

CONTACT INFORMATION	Assistant Professor Toyota Technological Institute at Chicago 6045 S. Kenwood Avenue Chicago, IL 60637 USA	Voice: +1 (773) 834-3637 Fax: +1 (773) 357-6970 mwalter@ttic.edu http://ttic.edu/walter
EDUCATION	Massachusetts Institute of Technology Woods Hole Oceanographic Institution Mechanical and Ocean Engineering MIT/WHOI Joint Program in Applied Ocean Science and Engineering Thesis: Sparse Bayesian Information Filters for Localization and Mapping John J. Leonard (chair), Hanumant Singh, Seth Teller	Ph.D. February 2008
	University of Illinois at Urbana-Champaign General Engineering, Robotics and Controls Specialization	B.S. May 2000
APPOINTMENTS	Toyota Technological Institute at Chicago Assistant Professor	November 2014–present
	University of Chicago Department of Computer Science Assistant Professor, part-time	February 2018–present
	Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory Research Scientist	February 2011–November 2014
	Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory Postdoctoral Associate	February 2008–February 2011
ADVISING & MENTORING EXPERIENCE	Advisor, B.S. Student Zachary Robertson University of Chicago, Computational and Applied Mathematics <i>Imitation Learning from Observation</i>	June 2020
	Co-Advisor, M.S. Student Andrea Daniele University of Rome - La Sapienza, Artificial Intelligence and Robotics <i>Learning to Generate Natural Language Instructions for Navigation</i>	January 2017
	Advisor, M.S. Student Hongyuan Mei University of Chicago, Department of Physical Sciences <i>Natural Language Processing with Attention-based Neural Networks</i>	August 2016
	Advisor, M.S. Student Bharat Chandar University of Chicago, Department of Statistics <i>Grasping With Visual and Semantic Features</i>	July 2016

Co-supervisor, MSRP Student Darrell Deo Summer 2010
MIT Summer Research Program (MSRP)
Prototype Vision-based Navigation System for the Visually Impaired

Supervisor, Visiting Student Alejandro Perez January–August 2011
MIT, CSAIL
Anytime Optimal Motion Planning for Manipulation

Supervisor, MSRP Student Alejandro Perez Summer 2010
MIT Summer Research Program (MSRP)
Anytime Optimal Motion Planning

Co-supervisor, M.Eng. Student Yuan Wei June 2009
MIT, EECS
A Perception-Guided Approach to Motion and Manipulation Planning

TEACHING

Self-driving Vehicles: Models and Algorithms for Autonomy (TTIC 31240)
Toyota Technological Institute at Chicago Autumn 2017

Robot Learning and Estimation (TTIC 31170)
Toyota Technological Institute at Chicago Spring 2015, 2017, 2019

Probabilistic Graphical Models (TTIC 31180)
Toyota Technological Institute at Chicago Spring 2016, 2018, 2020

Rapid Robotics: Autonomous Systems with Open Source Software
Massachusetts Institute of Technology Summer 2013, 2014, 2015

Guest Lectures

- Introduction to Machine Learning Summer School, Chicago, June 2018
- Workshop on Natural Language Understanding for Robotics, RoCKIn Camp, January 2014
- Robotics: Science and Systems II, MIT, October 2010
- Robotics: Science and Systems I, MIT, April 2009
- Mobile Autonomous Systems Lab (MASLAB), MIT, January 2009
- Probabilistic Techniques for Mobile Robotics, MIT, October 2008
- Information Filter-based SLAM, Summer School on Simultaneous Localization and Mapping, August 2006

PUBLICATIONS

Manuscripts are available at <http://www.ttic.edu/ripl/publications.php> as well as on Google Scholar ([link](#)).

Journal Articles

- [J1] J. Arkin, D. Park, S. Roy, M. R. Walter, N. Roy, T. M. Howard, and R. Paul, “Multimodal estimation and communication of latent semantic knowledge for robust execution of robot instructions,” *International Journal of Robotics Research*, 2020.

