

SHAYEGAN OMIDSHAFIEI

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EDUCATION

Massachusetts Institute of Technology

September 2013 – Summer 2018

Ph.D. in Aeronautics and Astronautics

Cambridge, MA

- Laboratory for Information and Decision Systems (LIDS) and Aerospace Controls Lab (ACL)
- Major: Artificial Intelligence & Machine Learning | Minor: Control Systems
- Thesis: *Decentralized Cooperative Multiagent Learning under Partial Observability*
- Thesis Committee: Jonathan P. How (advisor), Christopher Amato, Sertac Karaman, Ali Agha
- Courses: Algorithmic Game Theory and Data Science | Principles of Autonomy and Decision Making
Machine Learning | Computational Cognitive Science | Stochastic Estimation and Control
Nonlinear Optimization | Feedback Control Systems | Principles of Optimal Control
- Cumulative GPA: 5.00 / 5.00

Massachusetts Institute of Technology

September 2013 – August 2015

S.M. in Aeronautics and Astronautics

Cambridge, MA

- Thesis: *Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions*
- Thesis Advisor: Jonathan P. How
- Cumulative GPA: 5.00 / 5.00

University of Toronto

September 2008 – May 2012

B.A.Sc. in Engineering Science with Honors (Aerospace Major)

Toronto, ON

- Thesis: *Surrogate-Based Black-Box Emulator: Gaussian Process Models for Design Optimization*
- Engineering Science Award of Excellence
- Cumulative GPA: 3.93 / 4.00

EXPERIENCE

Massachusetts Institute of Technology

September 2013 – Present

Research Assistant

Cambridge, MA

- Decentralized learning and decision making algorithms for multiagent systems.

Qualcomm Research Center

June 2015 – August 2015

Research Intern

San Diego, CA

- Deep learning-based perception and planning for mobile robotics platforms.
- Received Roberto Padovani Scholarship, based on excellent performance as a summer intern.

SOTI Inc.

August 2012 – May 2013

Software Developer

Mississauga, ON

- Developer on flagship Android application, and of web services for build profiling and optimization.

University of Toronto - Institute for Aerospace Studies

May 2012 – August 2012

Researcher

Toronto, ON

- Developed Bayesian inference algorithm for probabilistic solving of elliptic partial differential equations.

University of Toronto - Department of Computer Science

May 2011 – August 2011

Researcher

Toronto, ON

- Implementation of sequential Monte Carlo inference for tracking pedestrians in monocular video data.

University of Toronto - Division of Engineering Science
Teaching Assistant

January 2011 – May 2011
Toronto, ON

- Advisor and evaluator in autonomous robotics course targeting development of payload delivery robots.

University of Toronto - Institute for Aerospace Studies
Lead Researcher

May 2010 – August 2010
Toronto, ON

- Electromechanical design/fab of robot prototyping platform, development of simulated Mars testbed.

Ryerson University - Department of Physics
Researcher

June 2007 – August 2007
Toronto, ON

- Developed 3D visualizations for gauging effectiveness of magnetic nanoparticles-based cancer treatment.

SELECTED REFEREED PUBLICATIONS

For full publications list, visit <http://tinyurl.com/shayeganPubs>.

Shayegan Omidshafiei, D. Kim, J. Pazis, J. P. How, “Crossmodal Attentive Skill Learner”, in Conference on Neural Information Processing Systems (NIPS) Deep Reinforcement Learning Symposium, Long Beach, CA, USA, December 2017.

Shayegan Omidshafiei, J. Pazis, C. Amato, J. P. How, J. Vian, “Deep Decentralized Multi-task Multi-Agent Reinforcement Learning under Partial Observability”, in The International Conference on Machine Learning (ICML), Sydney, Australia, August 2017.

Shayegan Omidshafiei, S. Liu, M. Everett, B. T. Lopez, C. Amato, M. Liu, J. P. How, J. Vian, “Semantic-level Decentralized Multi-Robot Decision-Making using Probabilistic Macro-Observations”, in IEEE International Conference on Robotics and Automation (ICRA), Singapore, May 2017.

Shayegan Omidshafiei, C. Amato, M. Liu, M. Everett, J. P. How, J. Vian, “Scalable Accelerated Decentralized Multi-Robot Policy Search in Continuous Observation Spaces”, in IEEE International Conference on Robotics and Automation (ICRA), Singapore, May 2017.

Shayegan Omidshafiei, A. Agha-mohammadi, C. Amato, J. P. How, “Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions”, in The International Journal of Robotics Research (IJRR), 2017.

Shayegan Omidshafiei, A. Agha-mohammadi, C. Amato, S. Liu, J. P. How, J. Vian, “Graph-based Cross Entropy Method for Solving Multi-Robot Decentralized POMDPs”, in IEEE International Conference on Robotics and Automation (ICRA), Stockholm, Sweden, May 2016.

Shayegan Omidshafiei, A. Agha-mohammadi, Y. F. Chen, N. K. Ure, S. Liu, B. T. Lopez, R. Surati, J. P. How, J. Vian, “Measurable Augmented Reality for Prototyping Cyberphysical Systems”, in IEEE Control Systems 36 (6), 65-87, 2016.

Shayegan Omidshafiei, A. Agha-mohammadi, C. Amato, J. P. How, “Decentralized Control of Partially Observable Markov Decision Processes using Belief Space Macro-actions”, in IEEE International Conference on Robotics and Automation (ICRA), Seattle, WA, USA, May 2015.

TECHNICAL

Python, MATLAB, Robot Operating System, TensorFlow, PyTorch, HTML, CSS, Android SDK, L^AT_EX

REFERENCES

Prof. Jonathan How
MIT AeroAstro
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Prof. Christopher Amato
Northeastern University
c.amato@northeastern.edu

Dr. Ali Agha-mohammadi
NASA Jet Propulsion Laboratory
aliagha@jpl.nasa.gov