

Todd Hester

CONTACT INFORMATION	Department of Computer Science The University of Texas at Austin 1 University Station C0500 Austin, TX 78712	Voice: (512) 232-1874 E-mail: todd@cs.utexas.edu WWW: www.cs.utexas.edu/~todd/
RESEARCH INTERESTS	Robotics: Robot soccer, Localization, Biped Locomotion Reinforcement Learning: Model-Based Reinforcement Learning, Exploration	
EDUCATION	The University of Texas at Austin , Austin, TX USA Ph.D., Department of Computer Science (current student) <ul style="list-style-type: none">• Research: Reinforcement Learning and Robotics• Advisor: Professor Peter Stone• Area of Study: Artificial Intelligence Northeastern University , Boston, MA USA B.S., Computer Engineering, April 2005 <ul style="list-style-type: none">• <i>Summa cum Laude</i>, with Honors• Capstone Design Project: Portable Muscle Oxygenation Detector	
AWARDS AND HONORS	The University of Texas at Austin <ul style="list-style-type: none">• Department of Computer Science Outstanding Teaching Assistant Award, 2009• Microelectronics and Computer Development Graduate Fellowship, 2006-2008 Northeastern University <ul style="list-style-type: none">• Ell Scholarship, 2000-2005• Sears B. Condit Award, 2005• Capstone Design Competition Winner, 2005	
ACADEMIC EXPERIENCE	The University of Texas at Austin , Austin, TX USA <i>Teaching Assistant</i> <ul style="list-style-type: none">• Fall 2009: CS 393R - Autonomous Robotics (Outstanding TA Award)• Spring 2009: CS 307 - Foundations of Computing <i>Graduate Research Assistant</i>	
ACADEMIC SERVICE	AAMAS 2010 Workshop on Agents in Real-time and Dynamic Environments, Program Committee RoboCup Standard Platform League 2010, Technical Committee RoboCup Standard Platform League 2009, Technical Committee	
PROFESSIONAL EXPERIENCE	Ace Academy , Austin, TX USA <i>Robotics Instructor</i> September 2008 to present <ul style="list-style-type: none">• Taught LEGO Mindstorms Robotics to elementary and middle school students• Taught Animation to elementary school students	

Spaulding Rehabilitation Hospital Motion Analysis Lab, Boston, MA USA

Research Engineer

May 2005 to June 2006

- Collected data for studies using wearable technology to evaluate movement abilities in different patient populations.
- Designed amplification units for use in motor unit recordings.
- Wrote Labview software to collect and view data from motor units.
- Wrote Matlab software to extract features from accelerometers and EMG to be used to predict clinical scores for Parkinsons Disease and stroke populations.
- Used pattern recognition techniques such as artificial neural networks, self-organizing maps, clustering, and principal components analysis to predict clinical scores and help with clinical decision-making.

Motorola, Marlboro, MA USA

Software Support Engineer

June 2004 to December 2004

- Analyzed, reproduced, and debugged customer issues with the BSR64000 broadband cable router.
- Visited customers sites for further debugging of problems.
- Solved issues with a combination of software fixes or configuration changes.
- Helped to architect the next generation broadband cable router design.

Sun Microsystems, Burlington, MA USA

Circuit Design Engineer

June 2003 to December 2003

- Wrote Perl scripts to automate various processes and routines.
- Worked on circuit design and layout for the UltraSparc V.
- Ran back end tools and spice simulations on designs.
- Maintained, tested, and characterized custom latch and flop library.

Air Force Research Laboratory, Hanscom AFB, MA USA

Research Engineer

October 2001 to March 2003

- Worked with another student on a project to build a temperature controller device to drive multiple devices in a hyperspectral imager.
- Programmed 8052 microprocessor and GUI and designed and built the circuits to control the temperatures.
- Designed and fabricated various printed circuit boards for the device.
- Worked on design and programming for multiple stepper motor drives.
- Worked on board layout and programming to interface sensors through USB.

Northeastern University, Boston, MA USA

AutoCAD Instructor

September 2000 to December 2000

- Taught AutoCAD to freshmen engineering design classes.

PUBLICATIONS

Journal Articles

- [1] S. Patel, R. Hughes, T. Hester, J. Stein, M. Akay, J. G. Dy, and P. Bonato, "A novel approach to monitor rehabilitation outcomes in stroke survivors using wearable technology," *Proceedings of the IEEE*, vol. 98, no. 3, 2010. To appear.
- [2] S. Patel, T. Hester, R. Hughes, N. Huggins, A. Flaherty, D. Standaert, J. Growdon, and P. Bonato, "Processing wearable sensor data to optimize deep-brain stimulation," *IEEE Pervasive Computing*, vol. 7, no. 1, pp. 56–61, 2008.

