CHRISTOPHER AMATO

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Research Interests

Artificial Intelligence, Robotics, Multi-Agent and Multi-Robot Systems, Reasoning Under Uncertainty, Machine Learning, Decentralized Control, Game Theory, Operations Research

Experience

- **Northeastern University**—Boston, MA — August 2016-present
  Assistant Professor
- **University of New Hampshire (UNH)**—Durham, NH — January 2015-August 2016
  Assistant Professor
- **Massachusetts Institute of Technology (MIT)**—Cambridge, MA — July 2014-January 2015
  Research Scientist
- **Massachusetts Institute of Technology (MIT)**—Cambridge, MA — January 2012-June 2014
  Postdoctoral Associate
- **Aptima, Inc.**—Woburn, MA — May 2010-January 2012
  Research Scientist
- **University of Massachusetts**—Amherst, MA — September 2004-May 2010
  Research Assistant
- **Microsoft Research**—Redmond, WA — May-August 2009
  Research Intern

Education

- **University of Massachusetts**—Amherst, MA — September 2010
  PhD in Computer Science
- **University of Massachusetts**—Amherst, MA — September 2007
  MS in Computer Science
- **University of Massachusetts**—Amherst, MA — September 2004
  BS with double major in Computer Science and Mathematics
- **Tufts University**—Medford, MA — May 1999
  BA with double major in Clinical Psychology and Philosophy

Publications

- **Book**

  1. Frans A. Oliehoek and Christopher Amato. *A Concise Introduction to Decentralized POMDPs*. Springer, July, 2016.

- **Book chapter**

  1. Christopher Amato. Cooperative Decision Making. In *Decision Making Under Uncertainty: Theory and Application*, edited by Mykel J. Kochenderfer. MIT Press, Cambridge, MA, July, 2015.

- **Journal publications**

1. Christopher Amato, George Konidaris, Ariel Anders, Gabriel Cruz, Jonathan P. How and Leslie P. Kaelbling. Policy Search for Multi-Robot Coordination under Uncertainty. To appear in *International Journal of Robotics Research*, 2016
2. Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih-Yuan Liu and Jonathan P. How. Decentralized Control of Multi-Robot Partially Observable Markov Decision Processes using Belief Space Macro-actions. To appear in *International Journal of Robotics Research*, 2016
3. Jilles S. Dibangoye, Christopher Amato, Olivier Buffet and François Charpillet. Optimally Solving Dec-POMDPs as Continuous-State MDPs. *Journal of Artificial Intelligence Research*, vol. 55, pages 443-497, February, 2016.
4. Frans A. Oliehoek, Matthijs T. J. Spaan, Christopher Amato and Shimon Whiteson. Incremental Clustering and Expansion for Faster Optimal Planning in Decentralized POMDPs. *Journal of Artificial Intelligence Research*, vol. 46, pages 449-509, March 2013.
5. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Optimizing Fixed-Size Stochastic Controllers for POMDPs and Decentralized POMDPs. *Journal of Autonomous Agents and Multi-Agent Systems*, vol. 21(3), pages 293-320, November 2010.
6. Daniel S. Bernstein, Christopher Amato, Eric A. Hansen and Shlomo Zilberstein. Policy Iteration for Decentralized Control of Markov Decision Processes. *Journal of Artificial Intelligence Research*, vol. 34, pages 89-132, February 2009.

