Jason Chang

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EDUCATION

Massachusetts Institute of Technology (MIT) **Cambridge, MA**
Projected Ph.D. Graduation Date: June 2014 **GPA 5.0/5.0**
Thesis Title: *Probabilistic Modeling of Dynamic, Implicit Shapes*

Massachusetts Institute of Technology (MIT) **Cambridge, MA**
S.M. Electrical Engineering and Computer Science: September 2009 **GPA 5.0/5.0**
Thesis Title: *Extracting Orientation and Scale from Smoothly Varying Textures with Application to Segmentation*

University of Illinois at Urbana-Champaign (UIUC) **Urbana-Champaign, IL**
B.S. Electrical Engineering (Highest Honors): May 2007 **Technical GPA 3.97/4.00**

RESEARCH & INDUSTRY EXPERIENCE

Computer Science and Artificial Intelligence Laboratory, MIT (2007-Present) **Cambridge, MA**
Research Assistant (Ph.D.) – Developed sampling algorithms for topology-preserving, implicit shapes and Markov random fields that were 10^5 times faster than previous approaches. Devised a massively parallelizable sampler for Dirichlet Process mixture models with improved convergence and efficiency. Applied samplers to image segmentation, object tracking, video segmentation, and generic clustering problems.

Research Assistant (S.M.) – Designed a new texture measure that explicitly models smooth changes in orientation, scale, contrast, and bias of textures. Applied this measure to perform computer vision tasks such as estimating the radiometric response of a camera and shading/reflectance decomposition of textured images.

State Farm Insurance Company (2013) **Bloomington, IL**
Innovation Team Intern – Developed multiple embedded computer vision algorithms to promote safe driving.

Shell International B.V. (2011) **Rijswijk, Netherlands**
Visiting Scientist – Formulated a probabilistic model for unsupervised statistical inference of seismic images. Corrected current supervised techniques to produce more reliable results.

Coordinated Science Laboratory, UIUC (2006-2007) **Urbana-Champaign, IL**
Research Assistant – Collaborated to develop decentralized detection schemes in distributed networks.

Motorola Inc. (2004-2007) **Libertyville & Deer Park, IL**
Mobile Devices Intern (2007) – Corrected drivers on the platform-level for Linux-Java phones. Automated current measurements and hardware testing, saving over 800 engineering hours per year.

Telematics Intern (2004-2005) – Performed extensive mechanical, electrical, and environmental testing. Redesigned current circuits to create more efficient and less costly boards. Designed programs to automate phone calls and control power. Created a test procedure to mimic all possible scenarios to ensure thorough debugging.

TEACHING EXPERIENCE

Electrical Engineering and Computer Science Department, MIT (2008-2011) **Cambridge, MA**
Undergraduate Research Supervisor (2011-2013) – Advised 2 undergraduates in their research projects.

Teaching Assistant (2011) – Prepared and gave lectures 7 times a week for 6.003, Signals and Systems. Received the highest teacher rating out of 6 instructors for the class.

Graduate Grader (2008) – Grade homework and help students in 6.438, Algorithms for Inference and Estimation

Electrical and Computer Engineering Department, UIUC (2006-2007) **Urbana-Champaign, IL**
Teaching Assistant – Held weekly office hours to help students taking Introduction to Electromagnetic Fields.

College of Engineering, UIUC (2005-2007) **Urbana-Champaign, IL**
Engineering Learning Assistant – Taught an introductory orientation course to incoming engineering freshmen.

LEADERSHIP

New House Undergraduate Residence, MIT (2009-Present) **Cambridge, MA**
Graduate Resident Tutor – Aided students in their college transition academically and socially. Planned biweekly study breaks and semester trips.

CSAIL Computer Vision Group, MIT (2011-Present) **Cambridge, MA**
Webmaster – Designed and maintained a website with dynamic user profiles and events.

EECS Graduate Student Association, MIT (2008-2011) **Cambridge, MA**
Advisor (2011) – Oversaw the association and provided advice in planning events and connecting with students.

Webmaster (2009-2010) – Redesigned the website to include an RSVP system, news updates, and photo albums.

Orientation Chair (2008) – Organized Visit Day for prospective students and orientation for incoming students.

Sidney-Pacific Graduate Residence, MIT (2008-2009) **Cambridge, MA**
Hall Counselor – Planned activities to build camaraderie within the community.

Engineering Open House, UIUC (2004-2007) **Urbana-Champaign, IL**

Director (2006-2007) – Led the committee of twenty students in planning the largest student-run event on campus. Attracted over 30,000 visitors from all over the world to see engineering at UIUC. Raised over $60,000 to sponsor what was quoted by the College Deans as "the best EOH in 87 years."