Book Chapters

- [1] P. Stone, M. Quinlan, and T. Hester, “The essence of soccer: Can robots play too?,” in *Soccer and Philosophy*, vol. 51 of *Popular Culture and Philosophy*, Open Court Publishing Company, 2010. To appear.

Refereed Conference Papers

- [1] T. Hester, M. Quinlan, and P. Stone, “Generalized model learning for reinforcement learning on a humanoid robot,” in *IEEE International Conference on Robotics and Automation (ICRA)*, May 2010. To appear.
- [2] S. Kalyanakrishnan, T. Hester, M. Quinlan, Y. Bentor, and P. Stone, “Three humanoid soccer platforms: Comparison and synthesis,” in *Proceedings of the RoboCup International Symposium 2009*, July 2009.
- [3] T. Hester and P. Stone, “Generalized model learning for reinforcement learning in factored domains,” in *The Eighth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2009.
- [4] T. Hester and P. Stone, “Negative information and line observations for monte carlo localization,” in *IEEE International Conference on Robotics and Automation (ICRA)*, May 2008.
- [5] N. K. Jong, T. Hester, and P. Stone, “The utility of temporal abstraction in reinforcement learning,” in *The Seventh International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2008.
- [6] P. Boissy, T. Hester, D. M. Sherrill, H. Corriveau, and P. Bonato, “Monitoring mobility assistive device use in post-stroke patients,” in *29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, 2007.
- [7] S. Patel, T. Hester, R. Hughes, N. Huggins, D. Standaert, A. Flaherty, and P. Bonato, “Using wearable sensors to enhance DBS parameter adjustment for Parkinson’s disease patients through measures of motor response,” in *3rd IEEE/EMBS International Summer School on Medical Devices and Biosensors*, pp. 141–144, 2006.
- [8] T. Hester, D. M. Sherrill, M. Hamel, K. Perreault, P. Boissy, and P. Bonato, “Identification of tasks performed by stroke patients using a mobility assistive device,” in *28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, pp. 1501–1504, 2006.
- [9] P. Boissy, T. Hester, D. M. Sherrill, H. Corriveau, and P. Bonato, “Monitoring mobility assistive device use in patients after stroke,” in *16th Congress of the International Society of Electrophysiology and Kinesiology (ISEK)*, 2006.
- [10] T. Hester, R. Hughes, D. M. Sherrill, S. Patel, N. Huggins, A. Flaherty, and D. Standaert, “Adjusting DBS settings to optimize Parkinson’s control therapy,” in *16th Congress of the International Society of Electrophysiology and Kinesiology (ISEK)*, 2006.
- [11] T. Hester, D. M. Sherrill, P. Bonato, M. Hamel, K. Perreault, and P. Boissy, “Using wearable sensors to analyze the quality of use of mobility assistive devices,” in *Third Annual Workshop on Wearable and Implantable Body Sensor Networks (BSN)*, pp. 127–130, April 2006.

- [12] T. Hester, R. Hughes, D. M. Sherrill, B. Knorr, M. Akay, J. Stein, and P. Bonato, “Using wearable sensors to measure motor abilities following stroke,” in *Third Annual Workshop on Wearable and Implantable Body Sensor Networks (BSN)*, pp. 5–8, April 2006.
- [13] S. Patel, D. Sherrill, R. Hughes, T. Hester, T. Lie-Nemeth, P. Bonato, D. Standaert, and N. Huggins, “Analysis of the severity of dyskinesia in patients with Parkinson’s disease via wearable sensors,” in *Third Annual Workshop on Wearable and Implantable Body Sensor Networks (BSN)*, pp. 123–126, April 2006.

Refereed Workshop Papers

- [1] T. Hester and P. Stone, “An empirical comparison of abstraction in models of Markov Decision Processes,” in *Proceedings of the ICML/UAI/COLT Workshop on Abstraction in Reinforcement Learning*, June 2009.

Technical Reports

- [1] T. Hester, M. Quinlan, P. Stone, and M. Sridharan, “UT Austin Villa 2009: Naos across Texas,” Tech. Rep. UT-AI-TR-09-08, The University of Texas at Austin, Department of Computer Sciences, AI Laboratory, December 2009.
- [2] T. Hester, M. Quinlan, and P. Stone, “UT Austin Villa 2008: Standing on Two Legs,” Tech. Rep. UT-AI-TR-08-8, The University of Texas at Austin, Department of Computer Sciences, AI Laboratory, November 2008.

SOCIETIES Tau Beta Pi
 Eta Kappa Nu
 IEEE Robotics and Automation Society

MISCELLANEOUS Citizenship: US
 Sports: Bowling, Ultimate Frisbee, Kickball
 Games: Poker
 New England Patriots fan