
CHAHYON KU

PhD Student
Robotics Department
University of Michigan

 [chahyon-ku.github.io](https://github.com/chahyon-ku)  chahyon@umich.edu
 206 792 6453  [chahyon-ku](https://github.com/chahyon-ku)
 Ann Arbor, MI  [chahyonku](https://www.linkedin.com/in/chahyonku)

SUMMARY

I am a PhD student at University of Michigan advised by Assistant Professor Bernadette Bucher, currently working on Robot Learning for Mobile Manipulation.

SKILLS

Languages: Python, C/C++

Technologies: PyTorch, JAX, CUDA, ROS, Bullet

EDUCATION

- 9/2024 - 5/2028 **Doctor of Philosophy in Robotics** University of Michigan
• Advisor: Bernadette Bucher
• Research: Robot Learning for Mobile Manipulation
- 9/2022 - 5/2024 **Master of Science in Robotics** University of Minnesota
• Advisor: Karthik Desingh
• Research: Imitation Learning for Manipulation, Object-centric Representations
- 9/2016 - 8/2022 **Bachelor of Science in Computer Science** University of Washington
• Research: Object-centric Representations, Instance Segmentation
• Coursework: Artificial Intelligence, Machine Learning, Computer Vision, Natural Language Processing

PUBLICATIONS

Katrina Ashton, **Chahyon Ku**, Shrey Shah, Wen Jiang, Kostas Daniilidis, Bernadette Bucher. HELIOS: Hierarchical Exploration for Language-grounded Interaction in Open Scenes. arXiv:2509.22498, 2025.

Chahyon Ku, Carl Winge, Ryan Diaz, Wentao Yuan, and Karthik Desingh. Evaluating Robustness of Visual Representations for Object Assembly Task Requiring Spatio-Geometrical Reasoning. ICRA, 2024.

RESEARCH EXPERIENCE

- Workshop Paper **HELIOS: Hierarchical Exploration for Language-grounded Interaction in Open Scenes**
• Presented as 10-min Spotlight at CoRL 2025 Learning Effective Abstractions for Planning Workshop.
• Worked on a hierarchical exploration agent that performs open vocabulary mobile manipulation by utilizing VLM value maps for global planning and uncertainty-aware gaussian splats for local planning.
- Conference Pub. **Evaluating Robustness of Visual Representations for Object Assembly Task Requiring Spatio-Geometrical Reasoning** <https://sites.google.com/view/geometric-peg-in-hole>
• Presented as Oral at ICRA 2024
• Presented as 8-min Spotlight at CoRL 2023 Pretraining for Robot Learning Workshop
• Proposed and implemented a novel dual-arm robotic manipulation task involving the assembly of parts with a specific geometric relationship, modeling real-world tasks such as capping a bottle
• Evaluated the performance of pretrained vision encoders through imitation learning in simulation and real
- Undergrad. Res. **Evaluating SORNet on a Geometric and Spatial Reasoning Dataset** [chahyon-ku.github.io/sornet-geospa](https://github.com/chahyon-ku/sornet-geospa)
• Undergraduate research at UW Robotics and State Estimation Lab (PI: Postdoc Scholar Karthik Desingh)
• Extended *SORNet: Spatial Object-Centric Representations for Sequential Manipulation* (CoRL 2021) to predict the geometric and spatial relations as predicates from RGB images
• Generated simulated images of elementary shapes in various configurations (supported, contained, etc.)
• Performed comparative analysis on sensitivity to unseen object attributes and relations
- Undergrad. Res. **University of Washington-Amazon Robot Manipulation Project**
• Undergraduate research at UW Robotics and State Estimation Lab (Mentor: PhD Candidate Yi Li)
• Worked on building a system of UR16 and RGBD camera to pick objects from Amazon pods
• Generated simulated RGBD images of randomized bins using the Google Scanned Objects (NVSII)
• Implemented, trained, and evaluated a U-net-based baseline for instance segmentation of products

PROFESSIONAL EXPERIENCE

- 9/2025 - 12/2025 **Intern, Research** NASA Jet Propulsion Laboratory
• Conduct research in indoor-outdoor navigation from natural language instructions.
• Produce a real-robot demo of a rover with a 7-DoF arm navigating office / lab campus environments.

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- 6/2025 – 9/2025 **Intern, Perception** **Waymo**
- Reimplemented and Extended a Recent State-of-the-art Method for 3D Object Detection from Camera and LIDAR Observations.
- 6/2023 – 9/2023 **Intern, Perception** **Zoox**
- Developed computer vision models for improving autonomous driving behavior around pedestrians
 - Identified the problem and mined 1 million relevant samples using proprietary C++/Python codebase
 - Designed and conducted experiments to present findings in documents and presentations
 - Communicated with various teams on the AI stack for feedback and smoother integration onto the vehicle

TEACHING EXPERIENCE

- 9/2023 – 5/2024 **Graduate Teaching Assistant** **University of Minnesota**
- CSCI 5551 Introduction to Intelligent Robotics
 - Adapted the kineval-stencil framework by Professor Chad Jenkins to fit contents of the course
 - Implemented solutions and improved the autograder with detailed error messages.
 - Created a new homework assignment combining previous assignments in kinematics, path planning, and state machines to simulate a mobile pick-and-place task.
- 4/2022 – 6/2022 **Undergraduate Teaching Assistant** **University of Washington**
- CSE 473 Artificial Intelligence
 - Created and graded problem sets on search, markov decision processes, and reinforcement learning.