- [J2] J. Zilly, J. Tani, B. Considine, B. Mehta, A. F. Daniele, M. Diaz, G. Bernasconi, C. Ruch, J. Hakenberg, F. Golemo, A. K. Bowser, M. R. Walter, R. Hristov, S. Mallya, E. Frazzoli, A. Censi, and L. Paull, “The AI Driving Olympics at NeurIPS 2018,” *The NeurIPS ‘18 Competition*, pp. 37–68, 2020.
- [J3] C. Landsiedel, V. Rieser, M. R. Walter, and D. Wollherr, “A review of spatial reasoning and interaction for real-world robotics,” *Advanced Robotics*, January 2017.
- [J4] M. R. Walter, M. Antone, E. Chuangsuwanich, A. Correa, R. Davis, L. Fletcher, E. Frazzoli, Y. Friedman, J. Glass, J. P. How, J. H. Jeon, S. Karaman, B. Luders, N. Roy, S. Tellex, and S. Teller, “A situationally-aware voice-commandable robotic forklift working alongside people in unstructured outdoor environments,” *Journal of Field Robotics*, vol. 32, no. 4, pp. 590–628, Jun. 2015.
- [J5] M. R. Walter, S. Hemachandra, B. Homberg, S. Tellex, and S. Teller, “A framework for learning semantic maps from grounded natural language descriptions,” *International Journal of Robotics Research*, vol. 31, no. 9, pp. 1167–1190, August 2014.
- [J6] M. R. Walter, Y. Friedman, M. Antone, and S. Teller, “One-shot visual appearance learning for mobile manipulation,” *International Journal of Robotics Research*, vol. 31, no. 4, pp. 554–567, April 2012.
- [J7] S. Tellex, T. Kollar, S. Dickerson, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy, “Approaching the symbol-grounding problem with probabilistic graphical models,” *AI Magazine*, vol. 32, no. 4, pp. 64–76, December 2011.
- [J8] J. Leonard, J. How, S. Teller, M. Berger, S. Campbell, G. Fiore, L. Fletcher, E. Frazzoli, A. Huang, S. Karaman, O. Koch, Y. Kuwata, D. Moore, E. Olson, S. Peters, J. Teo, R. Truax, M. Walter, D. Barrett, A. Epstein, K. Maheloni, K. Moyer, T. Jones, R. Buckley, M. Antone, R. Galejs, S. Krishnamurthy, and J. Williams, “A perception-driven autonomous urban vehicle,” in M. Buehler, K. Iagnemma, and S. Singh, Eds., ser. Springer Tracts in Advanced Robotics. Berlin, Heidelberg: Springer-Verlag, 2010, vol. 56, ch. 5, pp. 163–230.
- [J9] J. Leonard, J. How, S. Teller, M. Berger, S. Campbell, G. Fiore, L. Fletcher, E. Frazzoli, A. Huang, S. Karaman, O. Koch, Y. Kuwata, D. Moore, E. Olson, S. Peters, J. Teo, R. Truax, M. Walter, D. Barrett, A. Epstein, K. Maheloni, K. Moyer, T. Jones, R. Buckley, M. Antone, R. Galejs, S. Krishnamurthy, and J. Williams, “A perception-driven autonomous urban vehicle,” *Journal of Field Robotics*, vol. 25, no. 10, pp. 727–774, October 2008.
- [J10] M. R. Walter, R. M. Eustice, and J. J. Leonard, “Exactly sparse extended information filters for feature-based SLAM,” *International Journal of Robotics Research*, vol. 26, no. 4, pp. 335–359, April 2007.
- [J11] R. M. Eustice, H. Singh, J. J. Leonard, and M. R. Walter, “Visually mapping the RMS Titanic: Conservative covariance estimates for SLAM information filters,” *International Journal of Robotics Research*, vol. 25, no. 12, pp. 1223–1242, December 2006.

Refereed Conference Publications

- [C1] J. Tani, A. F. Daniele, G. Bernasconi, A. Camus, A. Petrov, A. Courchesne, B. Mehta, R. Suri, T. Zaluska, M. R. Walter, E. Frazzoli, L. Paull, and A. Censi, “Integrated benchmarking and design for reproducible and accessible evaluation of robotic agents,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, October 2020.

