

Josiah P. Hanna

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EDUCATION

The University of Texas at Austin
Ph.D. in Computer Science

Austin, TX
2014 – Present

- ◊ Advisor: Prof. Peter Stone
- ◊ Dissertation: Data Efficient Reinforcement Learning with Off-policy and Simulated Data
- ◊ Research: Artificial Intelligence, Reinforcement Learning, Robotics

The University of Kentucky
B.S. in Computer Science and Mathematics
◊ GPA: 4.0
◊ Summa Cum Laude

Lexington, KY
2010 – 2014

WORK EXPERIENCE

Google, inc.

Software Engineering Intern

Mountain View, CA
May 2017 – Sept. 2017

- ◊ Developed reinforcement learning algorithms with application to Google products.
- ◊ Advised by Craig Boutilier

University of Texas at Austin

IBM PhD Research Fellow

Austin, TX
September 2018 – Present

- ◊ Developed algorithms for correcting inaccuracy from random sampling in reinforcement learning.
- ◊ Mentored three undergraduate students on projects relating to reinforcement learning and optimization.

Teaching Assistant

September 2017 – Present

- ◊ CS 343H – Honors Artificial Intelligence
- ◊ CS 393R – Autonomous Robotics

NSF Graduate Research Fellow

August 2014 – August 2017

- ◊ Developed an algorithm allowing robot learning in simulation to transfer to the real world.
- ◊ Developed algorithms for evaluating the performance of untested robot behaviors.
- ◊ Developed a novel tolling scheme for autonomous vehicles that reduced traffic congestion in road networks.

Computer Science Department, University of Kentucky

Undergraduate Research Assistant

Lexington, KY
May 2013 – May 2014

- ◊ Investigated structural properties of artificial intelligence planning under uncertainty problems.

Laboratoire d'Informatique de Paris 6

Research Intern

Paris, France
May 2012 – Aug. 2012

- ◊ Developed algorithms for solving multi-objective planning problems.

College of Arts and Sciences, University of Kentucky

Software Developer

Lexington, KY
June 2011 – May 2012

- ◊ Developed clustering algorithm for student academic data.

HONORS AND AWARDS

- ◇ IBM PhD Fellowship 2018
- ◇ Robocup Standard Platform League Runner-Up 2016
- ◇ RoboCup 3D Simulation League Champions 2015
- ◇ National Science Foundation Graduate Research Fellowship 2014
- ◇ Barry M. Goldwater Scholarship 2013
- ◇ Phi Kappa Phi 2013
- ◇ Astronaut Scholarship 2013
- ◇ Duncan E. Clarke Memorial Scholarship 2012
- ◇ Barry M. Goldwater Scholarship, Honorable Mention 2012
- ◇ Tau Beta Pi 2012

SERVICE ACTIVITIES

- ◇ Program Committee, AAMAS 2019
- ◇ Program Committee, AAAI Conference on Artificial Intelligence 2019
- ◇ Reviewer, Neural Information Processing Systems (NIPS) 2018
- ◇ Reviewer, International Conference on Machine Learning (ICML) 2018
- ◇ RoboCup Standard Platform League, Organizing Committee 2018
- ◇ Program Committee, AAAI Spring Symposium on Data Efficient Reinforcement Learning 2018
- ◇ Reviewer, Neural Information Processing Systems (NIPS) 2017
- ◇ Program Committee, Workshop on Scaling Up Reinforcement Learning 2017
- ◇ Review Assistant, International Joint Conference on Artificial Intelligence (IJCAI) 2017
- ◇ Reviewer, Neural Information Processing Systems (NIPS) 2016

PUBLICATIONS

Journal Articles

- ◇ Sharon, G., Levin, M. W., **Hanna, J.P.**, Rambha, T., Boyles, S.D., Stone, P. “Network-Wide Dynamic Tolling for Connected and Automated Vehicles,” *Transportation Research Part C: Emerging Technologies*, 84, 142-157.
- ◇ Chen, TD., Kockelman, K.M., **Hanna, J.P.** “Implications of a Shared, Autonomous, Electric Vehicle (SAEV) Fleet,” *Transportation Research Part A: Policy and Practice*, 94, 243-254.