- **Selective conference publications**

1. Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih-Yuan Liu, Jonathan P. How and John Vian. Graph-based Cross Entropy Method for Solving Multi-Robot Decentralized POMDPs. In *Proceedings of the 2016 IEEE International Conference on Robotics and Automation* (ICRA-16), May 2016. (acceptance rate 35%)
2. Miao Liu, Christopher Amato, J. Daniel Griffith, Emily Anesta and Jonathan P. How. Learning for Decentralized Control of Multiagent Systems in Large Partially Observable Stochastic Environments. In *Proceedings of the Thirtieth AAAI Conference on Artificial Intelligence* (AAAI-16), February 2016. (acceptance rate 26%)
3. Christopher Amato, George Konidaris, Ariel Anders, Gabriel Cruz, Jonathan P. How and Leslie P. Kaelbling. Policy Search for Multi-Robot Coordination under Uncertainty. In *Proceedings of the 2015 Robotics: Science and Systems Conference* (RSS-15), July 2015. (acceptance rate 26%) **[Nominated for best paper at the conference]**
4. Miao Liu, Christopher Amato, Xuejun Liao, Jonathan P. How and Lawrence Carin. Stick-Breaking Policy Learning in Decentralized POMDPs. In *Proceedings of the Twenty-Fourth International Joint Conference on Artificial Intelligence* (IJCAI-15), July 2015. (acceptance rate 29%)
5. Christopher Amato, George D. Konidaris, Gabriel Cruz, Christopher Maynor, Jonathan P. How and Leslie P. Kaelbling. Planning for Decentralized Control of Multiple Robots Under Uncertainty. In *Proceedings of the 2015 IEEE International Conference on Robotics and Automation* (ICRA-15), May 2015. (acceptance rate 41%)
6. Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato and Jonathan P. How. Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions. In *Proceedings of the 2015 IEEE International Conference on Robotics and Automation* (ICRA-15), May 2015. (acceptance rate 41%)
7. Christopher Amato and Frans A. Oliehoek. Scalable Planning and Learning for Multiagent POMDPs. In *Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence* (AAAI-15), January 2015. (acceptance rate 27%)

8. Christopher Amato, George D. Konidaris and Leslie P. Kaelbling. Planning with Macro-Actions in Decentralized POMDPs. In *Proceedings of the Thirteenth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-14), May 2014. (acceptance rate 24%)
9. Jilles S. Dibangoye, Christopher Amato, Olivier Buffet and François Charpillet. Exploiting Separability in Multi-Agent Planning with Continuous-State MDPs. In *Proceedings of the Thirteenth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-14), May 2014. (acceptance rate 24%) **[Won best paper at the conference]**
10. Christopher Amato, Girish Chowdhary, Alborz Geramifard, Nazim Kemal Ure and Mykel J. Kochenderfer. Decentralized Control of Partially Observable Markov Decision Processes. In *Proceedings of the Fifty-Second IEEE Conference on Decision and Control* (CDC-13), December 2013. (invited paper)
11. Jilles S. Dibangoye, Christopher Amato, Olivier Buffet and François Charpillet. Optimally Solving Dec-POMDPs as Continuous-State MDPs. In *Proceedings of the Twenty-Third International Joint Conference on Artificial Intelligence* (IJCAI-13), August 2013. (oral presentation, acceptance rate 13%)
12. Jilles S. Dibangoye, Christopher Amato, Arnaud Doniec and François Charpillet. Producing Efficient Error-bounded Solutions for Transition Independent Decentralized MDPs. In *Proceedings of the Twelfth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-13), May 2013. (acceptance rate 22%)
13. Jilles S. Dibangoye, Christopher Amato and Arnaud Doniec. Scaling Up Decentralized MDPs Through Heuristic Search. In *Proceedings of the Twenty-Eighth Conference on Uncertainty in Artificial Intelligence* (UAI-12), August 2012. (acceptance rate 31%)
14. Komal Kapoor, Christopher Amato, Nisheeth Srivastava and Paul Schrater. Using POMDPs to Control an Accuracy-Processing Time Tradeoff in Video Surveillance. In *Proceedings of the Twenty-Fourth Annual Conference on Innovative Applications of Artificial Intelligence* (IAAI-12), July 2012. (unknown acceptance rate)
15. Pradeep Varakantham, Nathan Schurr, Alan Carlin and Christopher Amato. Decision Support in Organizations: A Case for OrgPOMDPs. In *Proceedings of the Tenth IEEE/WIC/ACM International Conference on Intelligent Agent Technology* (IAT-11), August 2011. (acceptance rate 21%)
16. Frans A. Oliehoek, Matthijs T. J. Spaan and Christopher Amato. Scaling Up Optimal Heuristic Search in Dec-POMDPs via Incremental Expansion. In *Proceedings of the Twenty-Second International Joint Conference on Artificial Intelligence* (IJCAI-11), July 2011. (acceptance rate 17%)
17. Christopher Amato, Blai Bonet and Shlomo Zilberstein. Finite-State Controllers Based on Mealy Machines for Centralized and Decentralized POMDPs. In *Proceedings of the Twenty-Fourth National Conference on Artificial Intelligence* (AAAI-10) July 2010. (acceptance rate 27%)
18. Christopher Amato and Guy Shani. High-level Reinforcement Learning in Strategy Games. In *Proceedings of the Ninth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-10), May 2010. (acceptance rate 24%)
19. Frans A. Oliehoek, Matthijs T. J. Spaan, Jilles S. Dibangoye and Christopher Amato. Solving Identical Payoff Bayesian Games with Heuristic Search. In *Proceedings of the Ninth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-10), May 2010. (acceptance rate 24%)
20. Christopher Amato, Jilles S. Dibangoye and Shlomo Zilberstein. Incremental Policy Generation for Finite-Horizon DEC-POMDPs. In *Proceedings of the Nineteenth International Conference on Automated Planning and Scheduling* (ICAPS-09), September 2009. (acceptance rate 34%)
21. Christopher Amato and Shlomo Zilberstein. Achieving Goals in Decentralized POMDPs. In *Proceedings of the Eighth International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-09), May 2009. (acceptance rate 22%)

22. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Optimizing Memory-Bounded Controllers for Decentralized POMDPs. In *Proceedings of the Twenty-Third Conference on Uncertainty in Artificial Intelligence* (UAI-07), July 2007. (acceptance rate 32%)
23. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Solving POMDPs Using Quadratically Constrained Linear Programs. In *Proceedings of the Twentieth International Joint Conference on Artificial Intelligence* (IJCAI-07), January 2007. (acceptance rate 35%)

- **Other publications**
  1. Shayegan Omidshafiei, Ali-akbar Agha-mohammadi, Christopher Amato, Shih-Yuan Liu, Jonathan How and John Vian. Health-Aware Multi-UAV Planning using Decentralized Partially Observable Semi-Markov Decision Processes. In *Proceedings of AIAA Infotech @ Aerospace, AIAA Science and Technology Forum and Exposition*, January 2016.
  2. Miao Liu, Christopher Amato, Xuejun Liao, Lawrence Carin and Jonathan P. How. Policy Based Reinforcement Learning in DEC-POMDPs with Bayesian Nonparametrics. In *Proceedings of the Workshop on Learning, Inference and Control of Multi-Agent Systems* at the Twenty-Ninth Annual Conference on Neural Information Processing Systems (NIPS-15), December 2015. **[Won best poster at the workshop]**
  3. Miao Liu, Christopher Amato, Emily Anesta, John D. Griffith and Jonathan P. How. Learning for Multiagent Decentralized Control in Large Partially Observable Stochastic Environments. In *Proceedings of the Second Multidisciplinary Conference on Reinforcement Learning and Decision Making* (RLDM-15), June 2015.
  4. Christopher Amato, George Konidaris, Jonathan P. How and Leslie P. Kaelbling. Decentralized Decision-Making Under Uncertainty for Multi-Robot Teams. In *Proceedings of the Future of Multiple Robot Research and its Multiple Identities* at the International Conference on Intelligent Robots and Systems (IROS-14), September 2014.
  5. Christopher Amato, George Konidaris, Jonathan P. How and Leslie P. Kaelbling. Combined Planning Under Uncertainty for Communication and Control in Multi-Robot Teams. In *Proceedings of the Workshop on Communication-aware Robotics: New Tools for Multi-Robot Networks, Autonomous Vehicles, and Localization* (CarNet) at Robotics: Science and Systems Conference, July 2014.
  6. Ali-akbar Agha-mohammadi, Shayegan Omidshafiei, Christopher Amato and Jonathan P. How. Graph-Based Planning to Solve Multi-Agent POMDPs. In *Proceedings of the Workshop on Distributed Control and Estimation for Robotic Vehicle Networks* at Robotics: Science and Systems Conference (RSS-14), July 2014.
  7. Christopher Amato, George D. Konidaris, Gabriel Cruz, Christopher Maynor, Jonathan P. How, Leslie P. Kaelbling. Planning for Decentralized Control of Multiple Robots Under Uncertainty. In *Proceedings of the Workshop on Planning and Robotics* (PlanRob) at the Twenty-Fourth International Conference on Automated Planning and Scheduling (ICAPS-14), June 2014.
  8. Frans A. Oliehoek and Christopher Amato. Best Response Bayesian Reinforcement Learning for Multiagent Systems with State Uncertainty. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Thirteenth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-14), May 2014.
  9. Christopher Amato and Frans A. Oliehoek. Scalable Bayesian Reinforcement Learning for Multiagent POMDPs. In *Proceedings of the First Multidisciplinary Conference on Reinforcement Learning and Decision Making* (RLDM-13), October 2013.
  10. Christopher Amato and Frans A. Oliehoek. Bayesian Reinforcement Learning for Multiagent Systems with State Uncertainty. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Twelfth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-13), May 2013.