- [C2] C. Schaff and M. R. Walter, “Residual policy learning for shared autonomy,” in *Proceedings of Robotics: Science and Systems (RSS)*, Jul. 2020.
- [C3] T. Huynh, M. Maire, and M. R. Walter, “Multigrid neural memory,” in *Proceedings of the International Conference on Machine Learning (ICML)*, Jun. 2020.
- [C4] F. Z. Dai and M. R. Walter, “Maximum expected hitting cost of a Markov decision process and informativeness of rewards,” in *Advances in Neural Information Processing Systems (NeurIPS)*, Vancouver, B.C. Canada, December 2019.
- [C5] S. Patki, E. Fahnestock, T. M. Howard, and M. R. Walter, “Language-guided semantic mapping and mobile manipulation in partially observable environments,” in *Proceedings of the Conference on Robot Learning (CoRL)*, Osaka, Japan, October 2019.
- [C6] Z. Dai and M. R. Walter, “Finite time analysis of potential-based reward shaping,” in *Proceedings of the Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, Montréal, Canada, Jul. 2019.
- [C7] S. Patki, A. F. Daniele, M. R. Walter, and T. M. Howard, “Inferring compact representations for efficient natural language understanding of robot instructions,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2019.
- [C8] C. Schaff, D. Yunis, A. Chakrabarti, and M. R. Walter, “Jointly learning to construct and control agents using deep reinforcement learning,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2019.
- [C9] A. F. Daniele, T. M. Howard, and M. R. Walter, “A multiview approach to learning articulated motion models,” in *Proceedings of the International Symposium of Robotics Research (ISRR)*, December 2017.
- [C10] C. Schaff, D. Yunis, A. Chakrabarti, and M. R. Walter, “Jointly optimizing placement and inference for beacon-based localization,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, B.C. Canada, Sep. 2017.
- [C11] D.-K. Kim and M. R. Walter, “Satellite image-based localization via learned embeddings,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, May 2017.
- [C12] A. F. Daniele, M. Bansal, and M. R. Walter, “Navigational instruction generation as inverse reinforcement learning with neural machine translation,” in *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Vienna, Austria, March 2017.
- [C13] H. Mei, M. Bansal, and M. R. Walter, “Coherent dialogue with attention-based language models,” in *Proceedings of the National Conference on Artificial Intelligence (AAAI)*, San Francisco, CA, February 2017.
- [C14] J. Oh, T. M. Howard, M. R. Walter, D. Barber, M. Zhu, Z. Park, A. Suppe, L. Navarro-Serment, F. Duvallat, A. Boularias, O. Romero, J. Vinokurov, T. Keegan, R. Dean, Craig Lennon, B. Bodt, M. Childers, J. Shi, K. Daniilidis, N. Roy, C. Lebiere, M. Hebert, and A. Stentz, “Integrated intelligence for human-robot teams,” in *Proceedings of the International Symposium on Experimental Robotics (ISER)*, Tokyo, Japan, October 2016.
- [C15] H. Mei, M. Bansal, and M. R. Walter, “What to talk about and how? Selective generation using LSTMs with coarse-to-fine alignment,” in *Proceedings of the Conference of the North American Chapter of the Association for Computational Linguistics — Human Language Technologies (NAACL HLT)*, San Diego, CA, Jun. 2016, pp. 720–730.