Refereed Conference Proceedings

- ◇ **Hanna, J.P.**, Sharon, G., Boyles, S.D., and Stone P. “Selecting Compliant Agents for Opt-in Micro-tolling.” To appear at *the 33rd AAAI Conference on Artificial Intelligence*, 2019.
- ◇ Chen, H., An, B., Sharon, G., **Hanna, J.P.**, Stone, P., Miao, Chunyan, and Soh, Y. C. “DyETC: Dynamic Electronic Toll Collection for Traffic Congestion Alleviation,” In *Proceedings of the 32nd AAAI Conference on Artificial Intelligence*, 2018.
- ◇ **Hanna, J.P.**, Thomas, P., Stone, P., and Niekum, S. “Data-efficient Policy Evaluation through Behavior Policy Search,” In *Proceedings of the 34th International Conference on Machine Learning (ICML)*, 2017.
- ◇ **Hanna, J.P.**, Stone, P., and Niekum, S. “Bootstrapping with Models: Confidence Intervals for Off-Policy Evaluation,” In *Proceedings of the 16th Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2017.

- ◇ Sharon, G., **Hanna, J.P.**, Rambha, T., Levin, M., Albert, M., Stone, P., and Boyles, S.D., “Real-time Adaptive Tolling Scheme for Optimized Social Welfare in Traffic Networks,” In *Proceedings of the 16th Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2017.
- ◇ **Hanna, J.P.** and Stone, P. “Grounded Action Transformation for Robot Learning in Simulation,” In *Proceedings of the 31st AAAI Conference on Artificial Intelligence*, 2017.
- ◇ Weng, P., Perny, P., Goldsmith, J., and **Hanna J.P.**, “Approximation of Lorenz-Optimal Solutions in Multiobjective Markov Decision Processes,” In *Proceedings of the Conference on Uncertainty in Artificial Intelligence*, extended abstract at *AAAI Late Breaking Paper Track*. 2013.

Book Chapters / Refereed Workshop / Symposium Proceedings

- ◇ **Hanna, J.P.** and Stone, P. “Correcting Sampling Error in the Monte Carlo Policy Gradient Estimator.” In *NeurIPS Workshop on Deep Reinforcement Learning*. 2018.
- ◇ **Hanna, J.P.** and Stone, P. “Towards a Data-efficient Off-policy Policy Gradient.” In *AAAI Spring Symposium on Data Efficient Reinforcement Learning*. 2018.
- ◇ Menashe, J., Kelle, J., Genter, K., **Hanna, J.P.**, Liebman, E., Narvekar, S., Zhang, R., and Stone, P. “Fast and Precise Black and White Ball Detection for RoboCup Soccer.” In *Robocup-2017: Robot Soccer World Cup XXI. Lecture Notes in Artificial Intelligence*, Springer Verlag, Berlin, 2017.
- ◇ **Hanna, J.P.**, Albert, M., Chen, T.D., Stone, P. “Minimal Make-Span Matching for Autonomous Car-Sharing,” In *Proceedings of the 9th IFAC Symposium on Intelligent Autonomous Vehicles*, July 2016, Leipzig, Germany
- ◇ Sharon, G., **Hanna, J.P.**, Rambha, T., Albert, M., Stone, P., Boyles, S.D., “Delta-Tolling: Adaptive Tolling for Optimizing Traffic Throughput,” In *Proceedings of the 9th International Workshop on Agents in Traffic and Transportation (ATT 2016)*, July 2016.
- ◇ MacAlpine, P., **Hanna, J.P.**, Liang, J., Stone, P. “UT Austin Villa: Robocup 2015 3D Simulation League Competition and Technical Challenges Champions.” In *Robocup-2015: Robot Soccer World Cup XIX. Lecture Notes in Artificial Intelligence*, Springer Verlag, Berlin, 2016.
- ◇ Guerin, J.T., **Hanna, J.P.**, Ferland, L., Mattei, N., and Goldsmith, J. “The Academic Advising Domain,” *International Planning Competition Workshop 2012 at the International Conference for Automated Planning Systems (ICAPS)*, 2012.

RELEVANT SKILLS

- ◇ **Proficient Languages:** C++, Python, Java, L^AT_EX
- ◇ **Tools:** Git, Linux, Mac OS, Tensorflow
- ◇ **Skills:** Artificial Intelligence, Robotics, Reinforcement Learning, Machine Learning, Multi-agent Systems, Supervised Learning, Statistics