11. Christopher Amato and Emma Brunskill. Diagnose and Decide: An Optimal Bayesian Approach. In *Proceedings of the Workshop on Bayesian Optimization and Decision Making* at the Twenty-Sixth Annual Conference on Neural Information Processing Systems (NIPS-12), December 2012.
12. Jilles S. Dibangoye, Christopher Amato and Arnaud Doniec. Scaling Up Decentralized MDPs Through Heuristic Search. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12), June 2012.
13. Pradeep Varakantham, Nathan Schurr, Alan Carlin and Christopher Amato. Adaptive Decision Support for Structured Organizations: A Case for OrgPOMDPs. Short paper in *Proceedings of the Tenth International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-11), May 2011. (acceptance rate 47%)
14. Christopher Amato, Nathan Schurr and Paul Picciano. Towards Realistic Decentralized Modeling for Use in a Real-World Personal Assistant Agent Scenario. In *Proceedings of the Workshop on Optimisation in Multi-Agent Systems* (OptMas) at the Tenth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-11), May 2011.
15. Christopher Amato, Nathan Schurr and Paul Picciano. Decentralized Models for Use in a Real-World Personal Assistant Agent Scenario. AAAI Spring Symposium entitled Help Me Help You: Bridging the Gaps in Human-Agent Collaboration, March 2011.
16. Christopher Amato and Shlomo Zilberstein. What's Worth Memorizing: Attribute-based Planning for DEC-POMDPs. In *Proceedings of the Multiagent Planning Workshop* (MASPLAN) at the Eighteenth International Conference on Automated Planning and Scheduling (ICAPS-08), September 2008.
17. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Optimizing Fixed-Size Stochastic Controllers for POMDPs. In *Proceedings of the Workshop on Advancements in POMDP Solvers* at the National Conference on Artificial Intelligence (AAAI-08), May 2008.
18. Christopher Amato and Shlomo Zilberstein. Heuristic Policy Iteration for Infinite-Horizon Decentralized POMDPs. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Seventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-08), May 2008.
19. Christopher Amato, Alan Carlin and Shlomo Zilberstein. Bounded Dynamic Programming for Decentralized POMDPs. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Sixth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-07), May 2007.
20. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Solving POMDPs Using Quadratically Constrained Linear Programs. Short Paper in *Proceedings of the Fifth International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS-06), May 2006. (acceptance rate 48%)
21. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Optimal Fixed-Size Controllers for Decentralized POMDPs. In *Proceedings of the Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) at the Fifth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-06), May 2006.
22. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Solving POMDPs Using Quadratically Constrained Linear Programs. North East Student Colloquium on Artificial Intelligence (NESCAI-06), April 2006.
23. Christopher Amato, Daniel S. Bernstein and Shlomo Zilberstein. Solving POMDPs Using Quadratically Constrained Linear Programs. Ninth International Symposium on Artificial Intelligence and Mathematics, January 2006.

24. Daniel S. Bernstein, Eric A. Hansen, Shlomo Zilberstein and Christopher Amato. Dynamic Programming for Partially Observable Stochastic Games. AAAI Spring Symposium on Bridging the Multi-Agent and Multi-Robotic Research Gap, March 2004.

