

Philip (Yizhou) Huang

Pittsburgh, PA | philiphuang@cmu.edu | philip-huang.com | linkedin.com/in/philip-yizhou-huang
github.com/philip-huang | scholar.google.com

Education

- Carnegie Mellon University**, Ph.D. in Robotics Aug 2023 – Present
GPA: 4.12/4.33. Research: Multi-robot task and motion planning (Advisor: Jiaoyang Li)
- University of Toronto**, M.Sc. in Computer Science Sept 2021 – Aug 2023
GPA: 4.00/4.00. Research: Task and motion planning (Advisors: Florian Shkurti, Tim Barfoot)
- University of Toronto**, B.A.Sc. in Engineering Science Sept 2016 – Jun 2021
GPA: 3.88/4.00 (Major: Machine Intelligence)

Selected Publications

- Prompt-to-Product: Generative Assembly via Bimanual Manipulation, IEEE RAM 2026 [pdf] [video]
- VAMP-MR: Vector-Accelerated Motion Planning and Execution for Multi-Robot-Arms, IEEE IROS 2026 [pdf]
- Benchmarking Shortcutting Techniques for Multi-Robot Arm Motion Planning, IEEE IROS 2025 [pdf][video]
- APEX-MR: Multi-Robot Asynchronous Planning and Execution for Cooperative Assembly, RSS 2025 [pdf][video]
- STAMP: Differentiable Task and Motion Planning via SVGD, IEEE RA-L 2025 [pdf][video]
- Field Testing of a Stochastic Planner for ASV Navigation Using Satellite Images, IEEE T-FR 2024 [pdf][video]
- Stochastic Planning for ASV Navigation Using Satellite Images, IEEE ICRA 2023 [pdf][video]
- Continual Model-Based Reinforcement Learning with Hypernetworks, IEEE ICRA 2021 [pdf][video]

Academic Experience

- Robotics Researcher**, AI for Robot Coordination at Scale Lab, CMU Aug 2023 – Present
- Developed an asynchronous multi-robot planning framework that achieved **48% faster execution** compared to sequential planning and 36% compared to synchronous planning on average.
 - Designed a multi-level reasoning framework for **the first dual-arm robotics system** for customized LEGO assembly using commercial bricks, integrating physics engine, task and motion planning, and real-time control. Received **media coverage** in Modern Machine Shop.
 - Building a generalizable skill graph and ontology for autonomous robot assembly with the ARM Institute.
- Robotics Researcher**, Robot Learning & Vision Lab, University of Toronto Jan 2020 – Aug 2023
- Conducted **km-scale, fully autonomous field tests** of ASVs equipped with GPS, vision, and sonar in ROS.
 - Proposed a novel stochastic planning algorithm using satellite images, achieving a **15% improvement** in expected travel time across 1000+ unique lake environments.
 - Developed a continual model-based reinforcement learning approach with hypernetworks and demonstrated state-of-the-art performance across diverse robotic simulations, including manipulation tasks.
- Object Detection Co-Lead**, University of Toronto Self-Driving Car Team Feb 2018 – Aug 2020
- Led the perception team in a three-time winning effort at the SAE AutoDrive Challenge.
 - Published **open-source LiDAR detection software** on GitHub (**280+ stars**) for academic and industrial use.

Industry Experience

- Research Scientist Intern**, NVIDIA, Seattle, WA May 2026 – August 2026
- Developing a GPU-accelerated, general-purpose algorithm for scheduling and planning multiple robot arms.
 - Research on applications of multi-robot systems in manufacturing, such as assembling NVIDIA's Blackwell GPU.

Skills

Languages and Tools: Python, C++, JavaScript, HTML, Julia, MATLAB, Bash, VLM, PyTorch, Docker, Linux, Git
Specialties: Multi-Robot Systems, Task and Motion Planning, Manipulation, Field Robotics, Perception Systems