- [C16] D. J. Barber, T. M. Howard, and M. R. Walter, “A multimodal interface for real-time soldier-robot teaming,” in *Proceedings of SPIE, Unmanned Systems Technology*, Baltimore, MD, April 2016.
- [C17] H. Mei, M. Bansal, and M. R. Walter, “Listen, attend, and walk: Neural mapping of navigational instructions to action sequences,” in *Proceedings of the National Conference on Artificial Intelligence (AAAI)*, Phoenix, AZ, February 2016, pp. 2772–2778.
- [C18] S. Hemachandra and M. R. Walter, “Information-theoretic dialog to improve spatial-semantic representations,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, October 2015.
- [C19] I. Chung, O. Propp, M. R. Walter, and T. M. Howard, “On the performance of hierarchical distributed correspondence graphs for efficient symbol grounding of robot instructions,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, October 2015.
- [C20] S. Hemachandra, F. Duvallet, T. M. Howard, N. Roy, A. Stentz, and M. R. Walter, “Learning models for following natural language directions in unknown environments,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, May 2015.
- [C21] S. Pillai, M. R. Walter, and S. Teller, “Learning articulated motions from visual demonstrations,” in *Proceedings of Robotics: Science and Systems (RSS)*, Berkeley, CA, Jul. 2014.
- [C22] F. Duvallet, M. R. Walter, T. Howard, S. Hemachandra, J. Oh, S. Teller, N. Roy, and A. Stentz, “Inferring maps and behaviors from natural language instructions,” in *Proceedings of the International Symposium on Experimental Robotics (ISER)*, Marrakech, Morocco, Jun. 2014.
- [C23] S. Hemachandra, M. R. Walter, S. Tellex, and S. Teller, “Learning spatially-semantic representations from natural language descriptions and scene classifications,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, May 2014.
- [C24] M. R. Walter, S. Hemachandra, B. Homberg, S. Tellex, and S. Teller, “Learning semantic maps from natural language descriptions,” in *Proceedings of Robotics: Science and Systems (RSS)*, Berlin, Germany, Jun. 2013.
- [C25] A. Perez, S. Karaman, A. Shkolnik, E. Frazzoli, S. Teller, and M. R. Walter, “Asymptotically-optimal path planning for manipulation using incremental sampling-based algorithms,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, San Francisco, CA, Sep. 2011, pp. 4307–4313.
- [C26] S. Tellex, T. Kollar, S. Dickerson, M. R. Walter, A. G. Banerjee, S. Teller, and N. Roy, “Understanding natural language commands for robotic navigation and mobile manipulation,” in *Proceedings of the National Conference on Artificial Intelligence (AAAI)*, San Francisco, CA, August 2011, pp. 1507–1514.
- [C27] S. Karaman, M. R. Walter, A. Perez, E. Frazzoli, and S. Teller, “Anytime motion planning using the RRT*,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Shanghai, China, May 2011, pp. 1478–1483.
- [C28] M. R. Walter, Y. Friedman, M. Antone, and S. Teller, “Vision-based reacquisition for task-level control,” in *Proceedings of the International Symposium on Experimental Robotics (ISER)*, New Delhi, India, December 2010.

