

Lening Li

Boston, MA, USA

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RESEARCH INTERESTS

Reinforcement Learning ◊ Optimal Control ◊ Game Theory ◊ Formal Methods

EDUCATION

Carnegie Mellon University (CMU)

Pittsburgh, PA, USA

MBA

Aug. 2025 - Present (*Expected May 2028*)

Worcester Polytechnic Institute (WPI)

Worcester, MA, USA

Ph.D. in Robotics Engineering

Aug. 2016 - Dec. 2022

- ◊ Thesis: “Optimal Control and Reinforcement Learning for Stochastic Systems under Temporal Logic Specifications”

M.S. in Robotics Engineering

Aug. 2016 - May 2018

M.S. in Computer Science

Aug. 2014 - May 2016

- ◊ Thesis: “Birrtopt: A combined software framework for motion planning applied on Atlas robot”

Harbin Institute of Technology (HIT)

China

B.S. in Computer Science

Sep. 2010 - Jul. 2014

- ◊ Summa Cum Laude (Top 5% of class)
- ◊ Thesis: “Contourlet Transform Based Image Compression”

B.A. in English Language & Literature

Sep. 2011 - Jul. 2014

- ◊ Thesis: “A Study on the Male Chauvinism in *Women in Love*”

CERTIFICATIONS

Certified REC Foundation Coach

Sep. 2023 - Sep. 2024

Robotics Education & Competition Foundation

Online

Coach and mentor robotics teams, fostering student growth in STEM and competitive engineering.

Certified FIRST Tech Challenge (FTC) Coach

Nov. 2022 - May 2023

FIRST Robotics

Online

Led and mentored FTC robotics teams, guiding students in robot design, programming, and competition strategy.

Certification in College Teaching

Jun. 2017 - Aug. 2019

Higher Education Consortium of Central Massachusetts (HECCMA)

Worcester, MA, USA

Professionally trained in evidence-based pedagogy to deliver high-quality courses.

INDUSTRY & ADVISORY EXPERIENCE

Robotic Lab Advisor

Dec. 2025 - Present

Harvard University

Cambridge, MA, USA

- ◊ Guide student researchers on algorithm design, system evaluation, and reproducible methodology for robotics projects.
- ◊ Mentor students across reinforcement learning, motion planning, control, and safety-critical system design, connecting theory to production deployment.

- Accelerate research output through structured reviews, project scoping, and targeted technical feedback.

Senior Software Engineer

Symbolic

Oct. 2022 - Present
Wilmington, MA, USA

- Designed and deployed production multi-agent path-planning and coordination algorithms in C++ for warehouse robot fleets of thousands.
- Improved fleet robustness through advances in control design, state estimation, and fault-tolerant behavior architectures.
- Optimized real-time decision-making pipelines to meet strict latency requirements across thousands of concurrent autonomous robots.

Senior Software Engineer

Berkshire Grey

Oct. 2021 - Aug. 2022
Bedford, MA, USA

- Led development of perception and manipulation algorithms enabling robust grasping of novel, previously unseen SKUs (ROS, C++, Python).
- Cut end-to-end system latency by overhauling inter-process communication and execution pipelines.

Software Engineering Intern

Rudolph Technologies

Jun. 2015 - Jan. 2016
Tewksbury, MA, USA

- Built an automated migration tool consolidating multiple legacy codebases onto a single unified platform.
- Improved wafer-defect data accuracy through algorithmic enhancements to collection and analysis pipelines.

Software Engineering Intern

Neusoft

Jul. 2013 - Aug. 2013
China

- Developed a map management system with efficient insert, delete, and update operations on geographic datasets.

REPRESENTATIVE SKILLS

Programming Languages:	C/C++, Python, MATLAB
Robotics & Control:	Motion Planning, Optimal Control, Reinforcement Learning
Robotic Systems:	ROS, ROS 2, Distributed Robotic Systems
Machine Learning:	PyTorch, TensorFlow
Languages:	English (Fluent), Chinese (Native)

TEACHING

Teaching Assistant

RBE 549. Computer Vision, WPI

Aug. 2022 - Dec. 2022
Worcester, MA, USA

- Co-designed and delivered a new graduate-level computer vision course, covering classical and deep learning approaches.
- Led weekly lectures and structured office hours, supporting student project development.
- Course website: <https://nitinjsanket.github.io/teaching/rbe549/fall2022.html>

Teaching Assistant

RBE 3001 & 3002. Unified Robotics III & IV, WPI

Aug. 2020 - May 2021
Worcester, MA, USA

- Supervised hands-on labs covering 3D-printed robot-arm kinematics, control, and mobile robot navigation.

