Driven Simulation. *Computer Methods in Biomechanics and Biomedical Engineering* 1-12, 2012.
- C. A. Chen, W. Lu, C. T. John, B. A. Hargreaves, S. B. Reeder, S. L. Delp, R. A. Siston, G. E. Gold. Multi-Echo IDEAL-GRE Water-Fat Separation for Rapid Assessment of Cartilage Morphology—Initial Experience. *Radiology* **252**(2): 561-567, 2009.
- S. L. Delp, F. C. Anderson, A. S. Arnold, P. Loan, A. Habib, C. T. John, E. Guendelman, D. G. Thelen. OpenSim: Open-source Software to Create and Analyze Dynamic Simulations of Movement. *IEEE Transactions on Biomedical Engineering* **54**(11): 1940-1950, 2007.
- C. T. John. All Bézier Curves Are Attractors of Iterated Function Systems. *New York Journal of Mathematics* **13**(7): 107-115, 2007.

Book Chapter:
- C. T. John. Visualization by Subdivision: Two Applications for Future Graphics Platforms. In E. John and J. Rubio (eds.), *Unique Chips and Systems*, chapter 9, pp. 239-258, CRC Press, 2008.

Technical Reports:
- C. T. John. Thoughts on Hybrid Systems. The University of Texas at Austin, Department of Computer Sciences, Technical Report CS-TR-03-22, May 14, 2003, 6 pages (supervised by Dr. Jayadev Misra).

Conference Papers:
- C. T. John, B. Dariush. Dynamically Consistent Human Movement Prediction for Interactive Vehicle Occupant Package Design. *3rd International Digital Human Modeling Symposium*, Tokyo, Japan, May 20-22, 2014.
- C. T. John. Visualization by Subdivision: Two Applications for Future Graphics Platforms. *Workshop on Unique Chips and Systems (UCAS-1)*, pages 12-19, Austin, Texas, USA, March 20, 2005.

Conference Presentations:
- C. T. John, F. C. Anderson, E. Guendelman, J. S. Higginson, S. L. Delp. Long-Duration Muscle-Actuated Simulations of Walking at Multiple Speeds. *American Society of Biomechanics 2007*, Stanford, California, USA, August 22-25, 2007.
- C. T. John, F. C. Anderson, E. Guendelman, J. S. Higginson, S. L. Delp. Generating 3D Muscle-Actuated Simulations of Normal and Pathological Walking. *Dynamic Walking III*, Mariehamn, Åland, Finland, June 25-29, 2007.

Conference Abstracts:
- S. R. Hamner, C. T. John, J. S. Higginson, S. L. Delp. Muscle Contributions to Propulsion and Support during Running. *American College of Sports Medicine (ACSM) Annual Meeting*, Seattle, Washington, USA, May 27-30, 2009.
- S. R. Hamner, C. T. John, J. S. Higginson, S. L. Delp. Muscle Contributions to Support and Progression during Running. *Gait and Clinical Movement Analysis Society 2009*, Denver, Colorado, USA, March 10-13, 2009.
- S. R. Hamner, C. T. John, F. C. Anderson, J. S. Higginson, S. L. Delp. Reducing Residual Forces and Moments in a Three-Dimensional Simulation of Running. *North American Congress on Biomechanics 2008*, Ann Arbor, Michigan, USA, August 5-9, 2008.
- F. C. Anderson, E. Guendelman, P. Loan, A. Habib, C. John, A. Arnold, D. Thelen, S. Delp. OpenSim: An Open-Source Platform for Simulating and Analyzing Musculoskeletal Dynamics. *American Society of Biomechanics 2007*, Stanford, California, USA, August 22-25, 2007.
- C. A. Chen, C. T. John, B. A. Hargreaves, S. B. Reeder, S. L. Delp, R. A. Siston, G. E. Gold. Multi-Echo IDEAL-GRE Water-Fat Separation for Rapid Assessment of Cartilage Morphology. *ISMRM-ESMRMB (International Society for Magnetic Resonance in Medicine – European Society for Magnetic Resonance in Medicine and Biology) Joint Annual Meeting*, Berlin, Germany, May 19-25, 2007.