- [C29] M. R. Walter, S. Karaman, E. Frazzoli, and S. Teller, “Closed-loop pallet engagement in unstructured environments,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, October 2010, pp. 5119–5126.
- [C30] S. Teller, M. R. Walter, M. Antone, A. Correa, R. Davis, L. Fletcher, E. Frazzoli, J. Glass, J. P. How, A. S. Huang, J. H. Jeon, S. Karaman, B. Luders, N. Roy, and T. Sainath, “A voice-commandable robotic forklift working alongside humans in minimally-prepared outdoor environments,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Anchorage, AK, May 2010, pp. 526–533.
- [C31] O. Koch, M. R. Walter, A. S. Huang, and S. Teller, “Ground robot navigation using uncalibrated cameras,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Anchorage, AK, May 2010, pp. 2423–2430.
- [C32] A. Correa, M. R. Walter, L. Fletcher, J. Glass, S. Teller, and R. Davis, “Multi-modal interaction with an autonomous forklift,” in *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Osaka, Japan, March 2010, pp. 243–250.
- [C33] A. Bahr, M. R. Walter, and J. J. Leonard, “Consistent cooperative localization,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, 2009, pp. 3415–3422.
- [C34] D. C. Moore, A. S. Huang, M. Walter, E. Olson, L. Fletcher, J. Leonard, and S. Teller, “Simultaneous local and global state estimation for robotic navigation,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, 2009, pp. 3794–3799.
- [C35] A. Shkolnik, M. Walter, and R. Tedrake, “Reachability-guided sampling for planning under differential constraints,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, May 2009, pp. 2859–2865.
- [C36] M. Walter, F. Hover, and J. Leonard, “SLAM for ship hull inspection using exactly sparse extended information filters,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Pasadena, CA, May 2008, pp. 1463–1470.
- [C37] M. Walter, R. Eustice, and J. Leonard, “A provably consistent method for imposing exact sparsity in feature-based SLAM information filters,” in *Proceedings of the International Symposium of Robotics Research (ISRR)*, San Francisco, CA: Springer, October 2005, pp. 214–234.
- [C38] R. Eustice, M. Walter, and J. Leonard, “Sparse extended information filters: Insights into sparsification,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Edmonton, Alberta, Canada, August 2005, pp. 641–648.
- [C39] E. Olson, M. Walter, S. Teller, and J. Leonard, “Single-cluster spectral graph partitioning for robotics applications,” in *Proceedings of Robotics: Science and Systems (RSS)*, Cambridge, MA, Jul. 2005.
- [C40] R. Eustice, H. Singh, J. Leonard, M. Walter, and R. Ballard, “Visually navigating the RMS Titanic with SLAM information filters,” in *Proceedings of Robotics: Science and Systems (RSS)*, Cambridge, MA, Jun. 2005, pp. 57–64.
- [C41] M. Walter and J. Leonard, “An experimental investigation of cooperative SLAM,” in *Proceedings of the IFAC Symposium on Intelligent Autonomous Vehicles (IAV)*, Lisbon, Portugal, Jul. 2004.

Refereed Workshop Publications

- [W1] A. F. Daniele, T. M. Howard, and M. R. Walter, “Learning articulated object models from language and vision,” in *Proceedings of the AAAI Fall Symposium on Natural Communication for Human-Robot Collaboration*, November 2017.
- [W2] A. F. Daniele, M. Bansal, and M. R. Walter, “Natural language generation in the context of providing indoor route instructions,” in *Proceedings Robotics: Science and Systems Workshop on Model Learning for Human-Robot Communication*, Ann Arbor, MI, Jun. 2016.
- [W3] H. Mei, M. Bansal, and M. R. Walter, “Listen, attend, and walk: Neural mapping of navigational instructions to action sequences,” in *Proceedings of Robotics: Science and Systems (RSS) Workshop on Model Learning for Human-Robot Communication*, Rome, Italy, Jul. 2015.
- [W4] S. Hemachandra, M. R. Walter, and S. Teller, “Information theoretic question asking to improve spatial semantic representations,” in *AAAI Fall Symposium on Knowledge, Skill, and Behavior Transfer in Autonomous Robots*, Arlington, VA, November 2014.
- [W5] T. M. Howard, I. Chung, O. Propp, M. R. Walter, and N. Roy, “Efficient natural language interfaces for assistive robots,” in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop on Rehabilitation and Assistive Robotics*, Chicago, IL, Sep. 2014.
- [W6] S. Hemachandra and M. R. Walter, “Learning semantic maps through dialog for a voice-commandable wheelchair,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop on Rehabilitation and Assistive Robotics*, Chicago, IL, Sep. 2014.
- [W7] S. Tellex, P. Thaker, J. Joseph, M. R. Walter, and N. Roy, “Toward learning perceptually grounded word meanings from unaligned parallel data,” in *Proceedings of the NAACL HLT Workshop on Semantic Interpretation in an Actionable Context*, Montréal, Canada, Jun. 2012, pp. 7–14.
- [W8] S. Hemachandra, R. Finman, S. Teller, and M. R. Walter, “Towards enabling a robot to effectively assist people in human-occupied environments,” in *Proceedings of the AAAI Spring Symposium*, Palo Alto, CA, March 2012.
- [W9] A. Perez, S. Karaman, E. Frazzoli, S. Teller, and M. R. Walter, “Asymptotically-optimal path planning for manipulation using incremental sampling-based algorithms,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) PR2 Workshop*, San Francisco, CA, October 2011.
- [W10] S. Tellex, T. Kollar, S. Dickerson, M. R. Walter, A. Banerjee, S. Teller, and N. Roy, “Interpreting robotic mobile manipulation commands expressed in natural language,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) Workshop on Manipulation Under Uncertainty*, Shanghai, China, May 2011.
- [W11] M. R. Walter, Y. Friedman, M. Antone, and S. Teller, “Appearance-based object reacquisition for mobile manipulation,” in *Proceedings of the IEEE Computer Vision and Pattern Recognition Workshops (CVPRW)*, San Francisco, CA, Jun. 2010.
- [W12] S. Karaman, M. R. Walter, E. Frazzoli, and S. Teller, “Closed-loop pallet engagement in an unstructured environment,” in *Proceeding of the IEEE International Conference on Robotics and Automation (ICRA) Workshop on Mobile Manipulation*, Anchorage, AK, May 2010.

