

Thor Helgeson

Present Address

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Permanent Address

212 West Summit St
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Education

B.S., Robotics, Minor in History of Art, University of Michigan, Ann Arbor, MI

Graduating April, 2026

GPA: 4.0/4.0

Relevant Coursework: Localization, Mapping, and Navigation; Differential Equations; Introduction to Dynamics and Vibrations; Applied Linear Algebra; Discrete Math; Data Structures and Algorithms

Professional Experience

University of Michigan, Industrial and Operations Engineering, Ann Arbor, MI

January 2024 to present

Research Assistant

- Retrofitted virtual reality simulator for new human-robot interaction study
- Will conduct human subject research involving the legibility of motion planned paths
- Will analyze data from this study using statistical significance tests

University of Michigan, Robotics, Ann Arbor, MI

August 2023 to present

Instructional aide, Human Robot Systems (Rob 204)

- Lead students through technical assignments in a lab setting to facilitate learning
- Coordinated with other instructional aides to ensure smooth operation of classroom activities
- Instructed students in an office-hours setting to give them guidance on technical assignments

University of Michigan, Robotics, Ann Arbor, MI

May to August 2023

Course development team, Human Robot Systems (Rob 204)

- Worked with a team to create lab activities which cover learning objectives related to human-robot interaction
- Designed and launched a web-based robotic arm simulator for use in lab activities
- Wrote comprehensive documentation to explain the steps of technical tasks in detail

Project Experience

Simultaneous Localization and Mapping

August to December 2023

- Performed system identification and tuned a PID-based motion controller to position robot within 5 cm of target using differential drive odometry
- Used occupancy grid mapping to localize robot based on 2D LIDAR scans
- Implemented particle filter to fuse differential drive odometry with sensor and action models and simultaneously localize and map environment

Web-Based Robotic Arm Simulator

July to August 2023

- Designed, implemented, and tested a web-based simulator for the JEMRMS on the ISS, a 6 DOF arm
- Launched and maintained the simulator for use in a lab activity for a University of Michigan class (ROB 204)
- Collaborated with other team members to create a custom, Arduino-based human interface device

Honors and Awards

William J. Branstrom Freshman Prize

- Awarded for ranking within the top 5% of my class in the College of Engineering

College of Engineering Dean's Honor List, Fall 2022, Winter 2023, Fall 2023

Skills

- Controls: ROS framework, C++, Java, WPILib
- Data Analysis: MATLAB, Python (NumPy, Matplotlib, Pandas), Microsoft Office Suite
- Visualization/Markup: Unity, C#, LaTeX, JavaScript (Node.js, Three.js, WebGL), HTML/CSS