Notable Awards

- Nominated for the best paper award at the 2015 Robotics: Science and Systems Conference (RSS-15)
- Won the best paper award at the Thirteenth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-14)
- Recognized for an outstanding project funded by the MIT Lincoln Lab Advance Concepts Committee in 2015
- Won an outstanding PC member award at the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI-15)

Teaching Experience

- **Instructor:** Northeastern CS 5100, Foundations of Artificial Intelligence. Graduate course, Fall 2016
- **Instructor:** UNH CS 780/880, Probabilisitic AI and Machine Learning. Undergraduate/graduate course, Spring 2016
- **Instructor:** UNH CS 980-01, Topics in Multi-Agent and Multi-Robot Systems. Graduate seminar, Fall 2015
- **Instructor:** UNH CS 980-01, Planning Under Uncertainty for Single and Multi-Robot Systems. Graduate seminar, Spring 2015
- **Instructor:** MIT 6.867, Machine Learning. Upper level undergraduate/graduate course, Fall 2012
- **Teaching Assistant:** UMass, Amherst CS 383, Artificial Intelligence. Undergraduate course, Spring 2009. Includes teaching one class period on Bayesian Networks.
- **Students supervised:**
  - Yuchen Xiao (Northeastern): PhD thesis TBD, September 2016-present
  - Sammie Katt (UNH and Northeastern): PhD thesis on efficient planning and learning in partially observable environments by exploiting structure, September 2015-present
  - Madison Clark-Turner (UNH): PhD thesis TBD, January 2016-August 2016
  - Vineet Parikh (Watchung Hills Regional High School, NJ): High school project on “Adaptable Multi-Robot Systems", September 2015-January 2016
  - Gabriel Cruz (MIT): Undergraduate research on autonomous robot planning and navigation, May 2013-January 2015 (co-supervised with George Konidaris)
  - Sara Sinback (MIT): Undergraduate research on heterogeneous robot planning, June 2014-August 2014 (co-supervised with George Konidaris)
  - Eric Shyu (MIT): Undergraduate research on sample-based approaches for Bayesian reinforcement learning, October 2012-December 2012
  - Joseph Lee (MIT): Undergraduate research project on Monte-Carlo tree search with opponent modeling in Go, January 2013-May 2013
  - Peter Huang (MIT): Masters project on learning and exploiting opponent models in Poker, January 2012-August 2012 (co-supervised with Frans Oliehoek)
  - Ishaan Chugh (MIT): Undergraduate research project on isomorphisms in Omaha Poker, February 2012-May 2012

  - Tulay Varol (UMass): Masters project on using POMDPs for inventory management, November 2009-March 2010
  - Cathy Zhang (UMass): Honors project on search and game theoretic solutions for a two-player stochastic game, Spring 2009

- **Course taken:** Scientific Teaching, graduate seminar on teaching methods with practice sessions, Spring 2009

Conference Tutorials

- *Multiagent Sequential Decision Making* with Prashant Doshi, Frans Oliehoek, Zinovi Rabinovich, Matthijs Spaan and Stefan Witwicki. To be given at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), May 2014
- *Cooperative Decision Making in Sequential Multiagent Settings* and *Self-Interested Decision Making in Sequential Multiagent Settings* with Prashant Doshi, Frans Oliehoek, Zinovi Rabinovich, Matthijs Spaan and Stefan Witwicki. Given at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), May 2013
- *Decision Making in Multiagent Settings* with Prashant Doshi, Piotr Gmytrasiewicz, Zinovi Rabinovich, Matthijs Spaan and Shlomo Zilberstein. Given at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), May 2010, May 2011 and June 2012
- *Decision-Theoretic Planning for Multi-Agent Systems: New Directions and Opportunities* with Matthijs Spaan and Shlomo Zilberstein. Given at the Twenty-First International Joint Conference on Artificial Intelligence (IJCAI-09), July 2009

Thesis Committees

- Scott Kiesel, Department of Computer Science, University of New Hampshire, “Robotics Needs Non-Classical Planning" PhD thesis committee member
- Zhao Cheng, Thayer School of Engineering, Dartmouth College, “State Representation for Problem Solving Using Reinforcement Learning" PhD thesis committee member
- Tao Mao, Thayer School of Engineering, Dartmouth College, “State Representation for Agent-Based Reinforcement Learning" PhD thesis committee member