INVITED TALKS	<i>Natural Language Learning for Human-Robot Collaboration</i> Conference on Computer and Robot Vision (CRV)	May 2020
	<i>Natural Language Learning for Human-Robot Collaboration</i> DePaul University	May 2020
	<i>Visual Place Recognition for Self-driving Vehicles</i> AutoAI Conference	February 2020
	<i>Visual Place Recognition for Autonomous Driving</i> IEEE Vehicular Technology Society	September 2019
	<i>Joint Optimization over Robot Motion and Control</i> International Workshop on Symbolic-Neural Learning	July 2019
	<i>Natural Language Learning for Human-Robot Collaboration</i> University of Rochester	March 2019
	<i>Visual Place Recognition for Self-Driving Vehicles</i> AutoAI Conference	February 2019
	<i>Natural Language Learning for Human-Robot Collaboration</i> TTIJ Symposium on Computer Science & Smart Vehicles	October 2018
	<i>Language Learning for Control and Collaboration</i> University of Michigan	June 2018
	<i>Jointly Learning to Construct and Control Agents Using Deep Reinforcement Learning</i> Robotics: Science and Systems (RSS) AC Meeting	April 2018
	<i>Natural Language Learning for Human-Robot Collaboration</i> Department of Computer Science, University of Texas at Austin	March 2018
	<i>Visual Place Recognition for Self-Driving Vehicles</i> AutoAI Conference	February 2018
	<i>Natural Language Interaction in Unknown Environments</i> University of Toronto	November 2017
	<i>Natural Language Interaction in Unknown Environments</i> Northeastern University	April 2017
	<i>Learning to Follow (and Give) Natural Language Instructions in Unknown Environments</i> Robotics: Science and Systems (RSS) AC Meeting	April 2017
	<i>Smart Cars: Perception-Driven Autonomous Vehicles</i> Northwestern University	January 2017
	<i>Following Natural Language Instructions in Unknown Environments</i> University of Wisconsin, Madison	March 2016
	<i>Smart Cars: Perception-Driven Autonomous Vehicles</i> Northwestern University	February 2016

