

APARAJITO SAHA

rajsaha@umich.edu — LinkedIn — Portfolio

RESEARCH INTERESTS

Instruction-following mobile manipulation, spatiotemporal perception and representations, hierarchical task & motion planning

EDUCATION

M.S. Robotics, University of Michigan, Ann Arbor

Cumulative GPA: 4.00/4.00

Relevant Courses: Advanced Computer Vision, 3D Robot Perception, Online Learning for Control, Computational Human-Robot Interaction

Ann Arbor, MI, USA

Aug 2024 — Exp. May 2026

B.S. Electrical & Computer Engineering + Computer Science, Cornell University

Cumulative GPA (double major): 3.74/4.00

Honors: Cum Laude, Departmental Honors in Computer Science, Dean's List

Relevant Courses: Fast Robots, Foundations of Robotics, Machine Learning, Computer Vision, Embedded Operating Systems, Analysis of Algorithms

Ithaca, NY, USA

Aug 2018 — May 2022

RESEARCH EXPERIENCE

Graduate Student Research Assistant, Mapping & Motion Lab

Supervising Faculty: Prof. Bernadette Bucher + Prof. Nima Fazeli

University of Michigan

Dec 2024 — Present

- Designed a benchmark proposing the interactive object search problem for mobile manipulators, which couples long-horizon spatial reasoning with fine-grained control for task planning and execution in unknown environments
- Led implementation efforts for a photorealistic, physics-driven extension on Nvidia's IsaacSim platform that leverages procedural generation and interactable asset population for creating multi-room indoor scenes
- Advised a team of graduate and undergraduate students for deploying state-of-the-art systems such as MAST3R-SLAM, ConceptGraphs and AnyGrasp on a Boston Dynamics Spot quadruped robot, with the objective of producing an open-source software stack for mobile manipulation
- Developed a method to add object-map alignment to visual-semantic frontier mapping to provide robust localization and open-set object goal navigation capabilities

Graduate Student Research Assistant, Distributed Autonomous Systems & Controls Lab

Supervising Faculty: Prof. Dimitra Panagou

University of Michigan

Jan 2025 — May 2025

- Conceived a lightweight warehouse simulation for evaluating multi-robot reinforcement learning algorithms such as Shared Experience Actor-Critic and Deep Q-Learning in coordinated pick-up-and-delivery tasks
- Contributed lecture content on learning for multi-robot collaboration for the "Multi-Robot Systems" graduate course taught by Professor Panagou in the Winter 2026 semester

Undergraduate Research Assistant, EmPRISE Lab

Supervising Faculty: Prof. Tapomayukh Bhattacharjee

Cornell University

Aug 2021 — May 2022

- Engineered a prototype circuit board for managing real-time communication of tactile feedback from a whole-arm fabric skin sensor system, earning an acknowledgment for the contribution in B. Xu et. al. "CushSense: Soft, Stretchable, and Comfortable Tactile Sensing Skin for Physical Human-Robot Interaction" *International Conference on Robotics & Automation, 2024*

PUBLICATIONS

Preprints

- **A. Saha**, Z.H. Gan, J. Skwinski, J. Guo, A. Arapin, J. Acheampong, S. Shaik, C. Ku, Y. Hu, N. Fazeli, B. Bucher. "Mobile InterAct: Interactive Semantic Object Search on a Mobile Manipulator" (*in-progress*)

Technical Reports

- A. Khurana*, K. Ranjan*, **A. Saha***. "AroundSound: Digital Echolocation for the Visually Impaired." *CircuitCellar Issue 386, Sept. 2022* (* denotes equal contribution)

PROFESSIONAL EXPERIENCE

Software Development Engineer, Amazon Fulfillment Technologies & Robotics
Manager: Todd Clemetson

North Reading, MA, USA
Jul 2022 — Aug 2024

- Designed autonomous robotic movement solutions deployed to over 1 million drive units in Amazon's global warehouse network
- Led a zero-downtime serverless rearchitecture and migration effort for a critical production service responsible for computing and updating unavailable resources on warehouse floors
- Contributed to algorithms for storage and retrieval optimization used in Amazon's Sequoia fulfillment center architecture, reducing delivery miss rates
- Developed a continuous improvement and deployment pipeline framework for the robotic movement team, leading to a 2 hour reduction in downtime and maintenance per service per week across 8 Tier-1 and Tier-2 services
- Participated in on-call rotations to resolve high-severity events, mentored interns and new engineers on engineering practices and projects, and held open office hours for operations managers to troubleshoot floor issues

TEACHING

Graduate Student Instructor, University of Michigan, Ann Arbor
EECS 442: Computer Vision (*240 students/ semester*)

Ann Arbor, MI, USA
Aug 2025 — Present

Teaching Assistant, Cornell University
ECE 5725: Design with Embedded Operating Systems (*80 students/ semester*)

Ithaca, NY, USA
Aug 2021 — May 2022

Peer Advisor, Cornell University
ENGRG 1050: Engineering Seminar (*25 students/ semester*)

Ithaca, NY, USA
Aug 2021 — May 2022

MENTORSHIP

University of Michigan, Ann Arbor

- Jinjia Guo, M.S. Robotics *Sept 2025 — Present*
- Kornvik Tanpipat, M.S. Robotics *Sept 2025 — Present*
- Saumit Vedula, M.S. Robotics *Sept 2025 — Present*
- Aileen Yan, M.S. Electrical & Computer Engineering *Sept 2025 — Present*
- Chenrui Gao, B.S. Computer Science & Engineering *Sept 2025 — Present*
- Georgia Zender, B.S. Computer Science & Engineering *Feb 2025 — May 2025*

Amazon Fulfillment Technologies & Robotics

- Hemant Palavali, Software Development Engineer *December 2023 — March 2024*

Cornell University

- Cornell Cup Robotics Team (20+ students) *Aug 2021 — May 2022*

SKILLS

Programming Languages: Python, C++, Java, MATLAB

Software: IsaacSim, PyTorch, ROS2, Slurm, Git, Docker, AWS Lambda, AWS DynamoDB

Hardware: NVIDIA Jetson, Raspberry Pi, Rapid Prototyping (3D Printing, Soldering, Circuit Board Design)