Professional Service

- Organizer, the *Symposium on Challenges and Opportunities in Multiagent Learning for the Real World* with Miao Liu, Karl Tuyls, Frans Oliehoek, Jonathan How and Peter Stone at AAAI Spring Symposium 2016
- Organizer, the *Symposium on Sequential Decision Making for Intelligent Agents* with Matthijs Spaan, Frans Oliehoek, Andrey Kolobov and Pascal Poupart at AAAI Fall Symposium 2015
- Organizer, the *Workshop on Decision Making in Partially Observable, Uncertain Worlds: Exploring Insights from Multiple Communities* with Emma Brunskill, Guy Shani and Matthijs Spaan at IJCAI-11
- Organizer, the *Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains* (MSDM) with Janusz Marecki, Sven Seuken and Matthijs Spaan at AAMAS-09 and Georgios Chalkiadakis, Prashant Doshi, Abdel-Illah Mouaddib and Matthijs Spaan at AAMAS-10
- NSF CISE IIS review panel, 2012-16
- NASA Early Stage Innovations review panel, 2016
- **Editorial Board:**

  - Journal of Artificial Intelligence Research (JAIR) 2016-present

- **Program Chair:**
  - Robotics Track Co-Chair (with Alessandro Farinelli) for AAMAS 2017

- **Area Chair:**
  - The International Joint Conference on Artificial Intelligence (IJCAI) 2015

- **Senior Program Committee Member:**
  - The International Joint Conference on Artificial Intelligence (IJCAI) 2013, 2016
  - The International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2016

- **Program Committee Member:**
  - Robotics: Science and Systems Conference (RSS) 2017
  - The National Conference on Artificial Intelligence (AAAI) 2011-2012, 2014-2017
  - The International Conference on Automated Planning and Scheduling (ICAPS) 2012, 2015-2016
  - The Conference on Uncertainty in Artificial Intelligence (UAI) 2014-2016
  - The International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2011-2015
  - The Conference on Neural Information Processing Systems (NIPS) 2015
  - The International Conference on Machine Learning (ICML) 2013-2014
  - The Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains (MSDM) at AAMAS 2011-2014
  - The Workshop on Autonomous Robots and Multirobot Systems (ARMS) at AAMAS 2014

- **Referee:**
  - IEEE International Conference on Robotics and Automation (ICRA) 2013-2017
  - Robotics: Science and Systems Conference (RSS) 2016
  - IEEE Robotics and Automation Letters (RA-L) 2016
  - IEEE Transactions on Robotics (T-RO) 2014-2016
  - Autonomous Robotics 2016
  - Artificial Intelligence Journal (AIJ) 2009-2010, 2013, 2015-2016
  - IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2015
  - International Symposium on Robotics Research (ISRR) 2015
  - IEEE Transactions on Control of Network Systems (CONES) 2014
  - The Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS) 2009-2014
  - The Journal of Machine Learning Research (JMLR) 2013
  - IEEE Conference on Decision and Control (CDC) 2013
  - IEEE Transactions on Systems, Man and Cybernetics, Part B: Cybernetics 2013-2014
  - North East Student Colloquium on Artificial Intelligence (NESCAI) 2010
  - International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2008-2009
  - International Conference on Automated Planning and Scheduling (ICAPS) 2008
  - AI Communications (AI-Com) 2008

  - Journal of Artificial Intelligence Research (JAIR) 2007
  - National Conference on Artificial Intelligence (AAAI) 2005-2006
  - International Symposium on Artificial Intelligence and Mathematics 2005

- **Advisory Committee Member:**
  - The Workshop on Multi-Agent Sequential Decision Making in Uncertain Domains (MSDM) at AAMAS 2014-2015