- Following Natural Language Directions in Unknown Environments*
 Department of Electrical Engineering and Computer Science, University of Michigan
 February 2016
- Real-Time Analytics Onboard Self-Driving Cars*
 The University of Chicago Booth School of Business August 2015
- Perception-Driven Autonomous Vehicles*
 The University of Chicago Booth School of Business May 2015
- Inferring Cognitive Models of Space and Action from Natural Language*
 Computer Science and Artificial Intelligence Laboratory, MIT August 2014
- Learning Semantic Maps from Natural Language Descriptions*
 Department of Computer Science, Worcester Polytechnic Institute April 2014
- Learning Semantic Maps from Natural Language Descriptions*
 Department of Computer Science, Cornell University April 2014
- Learning Cognitive Models from Machine Vision and Natural Language*
 Department of Computer Science, Northeastern University April 2014
- Learning Cognitive Models from Machine Vision and Natural Language*
 Department of Computer Science, Rutgers University February 2014
- Learning Cognitive Models from Machine Vision and Natural Language*
 Toyota Technological Institute at Chicago February 2014
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 Queensland University of Technology July 2013
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 NASA Ames Research Center July 2013
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 Johns Hopkins University Applied Physics Laboratory June 2013
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 Department of Mechanical Engineering, Texas A&M University May 2013
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 School of Computer Science, University of Massachusetts Amherst February 2013
- Acquiring Rich Models of Objects and Space Through Vision and Natural Language*
 IROS Workshop on Active Semantic Perception October 2012
- Intuitive Interaction with Autonomous Robots in Unstructured Environments*
 Inria Paris-Rocquencourt April 2012
- Intuitive Interaction with Autonomous Robots in Unstructured Environments*
 Inria Sophia Antipolis-Méditerranée April 2012
- Intuitive Interaction with Autonomous Robots in Unstructured Environments*

Vecna Technologies	April 2012
<i>Intuitive Interaction with Autonomous Robots in Unstructured Environments</i> Institute for Aerospace Studies, University of Toronto	February 2012
<i>Persistent Visual Memories for Object Manipulation</i> MIT Intelligence Initiative Workshop	January 2012
<i>Multimodal Interaction with an Autonomous Forklift</i> Spoken Language Systems Group, MIT	May 2010
<i>Voice-Commandable Autonomous Forklift for Operation in Semi-Structured Environments</i> Ecole Polytechnique Fédérale de Lausanne	July 2009

AWARDS

- Best Paper, NIPS Multimodal Machine Learning Workshop, 2015
- Best Application Paper Award Nominee, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2011
- National Defense Science and Engineering Graduate (NDSEG) Fellowship
- Bernt O. Larson Award, University of Illinois at Urbana-Champaign, 2001

PROFESSIONAL ACTIVITIES

Oceanographic Expeditions

- Acoustic mapping of ship hulls with Bluefin HAUV, Panama City, June 2007
- Ocean-acoustic sampling and prediction with two Bluefin-21s and several autonomous surface craft, Focused Acoustic Forecasting (FAF), Pianosa, Italy, July 2005
- Cooperative acoustic navigation and mapping for mine counter measures with two Bluefin-21s, Generic Oceanographic Array Technology Systems (GOATS), Pianosa, Italy, July 2004

Workshop Organization

- Co-organizer (with Ram Vasudevan), Midwest Robotics Workshop (MWRW), 2018
- Organizer, Families@RSS, 2018
- Co-organizer, RSS Workshop on Models and Representations for Human-Robot Communication, 2018
- Co-organizer (with Ram Vasudevan), Midwest Robotics Workshop (MWRW), 2017
- Co-organizer (with Thomas Howard), RSS Workshop on Spatial-Semantic Representations for Robotics (SSRR), 2017
- Co-organizer, Families@RSS, 2017
- Co-organizer (with Jean Oh and Zhou Yu, AAI Fall Symposium on Natural Communication for Human-Robot Collaboration (NCHRC), 2017
- Founder and Organizer, Midwest Robotics Workshop (MWRW), 2016
- Co-organizer (with Thomas Howard), RSS Workshop on Model Learning for Human-Robot Communication, 2016
- Steering Committee Member, Midwest Robotics Workshop (MWRW), 2015–present
- Co-founder and Co-organizer (with Thomas Howard), RSS Workshop on Model Learning for Human-Robot Communication, 2015
- Steering Committee Member, Northeast Robotics Colloquium (NERC), 2012–present
- Co-founder and Co-organizer (with George Konidaris and Stefanie Tellex), Northeast Robotics Colloquium (NERC), 2012

