Stephanie Milani

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Education

2019–Present	**Ph.D. in Machine Learning**, *Carnegie Mellon University*. Advisor: Fei Fang.
2019	**B.S. in Computer Science**, *University of Maryland, Baltimore County*, *Cum Laude*. Advisors: Marie desJardins and Cynthia Matuszek.
	B.A. in Psychology, *University of Maryland, Baltimore County*, *Cum Laude*.

Experience

2019–Present	**Research Assistant**, *Carnegie Mellon University*. Advisor: Fei Fang. Deep reinforcement learning and game theory for social good.
2019	**Research Assistant**, *Carnegie Mellon University*. Advisor: David Held. Reinforcement learning from demonstrations for robotics.
	Research Assistant, *UMBC*. Advisor: Cynthia Matuszek. Norm-aware hierarchical reinforcement learning.
2018–2019	**Research Intern**, *Carnegie Mellon University*. Advisor: Katia Sycara. Context-aware normative planning, learning, and reasoning for domestic service robots.
2016–2019	**Research Assistant**, *UMBC*. Advisor: Marie desJardins. Hierarchical model-based reinforcement learning.
2018	**Robotics Institute Summer Scholar**, *Carnegie Mellon University*. *(4% acceptance.)* Advisor: Katia Sycara. Norm-aware reinforcement learning.
2017	**Robotics Institute Summer Scholar**, *Carnegie Mellon University*. *(4% acceptance.)* Advisor: Christoph Mertz. Generation of adversarial examples for partially occluded traffic sign detection.
2014–2016	**Research Assistant**, *University of Maryland, School of Medicine*. Advisor: Jennifer Wenzel. Role of dopamine and the endocannabinoid system in reward and reinforcement.

Awards

Research

2018–2019	**Undergraduate Research Award**, UMBC *(1/55 awarded)*. Awarded for work on hierarchical, norm-aware reinforcement learning.
2018	**NSF Research Experience for Undergraduates**, Carnegie Mellon University.
	Best Undergrad Poster Presentation, UMBC CSEE Research Symposium. Awarded for work on abstract Markov decision processes.
2017, 2018	**Researcher of the Week**, UMBC.
2017	**Traffic21 Women in Transportation Fellow**, Carnegie Mellon University.

▬▬ Refereed Conference and Journal Papers . . . .

[1] **Stephanie Milani**, Nicholay Topin, Brandon Houghton, William H. Guss, Sharada P. Mohanty, Keisuke Nakata, Oriol Vinyals, and Noboru (Sean) Kuno. A Retrospective Analysis of the 2019 MineRL Competition on Sample-Efficient Reinforcement Learning Using Human Priors. *Proceedings of Machine Learning Research (PMLR): NeurIPS 2019 Competition & Demonstration Track Postproceedings*, 2020.

[2] John Winder, **Stephanie Milani**, Matthew Landen, Erebus Oh, Shane Parr, Shawn Squire, Marie desJardins, and Cynthia Matuszek. Planning with Abstract Learned Models While Learning Transferable Subtasks. *Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI)*, 2020. *20.6% acceptance.*

[3] Huao Li, **Stephanie Milani**, Vigneshram Krishnamoorthy, Michael Lewis, and Katia Sycara. Perceptions of Domestic Robots' Normative Behavior Across Cultures. *Proceedings of the 3rd AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*, 2019.

▬▬ Refereed Workshop Papers and Extended Abstracts . . . .

[1] **Stephanie Milani***, Zhou Fan*, Saurabh Gulati, Thanh Nguyen, Fei Fang, and Amulya Yadav. Intelligent Tutoring Strategies for Students with Autism Spectrum Disorder: A Reinforcement Learning Approach. *The 34th AAAI Conference on Artificial Intelligence (AAAI) Workshop on AI for Education*, 2020. Also accepted for lightning talk at the *CMU Symposium on AI and Social Good*, 2020.

[2] Brandon Houghton, **Stephanie Milani**, Nicholay Topin, William Guss, Katja Hofmann, Diego Perez-Liebana, Manuela Veloso, and Ruslan Salakhutdinov. Guaranteeing Reproducibility in Deep Learning Competitions. *The 33rd Conference on Neural Information Processing Systems (NeurIPS) Challenges in Machine Learning (CiML) Workshop*, 2019.

[3] **Stephanie Milani**, Nicholay Topin, and Katia Sycara. Penalty-Modified Markov Decision Processes: Efficient Incorporation of Norms into Sequential Decision Making Problems. *The 4th Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, 2019.

[4] John Winder, **Stephanie Milani**, Matthew Landen, Erebus Oh, Shane Parr, Shawn Squire, Marie desJardins, and Cynthia Matuszek. Planning with Abstract, Learned Models. *Do Good Robotics Symposium*, 2019.

[5] John Winder, Shawn Squire, Matthew Landen, **Stephanie Milani**, and Marie desJardins. Towards Planning with Hierarchies of Learned Markov Decision Processes. *The 27th International Conference on Automated Planning and Scheduling (ICAPS) Integrated Execution of Planning and Acting (IntEx) Workshop*, 2017.

[6] Shawn Squire, John Winder, Matthew Landen, **Stephanie Milani**, and Marie desJardins. R-AMDP: Model-based Learning for Abstract Markov Decision Process Hierarchies. *The 3rd Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, 2017.

Other Refereed Publications . . . .

