

## EDUCATION

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**Ph.D. – University of Illinois at Urbana-Champaign, Urbana, IL** **Aug 2020 - Present**  
Computer Science – Multi-Robot Task and Motion Planning  
Advisor: Nancy M. Amato  
GPA: 3.92/4.0

**Bachelor of Science – Colorado School of Mines, Golden, CO** **December 2019**  
Major: Computer Science – Robotics and Intelligent Systems  
Minor: Electrical Engineering – Digital Systems  
GPA: 3.95/4.0

## AWARDS AND HONORS

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### Graduate Awards and Honors:

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

### Undergraduate Awards and Honors:

- Graduated 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

## ENGINEERING AND TECHNICAL EXPERIENCE

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### Technical Experience:

- Task and Motion Planning
- Computer Vision
- Artificial Intelligence
- Robotics
- Embedded Systems
- Machine Learning
- Raspberry Pi
- Virtual Testing Software
- Arduino

### Programming Languages:

- C++
- Python
- C
- Java
- Ruby
- R
- Javascript
- HTML/CSS

### Frameworks and Engineering Software:

- MATLAB
- Robot Operating System
- Django
- Solidworks (Certified)

## RESEARCH INTERESTS

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- Multi-Robot Task and Motion Planning
- Multi-Robot Systems
- Parallel Algorithms
- Path and Motion Planning

## PEER-REVIEWED PUBLICATIONS

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- **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.
  - Presented at the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

# Hannah Lee

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- 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.
  - Presented at the 2020 IEEE International Conference on Robotics and Automation (ICRA)

## EXPERIENCE

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### **Graduate Research Assistant – Parasol Lab**

**Aug 2020 - Present**

*University of Illinois at Urbana-Champaign*

- Develop novel hybrid task and motion planning algorithms that provide improvements in scalability and performance in multi-robot systems
- Explore ways in which to incorporate multithreading and parallel programming to further improve the performance of hybrid algorithms
- Lead the Open Source Project that works to open source the Parasol Planning Library (PPL), a C++ library that develops novel planning algorithms

### **DREU Student Researcher – Parasol Lab**

**May 2019 – Aug 2020**

*University of Illinois at Urbana-Champaign*

- DREU is the Distributed Research Experience for Undergraduates program sponsored by the Computing Research Association for Widening Participation (CRA-WP)
- Used C++ to develop Task and Motion Planning Conflict-Based Search, an optimal multi-agent multi-task planning algorithm that solves payload transportation tasks with complex dependencies using heterogeneous teams of robots
- “Multi-Robot Task and Motion Planning with Complex Subtask Dependencies” paper published to the 2020 IEEE International Conference on Robotics and Automation (ICRA)

### **Undergraduate Student Researcher – MinDS@Mines Lab**

**Nov 2018 – Aug 2019**

*Colorado School of Mines*

- MinDS stands for Machine learning, Informatics, and Data Science, led by Prof. Hua Wang
- Assisted graduate students in applying machine learning methods to understand the complex interplays between multiple biological data from diverse resources
- This research involved producing novel algorithms for analyzing large scale heterogenous data sets

### **Software Intern – Ricoh USA, Inc.**

**June – Aug 2018**

- Used Javascript and Django to redesign the Cutsheet Automated Regression Tool (CART), an automated testing website that simulates physical prints made by cutsheet printers to ensure efficiency, accuracy, and quality of prints
- Increased efficiency and functionality while decreasing unnecessary testing by modifying database functionality and improved user experience by streamlining the user interface

### **Computer Science Capstone Project – Uber Technologies Inc.**

**May – June 2018**

- Proof of concept project – created a phone application that collects and verifies a user’s location by creating and comparing 3D models using 2D images
- Used Python to automate image processing and Java to develop a mobile application that took captured images and dispatched them to our testing server
- Utilized openMVG, openSFM, and MeshLab libraries and software to analyze 2D images and create 3D models

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## **Summer Intern – Computer Science Department**

