Stephanie Milani

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stephanie-milani
stephmilani

Education

2019–Present **Carnegie Mellon University**.
Ph.D. in Machine Learning.
Advisor: Fei Fang.

2019 **University of Maryland, Baltimore County**.
B.S. in Computer Science, B.A. in Psychology. *Cum Laude*. Honors College Certificate.
Advisors: Marie desJardins and Cynthia Matuszek.

Experience

2019–Present **Carnegie Mellon University**, *Research Assistant*.
Advisor: Fei Fang.

2021 **Research Intern**, *Microsoft Research, Cambridge*.
Offer deferred from summer 2020 to summer 2021 due to COVID-19.

2019 **Carnegie Mellon University**, *Research Assistant*.
Advisor: David Held.

University of Maryland, Baltimore County, *Research Assistant*.
Advisor: Cynthia Matuszek.

2018–2019 **Carnegie Mellon University**, *Research Intern*.
Advisor: Katia Sycara.

2016–2019 **University of Maryland, Baltimore County**, *Research Assistant*.
Advisor: Marie desJardins.

2018 **Carnegie Mellon University**, *Robotics Institute Summer Scholar*.
Advisor: Katia Sycara. *4% acceptance.*

2017 **Carnegie Mellon University**, *Robotics Institute Summer Scholar*.
Advisor: Christoph Mertz. *4% acceptance.*

2014–2016 **University of Maryland, School of Medicine**, *Research Assistant*.
Advisor: Jennifer Wenzel.

Awards

2020 **Top Reviewer Award, ICML** (top 33% of all reviewers)

2019 **Travel Awards: NeurIPS, RLDM, ICML, ICML Diversity and Inclusion** (Declined)

UMBC Honors College Community Service Award
1/4 awarded, for strong academic performance and outstanding community service.

2018–2019 **UMBC Undergraduate Research Award**
1/55 awarded, for work on hierarchical, norm-aware reinforcement learning.

Newman Civic Fellow
1/268 nationally awarded, for leadership and dedication to increasing access to CS.

Rewriting the Code Fellow
Awarded for technically-skilled experience and projects.

2017–2019 **National Academy of Engineering Grand Challenge Scholar**

2018 **NSF Research Experience for Undergraduates**
Awarded to research norm-aware planning and learning at Carnegie Mellon University.

Best Undergrad Poster Presentation, UMBC CSEE Research Symposium
Awarded for work on abstract Markov decision processes.

OurCS Workshop Oracle Scholar
1/102 students chosen to attend workshop for exploring research problems.

Grace Hopper Student Scholar
1/657 awarded, funded by Palo Alto Networks to attend Grace Hopper.

CWIT Grace Hopper Award (Declined)
26% acceptance, funded to attend Grace Hopper.

Inclusion@RSS Scholar
Awarded to attend Robotics: Science and Systems Conference.

2017–2018 **France-Merrick Scholar**
1/7 awarded, for commitment to leadership and service in CS and AI.

2017, 2018 **UMBC Researcher of the Week**
Awarded for work on planning and reinforcement learning.

2017 **Traffic21 Women in Transportation Fellow**
Only student awarded fellowship, for research at Carnegie Mellon University.

Refereed Publications

[1] **Stephanie Milani**, Weiran Shen, Kevin S. Chan, Sridhar Venkatesan, Nandi O. Leslie, Charles Kamhoua, and Fei Fang. Harnessing the Power of Deception in Attack Graph Games. *11th Conference on Decision and Game Theory for Security*, 2020.

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

[3] **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: NeurIPS 2019 Competition & Demonstration Track Postproceedings*, 2020.

[4] **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. *34th AAAI Conference on Artificial Intelligence Workshop on AI in Education*, 2020.

[5] 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. *34th AAAI Conference on Artificial Intelligence*, 2020.

[6] William H. Guss, Cayden Codel*, Katja Hofmann*, 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. *33rd Conference on Neural Information Processing Systems Competition Track*, 2019.

[7] Brandon Houghton, **Stephanie Milani**, Nicholay Topin, William Guss, Katja Hofmann, Diego Perez-Liebana, Manuela Veloso, and Ruslan Salakhutdinov. Guaranteeing Reproducibility in Deep Learning

Competitions. *33rd Conference on Neural Information Processing Systems Challenges in Machine Learning (CiML) Workshop*, 2019.

[8] 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.

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

[10] Huao Li, **Stephanie Milani**, Vigneshram Krishnamoorthy, Michael Lewis, and Katia Sycara. Perceptions of Domestic Robots' Normative Behavior Across Cultures. *2nd AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society*, 2019.

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

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

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

[14] John Winder, Shawn Squire, Matthew Landen, **Stephanie Milani**, and Marie desJardins. Towards Planning with Hierarchies of Learned Markov Decision Processes. *26th International Conference on Automated Planning and Scheduling — Integrated Execution of Planning and Acting (IntEx) Workshop*, 2017.

* *denotes equal contribution.*

Technical Reports

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

Professional Service

Reviewing

2020 AAAI, Game Theory and Machine Learning for Cyber Security (book chapter reviewer), ICML, AAAI Workshop on Diversity in Artificial Intelligence

2019 ICML Workshop on AI for Social Good, ICLR Workshop on AI for Social Good

2017, 2018 RISS Working Papers Journal

Conference Volunteering

2020 ICML, ICLR

2019 RLDM

2017 ICAPS

2016 Maryland Computing Education Summit

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.

Outreach

2019–Present **CMU AI Mentorship Program**, Mentor.
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.
Rewriting the Code Alumni Office Hours.
Dedicated 30 min/week to provide career and academic advice to female undergrads.
2016-2019 **UMBC Computer Science Education**, Vice President, President, Treasurer.
2017–2018 **Creative Coders**, Curriculum Development Coordinator.
Developed curriculum for middle-school students to learn CS concepts.
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 **Computer Science Matters in Maryland**, Curriculum Developer.
2016, 2017 **Hour of Code at UMBC**, Organizer and Volunteer.
Organized and volunteered during two-day-long Hour of Code events on CS and AI.

Affiliations

Rewriting the Code Alumni, AAAI, ACM.

Selected Media Coverage

- "MineRL sample-efficient reinforcement learning challenge—back for a second year—benefits organizers, as well as larger research community," by Noboru Sean Kuno. Microsoft Research Blog. August 2020.
- "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.