Thomas S. Stepleton

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Education

Carnegie Mellon University, *Pittsburgh, PA*. Ph.D student, Robotics Institute and Center for the Neural Basis of Cognition, since August 2002. Expected graduation date August 2009.

Swarthmore College, *Swarthmore, PA*. Bachelor of Arts, June 2002. Computer Science major, Philosophy minor, Cognitive Science concentrator.

Thomas Jefferson School, *St. Louis, MO*. Graduated with honors, June 1998.

Honors and Awards

2009, 2005	**IGERT Research Fellowship**, National Science Foundation
2002	**Best paper**, 2002 Usenix LISA system administration conference
	Graduate Research Fellowship, National Science Foundation
	Graduation with high honors, Swarthmore College
	Membership, Phi Beta Kappa
2001	**Membership**, Sigma Xi
1998	**Valedictorian**, Thomas Jefferson School

Professional history

Visiting researcher, **Department of Engineering, Cambridge University**. Completion of doctoral dissertation research, with focus on nonparametric Bayesian probabilistic models, under an NSF IGERT grant (*January to June 2009*).

Research assistant, **Robotics Institute, Carnegie Mellon University**. Current research with Dr. Tai Sing Lee on unsupervised learning of object models and the cognitive basis of visual object learning and representation. (*Fall 2002 to present*)

Intern, **Sony Corporation**. Extensible C++ implementation of FastSLAM simultaneous localization and mapping algorithm at corporate headquarters in Tokyo. System was developed to be platform agnostic; was applied in practice to the Sony AIBO entertainment robot. (*Summer 2003*)

Intern, **Jet Propulsion Laboratory**. Development and integration of simulator software for the 2003 Mars Exploration Rover software development team. The components of my distributed simulation software system communicated with each other over TCP/IP sockets, at times interfacing with actual spacecraft software running on flight computer prototypes. Skills learned include OpenGL programming and socket programming on the VxWorks real-time operating system. (*Summer 2002*)

Researcher, **Swarthmore College Computer Science Department**. Faculty-supervised undergraduate thesis research investigating word representation and instance-learning based real-time robot control. Additional work on nametag-reading component for Swarthmore real-time robot vision system included in paper published in *Machine Vision and Applications* [Springer-Verlag Press]. (*Summer 2000, 2001*)

Volunteer System Administrator, **Swarthmore College Computer Society**. Administration of 800-user shell account system, web and streaming media server, and PC lab client systems, all running Debian Linux. Setup and upkeep of X terminals, Macintosh video and graphics workstations, multimedia hardware, and printers in new computer laboratory. Early author and advocate of SCCS's current mission of becoming a learning and creativity resource. (*Fall 1998 - Spring 2002*)

Teaching activity

Teaching assistant, **School of Computer Science, Carnegie Mellon University**. 16-x62: Introduction to Mobile Robot Programming (*Fall 2004*). 15-212: Principles of Programming (*Spring 2007*).

Undergraduate research mentor, **School of Computer Science, Carnegie Mellon University**. Supervised Daniel Dewey in research and development of software for a computer-based Braille writing tutor system for developing communities (*Summer 2007*).

Publications

T. Stepleton, Z. Ghahramani, G. Gordon, T. S. Lee, "The Block Diagonal Infinite Hidden Markov Model". Twelfth International Conference on Artificial Intelligence and Statistics, April 2009. (*Oral presentation*)

N. Kalra, T. Lauwers, D. Dewey, T. Stepleton, M. B. Dias, "Design of a Braille Writing Tutor to Combat Illiteracy". *Information Systems Frontiers*, in press.

T.S. Lee, T. Stepleton, B. Potetz, J. Samonds, "Neural Coding of Scene Statistics for Surface and Object Inference". In *Object Categorization: Perspectives from Human and Machine Vision*, edited by S. Dickenson, A. Leonardis, B. Schiele, M. Tarr. Cambridge University Press, 2008.

A. Stein, T. Stepleton, M. Hebert, "Towards Unsupervised Whole Object Segmentation: Combining Automated Matting with Boundary Detection". IEEE Computer Society Conference on Computer Vision and Pattern Recognition, June 2008.

T. Lauwers, N. Kalra, D. Dewey, T. Stepleton, M. B. Dias, "Iterative Design of a Braille Writing Tutor to Combat Illiteracy". IEEE/ACM International Conference on Information and Communications Technology and Development, December 2007. (*Presenting author at oral presentation*)

T. Stepleton, "Predicting and Evaluating the Power of Shared Features". Workshop on Empirical Evaluation Methods in Computer Vision, June 2005. (*Oral presentation*)

T. Stepleton, T. S. Lee, "Using Co-occurrence and Segmentation to Learn Feature-based Object Models from Video". *WACV 2005*, January 2005.

B. Maxwell, N. Fairfield, N. Johnson, P. Malla, P. Dickson, S. Kim, S. Wojtkowski, T. Stepleton, "A Real-Time Vision Module for Interactive Perceptual Agents". *Machine Vision and Applications*, 14:72-82, 2003.

T. Stepleton, "Work-Augmented Laziness with the Los Task Request System". *Proceedings of the 16th Usenix Systems Administration Conference*, 1-12, November 2002. (*Oral presentation, best paper award*)