**May – Aug 2017**

*Colorado School of Mines*

- Outreach Events:
  - Organized CS career events for high school students interested in STEM
  - Presented at STEM Fairs at various Denver elementary schools
- Summer Camps:
  - Exposed middle school students from Creighton Middle School to CS using interactive activities that coded in Racket
  - Led the CSM Summer Robotics Camp where middle school students were taught to code in Java to create their own video games and program Finch robots
  - Taught the Python Computing: Building a Sensor System (CSCI 250) course to high school students where they learned to code in Python and learned the basics of electrical circuits
- K-12 Teacher Workshops:
  - Assisted in teaching middle school teachers Python during the Python Training Camp
  - Managed CS Unplugged Workshops for elementary school teachers
  - Helped manage and organize the Computer Science Professional Development Week

## **TEACHING EXPERIENCE**

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### **Lead Instructor – AI4ALL**

**May 2022 – Present**

### **Instructor – AI4ALL**

**Aug 2021 – May 2022**

### **Teaching Assistant – AI4ALL**

**Jan – Aug 2021**

*University of Illinois at Urbana-Champaign*

- AI4ALL is a program that outreaches AI to underrepresented individuals to diversify the workforce
- Lead Discover AI course for the University of Illinois at Urbana-Champaign and University of North Texas campuses
- Teach the Discover AI course that focuses on teaching basic artificial intelligence and machine learning concepts and ethics to undergraduate students of varying backgrounds
- Create and present interactive workshops and content for the Discover AI course across all campuses

### **Adjunct Professor – CSCI 261**

**Jan – May 2020**

*Colorado School of Mines*

- Instructed CSCI 261: Programming Concepts course to a class of 60 students
- Created and managed class materials, content, and structure
- Taught core programming concepts in C++ to students from varying majors

### **Teaching Assistant – Computer Science Department**

**Jan 2017 – May 2020**

*Colorado School of Mines*

- CSCI 101: Introduction to Computer Science (Jan 2017 – May 2018)
- CSCI 262: Data Structures (Aug 2018 – May 2020)
  - Assisted with record keeping, classroom instruction, and development of classroom materials
  - Created and managed course websites
  - Graded coursework and proctored exams
  - Aided students with homework, projects, and exam preparation

### **Teaching Assistant – Discover, Explore, Create, Technology (DECTech)**

**Aug 2017 – Dec 2019**

*Colorado School of Mines*

- DECTech is an outreach program that exposes grade school girls to STEM topics and careers
- Taught students a variety of STEM topics through weekly interactive activities
- Maintained and managed DECTech website

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## PROFESSIONAL ACTIVITIES

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- Editorial service – peer review submissions to IEEE journals and conferences Aug 2020 – Present
- Graduate student recruitment for University of Illinois at Urbana-Champaign March 2022
- Participated in NSF RESET Conference March 2021
- Member of the IEEE Robotics and Automation Society (RAS) May 2020 – Present
- Member of the Linux Users Group (LUG) Aug 2017 – Dec 2019
- Member of Colorado School of Mines ACM-W group Aug 2018 – Dec 2019
- Undergraduate student recruitment for Colorado School of Mines May 2017 – May 2020
- Research Mentoring:
  - Azhar Karypbayeva, iCAN May – Aug 2021
  - Athena Zheng, CS STARS Jan 2022 – May 2022
  - Rachael Wei, CS STARS Jan 2022 – May 2022
  - Tavie Kittredge, DREU May 2022 – Aug 2022
  - Mia Erdenebileg, CS STARS Jan 2022 – Present
  - Anushka Kansal, CS STARS March 2022 – Present
  - Nikhila Puppal, CS STARS March 2022 – Present
  - Sam Pasquesi March 2022 – Present
  - Ana Elissa Cabrera, iCAN May 2022 – Present
  - Brad Yang Aug 2022 – Present
  - Melissa Aninagyei-Bonsu, CS STARS Aug 2022 – Present