Editorial Activities

- Associate Editor, ACM Transactions on Human-Robot Interaction, 2017, 2018, 2019
- Senior Editor, Advanced Robotics, 2016
- Area Chair, Conference on Robot Learning (CoRL), 2020
- Associate Editor, International Conference on Intelligent Robots and Systems (IROS), 2015, 2016
- Area Chair, International Conference on Learning Representations, 2021
- Associate Editor, International Conference on Robotics and Automation (ICRA), 2016, 2017, 2018, 2019
- Senior Program Committee, National Conference on Artificial Intelligence (AAAI), 2018
- Area Chair, Neural Information Processing Systems (NeurIPS), 2020
- Associate Editor, Robotics and Automation Letters, 2017, 2018, 2019
- Area Chair, Robotics: Science and Systems (RSS), 2017, 2018

Program Committees

- Artificial Intelligence and Statistics (AISTATS), 2017, 2018, 2019, 2020
- Association for Computational Linguistics (ACL), 2017, 2018
- Association for the Advancement of Artificial Intelligence (AAAI), 2018, 2019, 2020
- Empirical Methods in Natural Language Processing (EMNLP), 2016, 2017, 2018, 2019
- European Chapter of the Association for Computational Linguistics (EACL), 2017
- IEEE Workshop on Robot Vision (WoRV), 2013
- International Conference on Machine Learning (ICML), 2018
- International Joint Conference on Artificial Intelligence (IJCAI), 2019
- International Symposium on Experimental Robotics (ISER), 2014
- Language Grounding for Robotics (RoboNLP), 2017
- Neural Information Processing Systems (NIPS), 2016, 2017
- North American Chapter of the Assoc. for Computational Linguistics (NAACL), 2018
- Robotics: Science and Systems (RSS), 2005, 2012, 2013, 2016
- Symbolic-Neural Learning (SNL), 2017

Reviewer

- **Conferences:** Conference on Robot Learning (CoRL); International Conference on Biomedical Robotics and Biomechanics (BioRob); International Conference on Field and Service Robotics (FSR); International Conference on Human-Robot Interaction (HRI); International Conference on Humanoid Robots (HUMANOIDS); International Conference on Intelligent Robots and Systems (IROS); International Conference on Learning Representations (ICLR); International Conference on Robotics and Automation (ICRA); International Offshore and Polar Engineering Conference (ISOPE); National Conference on Artificial Intelligence (AAAI); Neural Information Processing Systems (NeurIPS); Robotics: Science and Systems (RSS).
- **Journals:** Autonomous Robots; IEEE Journal of Oceanic Engineering; IEEE Transactions on Aerospace and Electronic Systems; IEEE Transactions on Robotics; IEEE Transactions on Systems, Man, and Cybernetics; International Journal of Computer Vision; International Journal of Robotics Research; Journal of Translational Engineering in Health and Medicine; Journal of Translational Engineering in Health and Medicine; Robotics and Automation Magazine; Robotics and Autonomous Systems; Speech Communication.

University Service

- Organizer, Industry Affiliates Program, 2019–present
- Member, Faculty Search Committee, 2017, 2018, 2019
- Secretary, Faculty Search Committee, 2016
- Organizer, Young Researcher Seminar Series, 2015–present

Outreach Activities

A subset of community outreach activities:

- Guest Lecturer, [Girls Who Code](#), July 2019
- Guest Lecturer, Kenwood Academy, December 2019
- Exhibitor, Museum of Science and Industry National Robotics Week, April 2019
- Guest Lecturer, [Girls Who Code](#), July 2018
- Exhibitor, Museum of Science and Industry National Robotics Week, April 2018
- Guest Lecturer, [Girls Who Code](#), July 2017
- Exhibitor, Museum of Science and Industry National Robotics Week, April 2017
- Guest Lecturer, [Girls Who Code](#), July 2016
- Guest Lecturer, Chicago City Data User Group, April 2016
- Exhibitor, Cambridge Science Festival, April 2013
- Mentor, [YearUp Boston](#), 2009–2010
- Guest Lecturer, [YearUp Boston](#), November 2009
- Guest Lecturer, Center for Talented Youth (CTY) Robotics Workshop, April 2009

Affiliations

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Robotics and Automation Society (RAS)
- American Association for the Advancement of Science (AAAS)
- Association for Computing Machinery (ACM)