- Designed and graded final projects, lab reports, and homework assignments.

Teaching Assistant

RBE 549. Computer Vision, WPI

Aug. 2018 - Dec. 2018

Worcester, MA, USA

- Delivered lectures and held office hours on computer vision theory and implementation for graduate students.

Teaching Assistant

RBE 1001. Introduction to Robotics, WPI

Aug. 2017 - May 2018

Worcester, MA, USA

- Managed and mentored a team of five undergraduate peer learning assistants.
- Designed and graded final projects, lab reports, and homework assignments.

REPRESENTATIVE PROJECTS

DARPA Robotics Challenge

Researcher

Aug. 2014 - May 2015

Worcester, MA, USA

- Collaborated with the WPI-CMU team on Boston Dynamics' Atlas humanoid robot at the DARPA Robotics Challenge Finals.
- Designed a motion planner for arm manipulation tasks including door opening, valve turning, and tool grasping.
- Designed a human-robot interaction interface that improved operator situational awareness and task execution efficiency.
- Ranked 7th out of 24 teams.

DARPA SI3-CMD: Serial Interactions in Imperfect Information Games for Complex Military Decision Making

Researcher

Jan. 2019 - Aug. 2020

Worcester, MA, USA

- Developed a game-theoretic deceptive planning framework and Python implementation in collaboration with SSCI.
- Improved mission success probability by exploiting information asymmetry and strategic deception within a formal hypergame model.
- Formulated a solution concept for dynamic hypergames with temporal objectives.

Optimal Control and Reinforcement Learning for Stochastic Systems under Temporal Logic Specifications

Researcher

Aug. 2016 - Aug. 2022

Worcester, MA, USA

- Developed a principled framework translating probabilistic temporal logic specifications into chance-constrained control problems with satisfaction guarantees.
- Proposed a scalable, model-free reinforcement learning approach for continuous stochastic systems with improved sample efficiency.

HONORS & AWARDS

Alex F. Backlin Fund Scholarship

Worcester Polytechnic Institute

Jan. 2021

Worcester, MA, USA

Travel Grant Award

Lehigh University

Oct. 2019

Bethlehem, PA, USA

Graduate Student Travel Award

Worcester Polytechnic Institute

Oct. 2019

Worcester, MA, USA

Graduate Student Travel Award
Worcester Polytechnic Institute

Mar. 2019
Worcester, MA, USA

Graduate Student Travel Award
Worcester Polytechnic Institute

Jun. 2017
Worcester, MA, USA

EXTRACURRICULAR ACTIVITIES AND LEADERSHIP

President
Graduate Student Government (GSG)

Jan. 2019 - May 2020
Worcester, MA, USA

- Led WPI's Graduate Student Government, overseeing all governance operations and institutional representation.
- Served as primary liaison between the graduate student body and university administration.
- Partnered with the Graduate Studies Office to escalate housing concerns directly to the Board of Trustees.
- Appointed to the Provost Search Committee and provided formal recommendations.

Volunteer
Lhasa Welfare Center for Children

Jul. 2013 - Sep. 2013
China

- Fundraised to support educational services for children from low-income families.
- Tutored children in Chinese, Math, and English.

ORGANIZATION MEMBERSHIPS

- **Member**, IEEE
- **Member**, IEEE Young Professionals
- **Member**, IEEE Robotics and Automation Society
- **Member**, Association for Women in Mathematics
- **Member**, Alpha Chapter of Rho Beta Epsilon (Honor society) at Worcester Polytechnic Institute

ACADEMIC SERVICES

Journal Reviewer

- IEEE Robotics and Automation Letters (RA-L)
- IET Cyber-Systems and Robotics
- IEEE Transactions on Intelligent Transportation Systems
- Discover Robotics
- The Journal of Supercomputing

Conference Reviewer

- International Conference on Robotics and Automation (ICRA)
- American Control Conference (ACC)
- IEEE Conference on Decision and Control (CDC)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- International Conference on Ubiquitous Robots (UR)
- European Control Conference (ECC)

