

Steven M. Hyland

Robotics Engineer | Manipulation | Physical Reasoning | Active Perception

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EDUCATION

Worcester Polytechnic Institute

exp. Aug. 2026

Ph.D. Robotics Engineering

Worcester, MA

- Research Focus: **robot manipulation, active perception, physical property estimation through interaction**
- Presidential Fellow, NSF NRT FORW-RD Fellow, Glenn Yee Award Recipient, IEEE RAS President

Columbia University

May 2019

B.S. Mechanical Engineering

New York, NY

- Kings Crown Leadership Award, Engineering Student Council, Senior Class Representative

EXPERIENCE

Worcester Polytechnic Institute (WPI)

Aug. 2021 – Present

Doctoral Research Assistant - [Adaptive & Intelligent Robotics](#) and [Soft Robotics](#) Labs

Worcester, MA

- Developed a framework enabling robots to estimate **3D center of mass of unknown objects through active pushing interactions**, combining dynamics modeling, force sensing, and optimization.
- Developed a **MuJoCo simulation pipeline for sim-to-real validation of manipulation strategies**, enabling rapid evaluation of model-based and reinforcement learning approaches.
- Designed and executed experiments using **industrial robot arms, force/torque sensing, and vision systems** to validate manipulation strategies on physical hardware.
- Mentored undergraduate researchers, coordinating demonstrations for NSF and IEEE RAS outreach initiatives.

Seegrid

Nov. 2019 – Aug. 2021

Implementation Engineer

Pittsburgh, PA

- Programmed and deployed autonomous mobile robots for Fortune 500 clients (Amazon, GM, UPS), supporting operations with **20+ robots per facility**.
- Designed and optimized fleet pathing logic to improve throughput regularly by >10%
- Built internal Python tools to accelerate deployment process by ~20 hrs per installation.
- Collaborated cross-functionally with product and customer teams to tailor AMR behaviors to site workflows.

Avar Robotics

Sep. 2019 – Nov. 2019

Robotic Design Engineer

New York, NY

- Modeled next-generation inventory-sorting robot in SolidWorks; performed FEA to verify structural safety.
- Prototyped tetherless mobile redesign enabling untethered, infrastructure free operation.

PUBLICATIONS & PRESENTATIONS

IEEE IROS 2026 (*submitted*)

Sep. 2026

Before the Tipping Point: Force-Guided Active Perception for Shape-Agnostic Estimation of 3D Centers of Mass

Pittsburgh, PA

IEEE CASE 2025

Oct. 2025

Onboard Sensing and Pushing of Unknown Payloads for CoM Estimation with a Holonomic Mobile Robot

Los Angeles, CA

NEMS 2025 (*oral*)

Jun. 2025

Onboard Sensing and Pushing of Unknown Payloads for CoM Estimation with a Holonomic Mobile Robot

Boston, MA

IEEE IROS 2023

Sep. 2023

Predicting Center of Mass by Iterative Pushing for Object Transportation and Manipulation

Detroit, MI

CERTIFICATIONS, SKILLS & INTERESTS

- **Certifications:** Karass Effective Negotiation, Forklift Certified
- **Technologies:** Python (NumPy, SciPy, PyTorch, OpenCV), MuJoCo, Gazebo, ROS 1&2, MATLAB, C++, MoveIt.
- **Robotics:** Model-based control, Sim2Real, parameter estimation, manipulation planning, dynamics modeling.
- **Skills:** Leadership, Scientific Communication, Cross-Functional Collaboration, SolidWorks & 3D Modeling.