Samer B. Nashed

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Education

University of Massachusetts Amherst
Ph.D., Computer Science 2023
Advisors: Roderic A. Grupen and Shlomo Zilberstein
Thesis Title: *Multi-SLAM Systems for Fault-Tolerant Simultaneous Localization and Mapping*

University of Massachusetts Amherst
M.S., Computer Science 2019
Advisor: Roderic A. Grupen

Swarthmore College
B.A., Double Major in Physics and Computer Science 2015

Research Experience and Professional Appointments

Postdoctoral Fellow. Montreal Robotics and Embodied AI Laboratory. Nov. 2023 – Present
Advisor: Liam Paull.

Graduate Research Assistant. Resource Bounded Reasoning Laboratory. Jan. 2022 – Nov. 2023
Advisor: Shlomo Zilberstein.

Graduate Research Assistant. Laboratory for Perceptual Robotics. January 2020 – Nov. 2023
Advisor: Roderic A. Grupen.

Applied Scientist Intern. Amazon Lab126, Sunnyvale CA. May 2019 – December 2019
Mentor: Jong Jin Park

Graduate Research Assistant. Autonomous Mobile Robotics Laboratory. Sept. 2015 – May 2019
Advisor: Joydeep Biswas.

Applied Scientist Intern. Amazon Robotics, North Reading MA. Summer 2018
Mentor: Jong Jin Park

Research Intern. Nissan, Sunnyvale CA. Summer 2017
Mentor: David M. Ilstrup

Honors and Awards

Dissertation Writing Fellowship Award Spring 2023
AAAI Distinguished Paper Award 2021
Massachusetts Space Grant Consortium Fellowship Summer 2020

Workshops and Tutorials Organized

3. Standing the Test of Time Workshop: Retrospective and Future of World Representations for Lifelong Robotics

Miguel Saavedra, Pierre-Yves Lajoie, **Samer B. Nashed**, Victor Cano, Liam Paull, Malika Meghjani, John Leonard.
At the International Conference on Intelligent Robots and Systems (IROS). 2024.

2. Workshop on Building and Evaluating Ethical Robotic Systems.
Samer B. Nashed, Justin Svegliato, David Meger, Louise Dennis, Benjamin Kuipers.
At the International Conference on Intelligent Robots and Systems (IROS). 2024.

1. Workshop on Building and Evaluating Ethical Robotic Systems.
Samer B. Nashed, Justin Svegliato, Dylan Hadfield-Menell, Louise Dennis, Paul Bello, and Alan Winfield.
At the International Conference on Intelligent Robots and Systems (IROS). 2021.

Invited Talks, Presentations, and Panels

6. Dagstuhl Seminar on Explainable AI for Sequential Decision Making — September 2024
5. Panelist on "Robustness" at MobiliT.AI — May 2024
4. Invited Talk at the Montreal Robotics and Embodied AI Laboratory — July 2023
"*Achieving Robust SLAM Systems via Integration throughout the Robotics Life Cycle*"
3. Invited Talk at the EQUAL Lab — July 2023
"*Fairness and Sequential Decision Making: Limits, Lessons, and Opportunities*"
2. Invited Presentation at the 7th Annual Center for Human-Compatible AI Workshop — June 2023
"*Causal Explanations for Sequential Decision Making under Uncertainty*"
1. Invited Talk at the General Motors Forum on Explainable Artificial Intelligence — April 2022
"*Generating Explanans for Markov Decision Processes*"

Teaching and Advising Experience

Advising

8. Advised MS student in robotic perception research — Fall 2021
7. Advised student on robotic perception research — Fall 2021
6. Advised student on PhD application process - they are now a PhD student at UMass — Fall 2021
5. Secondary Committee Member on an undergraduate Honors Thesis — Fall 2021 - Spring 2022
4. Advised MS student in independent reinforcement learning research — Fall 2021
3. Advised MS student in independent robotic perception research — Spring 2021
2. Advised MS student for an Independent Study — Fall 2020
1. Advised undergraduate for an Independent Study - later returned as MS student — Spring 2020

Teaching

8. Teaching assistant for Advanced Algorithms (CS611) — Fall 2022
7. Teaching assistant for Machine Learning (CS589) — Spring 2022
6. Teaching assistant for Artificial Intelligence (CS383) — Fall 2021

