

Thomas F. Kollar

CONTACT INFORMATION	Computer Science and Artificial Intelligence Laboratory Massachusetts Institute of Technology The Stata Center: 32-331 32 Vassar St. Cambridge, MA 02139 USA	Voice: (865) 250-2317 Fax: (617) 258-8682 E-mail: tkollar@csail.mit.edu WWW: http://tkollar.csail.mit.edu/TK
OBJECTIVE	Full-time position starting on September 1, 2011.	
INTERESTS	Machine Learning, Human-Robot Interaction, Grounding Spatial Natural Language	
EDUCATION	MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) , Cambridge, MA USA Ph.D., Electrical Engineering and Computer Science, June 2011 <ul style="list-style-type: none">Title: Learning to Understand Spatial Language for Robotic Navigation and Mobile ManipulationArea of Study: Robotics, Spatial Language Understanding, Human-Robot InteractionCommittee: Nicholas Roy (Adviser), Leslie Kaelbling, Antonio Torralba, Dieter Fox M.S., Electrical Engineering and Computer Science, May 2007 <ul style="list-style-type: none">Title: Optimizing Robot Trajectories using Reinforcement LearningArea of Study: Probabilistic RoboticsAdviser: Professor Nicholas Roy UNIVERSITY OF ROCHESTER , Rochester, NY USA B.S., Computer Science, June 2004 B.A., Mathematics, June 2004 <ul style="list-style-type: none">Minor: Psychology as a Social Science<i>Cum Laude</i> with highest honorsResearch Advisers: Professor Chris Brown and Professor Steven Gonek	
ACADEMIC EXPERIENCE	MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) , Cambridge, MA <i>Research Assistant</i> June 2004 to present <i>Teaching Assistant</i> Fall 2007 <ul style="list-style-type: none">Instructor: Professor Patrick WinstonCourse: Artificial Intelligence (6.034)Instructor for five one-hour tutorials once per weekGraded weekly bi-weekly lab reports, wrote exam questions, graded exam questions <i>Teaching Assistant</i> Spring 2007 <ul style="list-style-type: none">Instructor: Professor Nicholas RoyCourse: Real-Time Systems and Software (16.35)Held office hours, reviewed assignments, and graded bi-weekly assignments. UNIVERSITY OF ROCHESTER , Rochester, NY <i>Undergraduate Researcher and Teaching Assistant</i> September 2002 to May 2004 <ul style="list-style-type: none">Participated in the Undergraduate Robot Research teamWorked to create an hors-d'oeuvres and conference information serving robot that tracked faces, read nametags, understood natural language, spoke to conference attendees and retrieved food when necessaryRoles: Led team direction, organized funding, created robotic behaviors, helped implement visual trackingCourses: Created and lectured in a robotics recitation for an Artificial Intelligence course. <i>Undergraduate Student</i> September 2000 to June 2004	

OAK RIDGE NATIONAL LABORATORY: ENVIRONMENTAL SCIENCE DIVISION, Oak Ridge, TN

Energy Research Undergraduate Laboratory Fellowship (ERULF)

Summer 2001

- Organized and led web-page design
- Designed a web application/database using Cold Fusion and Microsoft Access.
- Developed Java application that dynamically plotted the location of data acquisition sites.

SERVICE
WORK

HRI PIONEERS WORKSHOP AT THE 2011 CONFERENCE ON HRI, Lausanne, Switzerland

General Chair

Fall 2010-Spring 2011

- Wrote grant proposal and received \$26,000 for student funding from the National Science Foundation under grant number 1115939.

MIDDLE EAST EDUCATION THROUGH TECHNOLOGY (MEET), Jerusalem, Israel

Year 3 Program Director and Instructor

Summer 2007-present

- Directed the year 3 instructor team in the preparation of the summer curriculum and projects.
- Instructor for the third-year students in a program that brings Israeli and Palestinian youth together around a curriculum of Computer Science and business.
- Worked on a web application to organize procedures for Nesher, an Israeli concrete company.

JOURNAL
PUBLICATIONS

- Kollar, T. and N. Roy, "Trajectory Optimization using Reinforcement Learning for Map Exploration." *The International Journal of Robotics Research* 27 (2), 175-196, February 2008.

SELECT
CONFERENCE
PUBLICATIONS

- Kollar, T., Tellex, S., Dickerson, S., Walter, M., Banerjee, A., Teller, S. and N. Roy, "Understanding Natural Language Commands for Robotic Navigation and Mobile Manipulation." accepted to the 25th Conference on Artificial Intelligence (AAAI), 2011.
- Kollar, T., Tellex, S. and N. Roy, "Grounding Verbs of Motion in Natural Language Commands to Robots." *Proceedings of the 12th International Symposium on Experimental Robotics (ISER)*, 2010.
- Tellex, S., Kollar, T., Shaw, G., Roy, N. and D. Roy, "Grounding Spatial Language for Video Search." *Proceedings of the Eleventh International Conference on Multimodal Interfaces (ICMI)*, 2010 [**Best Student Paper**].
- Huang, A., Tellex, S., Bachrach, A., Kollar, T., Roy, D. and N. Roy, "Natural Language Command of an Autonomous Micro-Air Vehicle", *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2010.
- Kollar, T., Tellex, S., Roy, D. and N. Roy, "Toward Understanding Natural Language Directions", *Proceedings of 5th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2010.
- Espinace, P., Kollar, T., Soto, A. and N. Roy. "Indoor Scene Recognition Through Object Detection". *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
- Kollar, T. and N. Roy. "Utilizing object-object and object-scene context when planning to find things". *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, 2009.
- Kollar, T. and N. Roy, "Efficient optimization of information-theoretic exploration in SLAM." *Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence (AAAI)*, Physically Grounded AI track. pp. 1369-1375, 2008.
- Brunskill, E., Kollar, T. and N. Roy, "Topological Mapping Using Spectral Clustering and Classification." *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*, pp. 3491-3496, 2007.
- Doshi, F., Brunskill, E., Shkolnik, A., Kollar, T., Rohanimanesh, K., Tedrake, R. and N. Roy, "Collision Detection in Legged Locomotion using Supervised Learning." *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. San Diego, 2007.
- Kollar, T. and N. Roy, "Using Reinforcement Learning to Improve Exploration Trajectories for Error Minimization." *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pp. 3338-3343, 2006.