- F. C. Anderson, C. T. John, E. Guendelman, A. S. Arnold, S. L. Delp. SimTrack: Software for Rapidly Generating Muscle-Actuated Simulations of Long-Duration Movement. *2006 International Symposium on Biomedical Engineering*, Taipei, Taiwan, December 14-16, 2006.

Invited Presentations:
- C. T. John. Can computers tell us how to keep people from falling? Selected for presentation at posters-only Opportunity Job Fair, Stanford University School of Engineering, January 28, 2011.
- C. T. John. How can a CS researcher focus their career on biomechanics? Seminar on Human, Avatar, and Robot Motion, Stanford University, January 25, 2011.
- C. T. John. Can mathematics cure all walking disorders? Mathematical & Computational Biology Seminar, Department of Mathematics, UC-Berkeley, December 9, 2009.
- C. T. John. Non-technical speech on human walking research, including passive dynamics, potential energy, kinetic energy, and gravity and their roles in walking and other movements, during the class Dance 139: Liquid Flow, Intermediate Modern Dance, at Stanford University, October 2, 2009.
- C. T. John. Slicer & Simbios. SimTK Tech Meeting, National Center for Physics-Based Simulation of Biological Structures (Simbios), Stanford University, February 12, 2007.
- C. T. John. Generating 3D Muscle-Actuated Simulations of Movement. Manipulation Group Meeting (Directed by Oussama Khatib, PhD), Stanford Robotics Laboratory, Department of Computer Science, Stanford University, September 12, 2006.
- C. T. John. Image Processing with Slicer. Graphics Café, Computer Graphics Laboratory, Department of Computer Science, Stanford University, August 25, 2005.
- C. T. John. Features Added to Slicer Image Editor. NA-MIC Programming Week, Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, June 28, 2005.
- C. T. John. Collaboration between Simbios and NA-MIC. NA-MIC Programming Week, Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, June 28, 2005.

Conference Posters:
- C. T. John, M. D. Fox, M. Q. Liu, M. H. Schwartz, S. L. Delp. Muscle Contributions to Medial-Lateral Acceleration of the Body during Walking. *Proceedings of the American Society of Mechanical Engineers (ASME) 2009 Summer Bioengineering Conference (SBC2009)*, Resort at Squaw Creek, Olympic Valley, CA, June 17-21, 2009.
- S. R. Hamner, C. T. John, S. L. Delp. Muscle Contributions to Propulsion and Support During Running. *Biomedical Computation at Stanford (BCATS)*, Stanford, California, USA, October 25, 2008.

- S. R. Hamner, C. T. John, F. C. Anderson, J. S. Higginson, S. L. Delp. Reducing Residual Forces and Moments in a Three-Dimensional Simulation of Running. *North American Congress on Biomechanics 2008*, Ann Arbor, Michigan, USA, August 5-9, 2008.
- C. T. John, F. C. Anderson, E. Guendelman, J. S. Higginson, S. L. Delp. Rapid Generation of 3D Muscle-Driven Simulations of Human Walking. *Biomedical Computation at Stanford (BCATS)*, Stanford, California, USA, October 27, 2007.
- S. L. Delp, F. C. Anderson, A. S. Arnold, P. Loan, A. Habib, C. T. John, A. Seth, E. Guendelman, D. G. Thelen, J. A. Reinbolt. OpenSim: Open-source Software for Neuromuscular Biomechanics. *Life in Motion Bio-X Symposium 2007*, Stanford, California, USA, October 25, 2007.
- C. T. John, F. C. Anderson, E. Guendelman, A. S. Arnold, S. L. Delp. An Algorithm for Generating Muscle-Actuated Simulations of Long-Duration Movements. *Biomedical Computation at Stanford (BCATS)*, Stanford, California, USA, October 21, 2006.
- C. T. John, S. L. Delp. From Biomedical Images to Geometric Models. *Biomedical Computation at Stanford (BCATS)*, Stanford, California, USA, October 15, 2005.
- C. T. John. Characterization of Quadratic Bézier Splines as Attractors of Iterated Function Systems. *Nonlinear Dynamics and Pattern Formation Conference,* Austin, Texas, USA, June 2000.