[1] William H. Guss, Mario Ynocente Castro*, Sam Devlin*, Brandon Houghton*, Noboru Sean Kuno*, Crissman Loomis*, Keisuke Nakata*, **Stephanie Milani***, Sharada Mohanty*, Ruslan Salakhutdinov*, Shinya Shiroshita*, John Schulman*, Nicholay Topin*, Avinash Ummadisingu*, and Oriol Vinyals*. NeurIPS 2020 Competition: The MineRL Competition on Sample Efficient Reinforcement Learning using Human Priors. *The 34th Conference on Neural Information Processing Systems (NeurIPS) Competition Track*, 2020.

[2] William H. Guss, Cayden Codel*, Katja Hoffman*, Brandon Houghton*, Noboru (Sean) Kuno*, **Stephanie Milani***, Sharada Mohanty*, Diego Perez-Liebana*, Ruslan Salakhutdinov*, Nicholay Topin*, Manuela Veloso*, and Phillip Wang*. The MineRL Competition on Sample Efficient Reinforcement Learning using Human Priors. *The 33rd Conference on Neural Information Processing Systems (NeurIPS) Competition Track*, 2019.

* denotes equal contribution.

Technical Reports . . . .

[1] **Stephanie Milani**. Penalty-Modified Abstract Markov Decision Processes. *Technical Report for Undergraduate Research Award, UMBC*, 2019.

[2] **Stephanie Milani**. Creating a Scalable Framework for Model-Free Reinforcement Learning in Norm-Rich Environments. *Robotics Institute Summer Scholars Working Papers Journal*, 2018.

[3] **Stephanie Milani** and Christoph Mertz. Generating Hard Positive Examples via Adversary for Occluded Traffic Sign Detection. *Robotics Institute Summer Scholars Working Papers Journal*, 2017.

Professional Service . . . .

Reviewing

2020 **Game Theory and Machine Learning for Cyber Security**, Book Chapter Reviewer.

ICML, Reviewer.

AAAI Workshop on Diversity in Artificial Intelligence, Reviewer.

2019 **ICML Workshop on AI for Social Good**, Reviewer.

ICLR Workshop on AI for Social Good, Reviewer.

2017, 2018 **RISS Working Papers Journal**, Reviewer.

Conference Volunteering

2020 **ICML** (Virtual), Volunteer.

ICLR (Virtual), Volunteer.

2019 **RLDM at McGill University**, Volunteer.

2017 **ICAPS at Carnegie Mellon University**, Volunteer.

2016 **Maryland Computing Education Summit at UMBC**, Volunteer.

Other

2019-Present	**MineRL Competition on Sample-Efficient Reinforcement Learning**, Organizer.
2020	**Carnegie Mellon University RISS Admissions Committee**.
2017, 2018	**RISS Working Papers Journal**, Assistant Managing Editor.
2017	**UMBC Department of IT**, Machine Learning Consultant.

Invitation-only Meetings . . . .

2018	**CCC AI Roadmap Workshop: Integrated Intelligence**.
	Resulted in *A 20-Year Community Roadmap for AI Research in the US*.

Grant Support . . . .

[1] **Stephanie Milani** and Nicholay Topin. Inclusivity Travel Grants for MineRL Competition and Workshop at NeurIPS 2019 (2019), *Artificial Intelligence Journal (AIJ)*, € 3,000, 2019.

Teaching and Mentoring . . . .

2019–Present	**CMU AI Mentorship Program**, Mentor.
2019	**Rewriting the Code Alumni Office Hours.**
	Dedicated 30 min/week to provide career and academic advice to female undergrads.
2017–2018	**Creative Coders**, Curriculum Development Coordinator.
	Developed curriculum for middle-school students to learn CS concepts.
2017	**QuHacks Hackathon at UMBC**.
2016–2017	**Computer Science Matters in Maryland**, Curriculum Developer.
2016, 2017	**Hour of Code at UMBC**.
	Introduced UMBC and middle-school students to CS and AI via hands-on activities.

Outreach . . . .

2020	**The Campus Laboratory School at Carlow University Career Day**, Presenter.
2019	**Steel City Showdown FIRST Robotics Competition**, Referee and Volunteer.
	Robotics Institute Summer Scholars Program, Presenter at Orientation.
2016-2019	**UMBC Computer Science Education**, Vice President, President, Treasurer.
2017	**Creative Coders**, Co-founder.
	Co-founded program to introduce middle-school students to CS.
	QuHacks Hackathon at UMBC, Organizer.
	Organized day-long hackathon for appx. 100 high-school and middle-school students.
	North County High School Computer Science Classes, Co-presenter.
2016, 2017	**Hour of Code at UMBC**, Organizer.
	Organized two-day-long Hour of Code events.

Affiliations . . . .

2019–Present	Rewriting the Code, Alumni.
	Association for the Advancement of Artificial Intelligence (AAAI), Member.
2018–Present	Association for Computing Machinery (ACM), Member.
2017–2019	Center for Women in Technology (CWIT), Affiliate.

Selected Media Coverage

- "Project Malmo competition returns with student organizers and a new mission: To democratize reinforcement learning," by Noboru Sean Kuno. Microsoft Research Blog. August 2019.
- "Traffic21's Women in Transportation Awardee Joining CMU's Machine Learning Ph.D. Program." Mobility21. April 2019.
- "Stephanie Milani named Newman Civic Fellow for expanding access to CS education," by Catalina Sofia Dansberger Duque. UMBC News. April 2018.
- "The Hour of Code Arrives at UMBC," by Declan Keefe. The Retriever. December 2017.