Invited Talks

- Workshop on On-line Decision-Making in Multi-Robot Coordination at the 2016 Robotics: Science and Systems Conference (RSS-16). *Multi-Robot Coordination Under Uncertainty With Limited Communication*. June 19, 2016
- The Northeast Robotics Colloquium (NERC) at Worcester Polytechnic Institute. *Multi-Robot Coordination Under Uncertainty With Limited Communication*. November 7, 2015.
- MIT Lincoln Laboratory. *Robust Coordination for Autonomous Systems in Unstructured Environments*. April 24, 2015. Host: Dan Griffith
- Workshop on Intelligent Planning and Control: Bringing Together Adaptive Control and Reinforcement Learning for Guaranteeing Optimal Performance and Robustness at the Fifty-Second IEEE Conference on Decision and Control (CDC-13), *Decentralized Control under Uncertainty*. December, 2013
- Workshop on Bayesian Nonparametric Models (BNPM) For Reliable Planning And Decision-Making Under Uncertainty at Massachusetts Institute of Technology. *Bayesian Learning in Decentralized POMDPs*. October 18, 2012
- The 2012 International Conference on Collaboration Technologies and Systems. Invited tutorial on *Models of Coordination in Multiagent Decision Making*. May 21, 2012
- MIT Lincoln Laboratory. *Scalable Multiagent Planning and Coordination in Uncertain Environments*. January 23, 2012. Host: Mykel Kochenderfer
- Use-inspired Agents and Multiagent Systems Workshop at the University of Southern California. *Decentralized Models for Use in a Real-World Personal Assistant Agent Scenario*. March 24, 2011
- Worcester Polytechnic Institute, Robotics Seminar. *Efficient Planning and Coordination in Uncertain Environments: Algorithms to Applications*. January 31, 2011. Hosts: Greg Fischer and Sonia Chernova
- Massachusetts Institute of Technology, Learning in Intelligent Systems Group. *Increasing Scalability in Algorithms for Centralized and Decentralized POMDPs*. October 29, 2010. Host: Leslie Pack Kaelbling
- Carnegie Mellon University, Intelligent Software Agents Lab. *Increasing Scalability in Algorithms for Centralized and Decentralized POMDPs*. February 5, 2010. Host: Katia Sycara

Press

- "Robots collaborate to deliver meds, supplies, and even drinks" at *MITnews*:
  `http://news.mit.edu/2015/csail-delivery-robots-collaborate-0810`
  Also covered by
  Wired: `http://www.wired.com/2015/08/meet-mits-beer-delivery-bots/`
  The Boston Globe: `http://bit.ly/1J9QRhz`
  The Huffington Post: `http://huff.to/1GiFEF8`
  Engadget: `http://engt.co/1DOdnur`
  IEEE Spectrum: `http://bit.ly/1L8oQ7F`
  LA Times: `http://lat.ms/1E10Svz`
  Popular Science: `http://www.popsci.com/watch-team-mit-bartender-robots-serve-beer`
  and several others.

- "Helping robots handle uncertainty: Algorithm for planning multirobot collaborations makes complex models practical" at *MITnews*: http://newsoffice.mit.edu/2015/algorithm-helps-robots-handle-uncertainty-0602
- "Herding robots: A new system combines simple control programs to enable fleets of robots — or other multiagent systems — to collaborate in unprecedented ways" at *MITnews*: http://web.mit.edu/newsoffice/2014/herding-robots-0212.html. Also covered by *Government Technology*: http://bit.ly/1YPEcpa, *IEEE Spectrum*: http://bit.ly/1MHEasS and others.
- "System improves automated monitoring of security cameras" at *MITnews*: http://web.mit.edu/newsoffice/2012/auto-video-surveillance-algorithm-0605.html. Also covered by *Talking Points Memo*: http://bit.ly/1RgXYVw and *Security Info Watch*: http://bit.ly/1FJi2yq.
- "Teaching Computers to Take Over the World" at *PhaseLeap* about my work using machine learning in the video game Civilization IV: http://phaseleap.com/articles/teaching-computers-to-take-over-the-world/

Grants Obtained

- Co-PI, "Context and Task-aware Active Perception for Multiagent Systems" Office of Naval Research, 12/1/2016 – 11/30/2020, $279,999 of $2,536,000 total.
- Principal Investigator, "Decentralized Multi-Agent Cooperation II." Lincoln Laboratory Line Funding, 10/1/2016 – 9/30/2017, $64,500.
- Principal Investigator, "Decentralized Multi-Agent Cooperation." Lincoln Laboratory Line Funding, 10/1/2015 – 9/31/2016, $88,200.
- Principal Investigator, "CRII: RI: Planning and Learning with Macro-Actions in Cooperative Multiagent Systems." NSF, 2/01/2015 – 1/31/2017, $174,798.
- Co-PI, "Decentralized Multi-Agent Cooperation with Macro-Actions." Lincoln Laboratory Advanced Concepts Committee, 4/1/2014 – 7/31/2015, $100,000.
- Principal Investigator, "SBIR: Biologically Inspired Scene Estimation", Office of Naval Research, 12/22/2010 – 6/22/2011, $100,000.