Undergraduate Research:
- C. T. John. Subdivision of Plane Curves. Undergraduate Thesis Defense. Supervisor: Chandrajit L. Bajaj, PhD. Second Reader: Sean Keel, PhD. University of Texas at Austin, April 28, 2003.
- C. T. John, M. P. Marder. Cloud Formation: Simulating the Evolution of Water Droplet Populations. Center for Nonlinear Dynamics, Department of Physics, University of Texas at Austin, Austin, TX. 20 pages.

Student/Career Advice Publications:
- C. T. John. *Computer Science for Kids and Adults Too* (comic book), a project aimed at increasing diversity in computer science (2014-Present) https://medium.com/education-innovation/a-comic-book-for-all-of-us-especially-girls-and-women-to-learn-and-enjoy-computer-science-e79c4bf73888#.x2gwjjh05
- C. T. John. *PhorbiDden PhooD: Real Secrets to Mastering the PhD Adventure* (a book of concrete advice for Ph.D. students), 2013. (CafePress, 177 pages)
- Lead Editor of *The Redbook*, 2008-2011, written by graduate students in the Department of Computer Science, Stanford University

Service

Dec 2018   Guest Speaker, Gasquet Mountain School, Crescent City, California
Selected by teacher to speak to sixth- to eighth-grade STEM class about software & careers for the Hour of Code, via Code.org

Nov 2018   Mentor, Breaking the Glass + Charles Schwab Speed Networking for Women in Tech, Austin, Texas
Selected by Breaking the Glass to mentor women in the tech industry

Oct 2018   Mentor, Beth Sadler Means Young Women's Leadership Academy, Austin, Texas
Assisted middle-school students with robotics project for Coding in the Classroom event

Dec 2016   Guest Speaker, Don Callejon School, Santa Clara, California
Selected by teacher to speak to third-grade students about what it means to be a computer scientist and software engineer, via Code.org

Aug 2011   OpenSim Advanced User and Developer Workshop, Stanford University
Trained classroom of users and developers of open-source software for physics-based analysis of human movement

Nov 2009   Volunteer at Biomedical Computation at Stanford Conference
Performed demos for OpenSim (biomechanical simulation) and OpenMM (molecular simulation) software, explained the work of the Simbios center for physics-based simulation of biological structures, helped setup breakfast and lunch

Oct 2009   OpenSim Developers' Workshop, Stanford University
Developed software and presentation to train non-programmers on how to program controllers for human and robot models

Aug 2009   OpenSim Advanced Users' Workshop, Stanford University
Developed a software plug-in for a controller for human/robot models in the open-source package OpenSim and trained researchers to use and develop code within OpenSim to support their research goals

Jan 2009   OpenSim Jamboree II, Stanford University
Updated a controller algorithm inside the OpenSim software package, delivered presentation on running analyses in OpenSim, assisted participants with using OpenSim and developing programs to add to OpenSim to perform their research on movement science

Aug 2008   OpenSim Jamboree, Stanford University
Developed a controller algorithm inside the OpenSim software package,
assisted participants with using OpenSim and developing programs to
plug-in to OpenSim to perform their biomechanical simulation research

2007   OpenSim Workshop
American Society of Biomechanics Conference, Stanford University
Co-hosted the first-ever workshop to train human movement science
researchers to use the open-source OpenSim simulation package

Reviewer Positions

- *Journal of Biomechanics*, 2010
- *SIGGRAPH (ACM Transactions on Graphics)*, 2009
- *Computers & Graphics*, 2008