

Hannah Lee

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Professional Summary

I am a PhD candidate at the University of Illinois Urbana-Champaign, graduating in May 2025, actively pursuing software developer roles in industry and government. My research, under Dr. Nancy M. Amato at the Parasol Lab, includes collaboration with MIT Lincoln Laboratory on distributed path planning algorithms for large-scale multi-robot systems. I specialize in search algorithms and am passionate about creating robust, resilient solutions for complex challenges. I prioritize software development best practices, including rigorous version control, code reviews, and testing.

Experience

Graduate Research Assistant

Aug 2020 – Present

Parasol Lab, University of Illinois at Urbana-Champaign

- Engineered constraint-search based task and motion planning algorithms, incorporating multithreading and parallel programming techniques to improve scalability, performance, and efficiency for multi-robot systems in distributed settings.
- Co-led the open-source initiative for the Parasol Planning Library (PPL), contributing to the development of advanced multi-robot path planning algorithms in C++.

Student Technical Assistant

May 2023 – Present

MIT Lincoln Laboratory

- Designed algorithms and planning frameworks to enhance collaboration and coordination in decentralized multi-robot systems, optimized for online planning and dynamic environments.
- Led projects on coordinating surface vehicles for wide-area ocean mapping and synchronizing drone swarms for complex tasks.

Lead Instructor

Jan 2021 – Present

AI4ALL

- Lead Instructor for AI4ALL's Ignite AI and Discover AI programs, teaching foundational AI and ML with an emphasis on ethics, tailored for undergraduates from diverse backgrounds.
- Mentored new instructors and designed interactive workshops, contributing to the success of AI4ALL's initiatives across multiple campuses.

Adjunct Professor

Jan – May 2020

Computer Science Department, Colorado School of Mines

- Instructor for CSCI 261: Programming Concepts, teaching 60 students fundamental programming in C++, including data structures and algorithms, with a focus on accessibility and engagement.
- Developed course materials and fostered a supportive learning environment through regular office hours, personalized feedback, and additional resources to help students succeed.

Software Intern

June – Aug 2018

Ricoh USA, Inc.

- Redesigned an automated testing platform using JavaScript and Django to simulate and evaluate the efficiency, accuracy, and quality of cutsheet printer outputs.
- Enhanced efficiency and functionality by optimizing database operations, reducing redundant testing, and streamlining the user interface for a better user experience.

Education

Doctor of Philosophy in Computer Science

Expected May 2025

University of Illinois at Urbana-Champaign

GPA: 3.94/4.0

- Thesis: Studies in Constraint-Based Search for Multi-Robot Planning
- Advisor: Nancy M. Amato

Bachelor of Science in Computer Science

Dec 2019

Colorado School of Mines

GPA: 3.95/4.0

- Major: Computer Science – Robotics and Intelligent Systems
- Minor: Electrical Engineering – Digital Systems

Awards and Honors

Graduate Awards and Honors:

- NSF Graduate Research Fellowship, National Science Foundation May 2020 – Aug 2023

Undergraduate Awards and Honors:

- Summa Cum Laude, Colorado School of Mines Dec 2019
- Faculty Choice Senior Award, Colorado School of Mines CS Dept. Dec 2019
- Grace Hopper Celebration Research Scholarship, ACM-WP Oct 2019
- National Dean's List, Colorado School of Mines Aug 2016 – Dec 2019
- President's Scholarship, Colorado School of Mines Aug 2016 – Dec 2019

Skills

Software:

- Proficient: C++, Python, CMake, Git, Bash
- Moderate: Java, ROS, MATLAB

Relevant Coursework:

- AI for Robot Manipulation
- Computer Vision
- Advanced Computational Topics in Robotics
- Learning and Control for Multi-Agent Systems

Project Repositories:

- github.com/parasollab/open-ppl
- github.com/hannahjmlee/MANA-Core
- github.com/hannahjmlee/MANA-Labs
- github.com/hannahjmlee/BenchmarkGenerator

Peer-Reviewed Publications

- **Lee, Hannah**, Zachary Serlin, Marco Morales, and Nancy M. Amato. "PRISM: Online Decentralized Multi-Agent Pathfinding with Rapid Information Sharing using Motion Constraints." *[Under Submission]*
- **Lee, Hannah**, James Motes, Marco Morales, and Nancy M. Amato. "An Analysis of Constraint-Based Multi-Agent Pathfinding Algorithms." *[Under Submission]*
- **Lee, Hannah**, James Motes, Marco Morales, and Nancy M. Amato. "Parallel Hierarchical Composition Conflict-Based Search for Optimal Multi-Agent Pathfinding." *IEEE Robotics and Automation Letters (RA-L)* 6, no. 4 (2021): 7001-7008.
- Motes, James, Read Sandström, **Hannah Lee**, Shawna Thomas, and Nancy M. Amato. "Multi-robot task and motion planning with subtask dependencies." *IEEE Robotics and Automation Letters (RA-L)* 5, no. 2 (2020): 3338-3345.