5. Teaching assistant for Artificial Intelligence (CS383) Spring 2021
4. Teaching assistant for Artificial Intelligence (CS383) Fall 2020
3. Teaching assistant for Artificial Intelligence (CS383) Spring 2020
2. Teaching assistant for Robotics (CS403) Spring 2019
1. Teaching assistant for Programming Methodologies (CS220) Fall 2018

Service and Professional Activities

Reviewing

16. Neural Information Processing Systems (NeurIPS) 2024
15. European Conference on Artificial Intelligence (ECAI) 2024
14. Formal Ethical Agents and Robots Workshop at Integrated Formal Methods Conference 2024
13. Associate Editor International Conference on Intelligent Robots and Systems (IROS) 2024
12. International Joint Conference on Artificial Intelligence (IJCAI) 2024
11. International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2024
10. AAAI Conference on Artificial Intelligence (AAAI) 2023-2024
9. Journal of Artificial Intelligence Research (JAIR) 2023-2024
8. International Conference on Robotics and Automation (ICRA) 2018-2024
7. GenPlan Workshop at Neural Information Processing Systems 2023
6. Robotics and Automation Letters (RA-L) 2023
5. International Conference on Ubiquitous Robots (UR) 2023
4. International Conference on Human-Robot Interaction (HRI) 2022-2023
3. International Conference on Intelligent Robots and Systems (IROS) 2016-2023
2. Artificial Intelligence (Journal) 2022
1. Robotics and Autonomous Systems (Journal) 2017

Other

7. Moderator and presenter at the inaugural UMass Research Night Fall 2022
6. Graduate student mentor Fall 2022
5. Designed and executed robotics curriculum for Massenberg STEM Institute Summer 2022
4. Robotics faculty search (UMass) student subcommittee Spring 2020
3. Graduate Advisor to the undergraduate UMass Robotics club Fall 2020 - 2023
2. Member of Machine Learning and Friends Lunch group, which hosts a series of invited talks each semester 2018 - 2023

1. Member of the New (Graduate) Student Committee at the College 2016 - 2020, 2023

Publications and Patents

Journal Publications

3. A Survey of Opponent Modeling in Adversarial Domains.
Samer B. Nashed and Shlomo Zilberstein. *Journal of Artificial Intelligence Research*. 2022.

2. Pitch Measurements in Chiral Lyotropic Chromonic Liquid Crystals.
Timothy Ogolla, **Samer B. Nashed** and Peter J. Collings. *Liquid Crystals*. 2017.

1. Pinning Susceptibility: The Effect of Dilute, Quenched Disorder on Jamming.
Amy L. Graves, **Samer B. Nashed**, Elliot Padgett, Carl P. Goodrich, Andrea J. Liu and James P. Sethna. *Physical Review Letters*. 2016.

Conference Publications

13. Choosing the Right Tool for the Job: Online Decision Making over SLAM Algorithms
Samer B. Nashed, Roderic A. Grupen and Shlomo Zilberstein. In *Proceedings of the International Conference on Robotics and Automation (ICRA)*. 2024.

12. Ethically Compliant Autonomous Systems under Partial Observability
Qingyuan Lu, Justin Svegliato, **Samer B. Nashed**, Shlomo Zilberstein, and Stuart Russell. In *Proceedings of the International Conference on Robotics and Automation (ICRA)*. 2024.

11. Formal Composition of Robotic Systems as Contract Programs.
Mason Nakamura, Justin Svegliato, **Samer B. Nashed**, Shlomo Zilberstein, and Stuart Russell. In *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*. 2023.

10. Selecting the Partial State Abstractions of MDPs: A Metareasoning Approach with Deep Reinforcement Learning.
Samer B. Nashed*, Justin Svegliato*, Abhinav Bhatia, Stuart Russell and Shlomo Zilberstein. In *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*. 2022.

9. Tuning the Hyperparameters of Anytime Planning: A Metareasoning Approach with Deep Reinforcement Learning.
Abhinav Bhatia, Justin Svegliato, **Samer B. Nashed** and Shlomo Zilberstein. In *Proceedings International Conference on Automated Planning and Scheduling (ICAPS)*. 2022.

8. Robust Rank Deficient SLAM.
Samer B. Nashed, Jong Jin Park, Roger Webster and Joseph W. Durham. In *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*. 2021.