Exhibits Director (2005-2006) – Managed 150 student exhibits participating in EOH, acting as the liaison between students and safety officials. Allocated and distributed $20,000 in funding to the student exhibits.

Social Director (2004-2005) – Planned team-building activities for the EOH Central Committee. Organized the entertainment tent which included student performances and food.

Engineering and Robotics, UIUC (2004-2007) **Urbana-Champaign, IL**

Advisor & Electrical Lead (2006-2007) – Directed group from a technical standpoint through the planning, constructing, and testing phases. Designed all hardware and software to control the robot.

President & Founder (2004-2006) – Led a group of ten students in designing and building a remote controlled robot for an annual competition. Obtained over $18,000 in corporate funding to support the organization.

Eta Kappa Nu Honors Society, UIUC (2004-2007) **Urbana-Champaign, IL**

Tutor & Member – Held weekly tutoring sessions for multiple undergraduate ECE classes

HONORS & AWARDS

MIT Energy Initiatives Fellow (2011-2012)	Cambridge, MA
Siebel Scholar (2008-2009)	Cambridge, MA
Mathworks Fellowship Recipient (2007-2008)	Cambridge, MA
Engineering Highest Honor – Knight of St. Patrick (2007)	Urbana-Champaign, IL
Timothy N. Trick Leadership Award (2007)	Urbana-Champaign, IL
International Engineering Consortium's William L. Everitt Award of Excellence (2007)	Urbana-Champaign, IL
Edward C. Jordan Award of Excellence in Communications Research (2007)	Urbana-Champaign, IL
Office of the Chancellor Golden I Award (2007)	Urbana-Champaign, IL
Vodafone Research Scholarship Recipient (2006-2007)	Urbana-Champaign, IL
Micron Technologies Scholarship Recipient (2005-2007)	Urbana-Champaign, IL
Ellery B. Paine Outstanding Junior Award (2006)	Urbana-Champaign, IL
Accenture Outstanding Junior Award (2005)	Urbana-Champaign, IL

PUBLICATIONS

J. Chang, and J. W. Fisher III, "Parallel Sampling of DP Mixture Models using Sub-Cluster Splits", Neural Information Processing Systems, Lake Tahoe, UT, USA, Dec. 5 - 8, 2013.

J. Chang, and J. W. Fisher III, "Topology-Constrained Layered Tracking with Latent Flow", IEEE International Conference on Computer Vision, Sydney, Australia, Dec. 1 - 8, 2013.

J. Chang, D. Wei, and J. W. Fisher III, "A Video Representation Using Temporal Superpixels", IEEE Computer Vision and Pattern Recognition, Portland, OR, USA, June 23 - 28, 2013.

J. Chang and J. W. Fisher III, "Efficient Topology-Controlled Sampling of Implicit Shapes", IEEE International Conference on Image Processing, Orlando, FL, USA, Sept 30 - Oct 3, 2012.

J. Chang and J. W. Fisher III, "Efficient MCMC Sampling with Implicit Shape Representations", IEEE Computer Vision and Pattern Recognition, Colorado Springs, CO, USA, June 20 - June 23, 2011.

J. Chang and J. W. Fisher III, "Analysis of Orientation and Scale in Smoothly Varying Textures", IEEE International Conference on Computer Vision, Kyoto, Japan, Sept 27 - Oct 4, 2009.

J. Chang, "Extracting Orientation and Scale from Smoothing Varying Textures with Application to Segmentation", S.M. Thesis. MIT, Cambridge, MA Sept. 2009.

INVITED TALKS

Modeling Textures and Computing Statistics of Object Shapes in Images – Boston University Image and Video Computer Group Seminar (2011).

Inferring Relative Seismic Age – Stochastic Systems Group Seminar (2011).

Efficient MCMC Sampling with Implicit Shape Representations – CSAIL Vision Seminar (2011).

Analysis of Smoothly Varying Textures Applied to Segmentation – ATRC Workshop (2009).

Texture Based Image Segmentation – Stochastic Systems Group Seminar (2008).

PATENTS

Efficient MCMC Sampling with Implicit Shape Representations. U.S. Patent Application 13/448,581, filed April 2012. Patent Pending.

SKILLS & ABILITIES

Programming – C/C++, Matlab, OpenCV, Java, PHP, Javascript, MySQL, HTML, Visual Basic

Languages – Native English speaker, Fluent in spoken Mandarin