SOCIAL MEDIA

LinkedIn: <https://www.linkedin.com/in/lening-li/>
Profile: <https://lening.li>
GitHub: <https://github.com/leelening>
Google Scholar: <https://scholar.google.com/citations?user=KWUJ10wAAAAJ\&hl=en>

PUBLICATIONS

arXiv Preprints

- P.1 **L. Li** and Z. Qian, “Topological guided actor-critic modular learning of continuous systems with temporal objectives,” *arXiv preprint arXiv:2304.10041*, 2023
- P.2 **L. Li** and J. Fu, “Policy synthesis for metric interval temporal logic with probabilistic distributions,” *arXiv preprint arXiv:2105.04593*, 2021

Conferences

- C.1 C. G. Atkeson, B. P. W. Babu, N. Banerjee, D. Berenson, C. P. Bove, X. Cui, M. DeDonato, R. Du, **L. Li**, P. Franklin, *et al.*, “No falls, no resets: Reliable humanoid behavior in the darpa robotics challenge,” in *2015 IEEE-RAS 15th International Conference on Humanoid Robots (Humanoids)*, pp. 623–630, IEEE, 2015
- C.2 **L. Li**, X. Long, and M. A. Gennert, “Birrtopt: A combined sampling and optimizing motion planner for humanoid robots,” in *2016 IEEE-RAS 16th International Conference on Humanoid Robots (Humanoids)*, pp. 469–476, IEEE, 2016
- C.3 **L. Li** and J. Fu, “Sampling-based approximate optimal temporal logic planning,” in *2017 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 1328–1335, IEEE, 2017
- C.4 **L. Li** and J. Fu, “Topological approximate dynamic programming under temporal logic constraints,” in *2019 IEEE 58th Conference on Decision and Control (CDC)*, pp. 5330–5337, IEEE, 2019
- C.5 **L. Li** and J. Fu, “Approximate dynamic programming with probabilistic temporal logic constraints,” in *2019 American Control Conference (ACC)*, pp. 1696–1703, IEEE, 2019
- C.6 **L. Li**, H. Ma, S. Han, and J. Fu, “Synthesis of proactive sensor placement in probabilistic attack graphs,” in *2023 American Control Conference (ACC)*, pp. 3415–3421, IEEE, 2023
- C.7 **L. Li**, H. Rahmani, and J. Fu, “Probabilistic planning with prioritized preferences over temporal logic objectives,” in *32nd International Joint Conference on Artificial Intelligence*, 2023(Acceptance rate: **15%**)

Journals

- J.1 M. DeDonato, F. Polido, K. Knoedler, B. P. Babu, N. Banerjee, C. P. Bove, **L. Li**, R. Du, P. Franklin, J. P. Graff, *et al.*, “Team wpi-cmu: Achieving reliable humanoid behavior in the darpa robotics challenge,” *Journal of Field Robotics*, vol. 34, no. 2, pp. 381–399, 2017
- J.2 Z. Chen, **L. Li**, and X. Huang, “Building an autonomous lane keeping simulator using real-world data and end-to-end learning,” *IEEE Intelligent Transportation Systems Magazine*, vol. 12, no. 1, pp. 47–59, 2018
- J.3 **L. Li**, H. Ma, A. N. Kulkarni, and J. Fu, “Dynamic hypergames for synthesis of deceptive strategies with temporal logic objectives,” *IEEE Transactions on Automation Science and Engineering*, 2022

Chapters

- Ch.1 C. G. Atkeson, P. B. Benezun, N. Banerjee, D. Berenson, C. P. Bove, X. Cui, M. DeDonato, R. Du, **L. Li**, P. Franklin, *et al.*, “Achieving reliable humanoid robot operations in the darpa robotics challenge: Team wpi-cmu’s approach,” in *The DARPA Robotics Challenge Finals: Humanoid Robots To The Rescue*, pp. 271–307, Springer, 2018

Ch.2 C. G. Atkeson, P. B. Benzun, N. Banerjee, D. Berenson, C. P. Bove, X. Cui, M. DeDonato, R. Du, **L. Li**, P. Franklin, *et al.*, “What happened at the darpa robotics challenge finals,” in *The DARPA Robotics Challenge Finals: Humanoid Robots To The Rescue*, pp. 667–684, Springer, 2018