7. Solving Markov Decision Processes with Partial State Abstractions.
Samer B. Nashed*, Justin Svegliato*, Matteo Brucato, Connor Basich, Rod Grupen and Shlomo Zilberstein. In *Proceedings of the International Conference on Robotics and Automation (ICRA)*. 2021.

6. Ethically Compliant Planning within Moral Communities. **(Oral Presentation)**
Samer B. Nashed, Justin Svegliato and Shlomo Zilberstein. In *Proceedings of the AAAI Conference Artificial Intelligence, Ethics, and Society (AIES)*. 2021.

5. Ethically Compliant Sequential Decision Making. **(Distinguished Paper Award)**
Justin Svegliato, **Samer B. Nashed** and Shlomo Zilberstein. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2021.

4. Laser2Vec: Similarity-based Retrieval for Robotic Perception Data.
Samer B. Nashed. In *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*. 2020.

3. Human-in-the-Loop SLAM. **(Oral Presentation)**
Samer B. Nashed and Joydeep Biswas. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*. 2018.

2. Localization under Topological Uncertainty for Lane Identification of Autonomous Vehicles.
Samer B. Nashed, David M. Ilstrup, and Joydeep Biswas. In *Proceedings of the International Conference on Robotics and Automation (ICRA)*. 2018.

1. Curating Long-term Vector Maps.
Samer B. Nashed and Joydeep Biswas. In *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*. 2016.

Workshops, Competitions, and Extended Abstracts

10. RL^3: Boosting Meta Reinforcement Learning via RL inside RL^2. **(Contributed Talk)**
Abhinav Bhatia, **Samer B. Nashed**, Shlomo Zilberstein. NeurIPS Workshop on Generalization in Planning. 2023.

9. Estimating Causal Responsibility for Explaining Autonomous Behavior.
Saaduddin Mahmud*, **Samer B. Nashed***, Claudia V. Goldman and Shlomo Zilberstein. AAMAS Workshop on Explainable and Transparent AI and Multi-Agent Systems. 2023

8. Causal Explanations for Sequential Decision Making Under Uncertainty.
Samer B. Nashed, Saaduddin Mahmud, Claudia V. Goldman and Shlomo Zilberstein. Extended abstract at the 22nd International Conference on Autonomous Agents and Multiagent Systems. 2023.

7. Ethically Compliant Planning in Moral Autonomous Systems.
Justin Svegliato, **Samer B. Nashed**, and Shlomo Zilberstein. IJCAI Workshop on Artificial Intelligence Safety. 2020.

6. A Brief Survey of Loop Closure Detection: A Case for Rethinking Evaluation of Intelligent Systems.
Samer B. Nashed. NeurIPS Workshop on Machine Learning Retrospectives, Surveys & Meta-Analyses. 2020.

5. An Integrated Approach to Moral Autonomous Systems.
Justin Svegliato, **Samer B. Nashed**, and Shlomo Zilberstein. Extended Abstract at the 24th European Conference on Artificial Intelligence. 2020.

4. UMass Minutebots 2018 Team Description Paper.
Kyle Vedder, Edward Schneeweiss, Sadegh Rabiee, **Samer B. Nashed**, Spencer Lane, Jarrett Holtz, Joydeep Biswas and David Balaban. RoboCup Small Size League. 2018.

3. Human-in-the-Loop SLAM.
Samer B. Nashed and Joydeep Biswas. ICAPS Workshop on Planning and Robotics. 2017.

2. UMass Minutebots 2017 Team Description Paper.
Kyle Vedder, Edward Schneeweiss, Sadegh Rabiee, **Samer B. Nashed**, Spencer Lane, Jarrett Holtz, Joydeep Biswas and David Balaban. RoboCup Small Size League. 2017.

1. Curating Long-term Vector Maps.
   Samer B. Nashed and Joydeep Biswas. IJCAI Workshop on Autonomous Mobile Service Robots. 2016.

Patents

3. Physical Models for Hierarchical Clustering and Symbolic Inference.
   Samer B. Nashed, Jong Jin Park, Joseph W. Durham.
   US Patent 11,860,278, 2024.

2. Autonomous Machine Motion Planning in a Dynamic Environment.
   Anatoly Mitlin, **Samer Nashed**.
   US Patent 11,498,587, 2022.

1. Localization Determination for Vehicle Operation.
   Samer B. Nashed, David M. Ilstrup.
   US Patent 11,112,259, 2021