

# Ryan Diaz

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github.com/RyangDiaz

## EDUCATION

<b>Rice University</b> <i>Doctor of Philosophy, Computer Science</i>	Aug. 2025 – Present Houston, TX
<b>University of Minnesota, Twin Cities</b> <i>Bachelor of Science, Computer Science and Mathematics</i>	Sep. 2021 – May 2025 Minneapolis, MN
<ul style="list-style-type: none"><li>◦ <b>Honors:</b> summa cum laude with high distinction (GPA 4.0/4.0)</li><li>◦ <b>Relevant Coursework:</b> Deep Learning for Robot Manipulation, Machine Learning, Data Analysis, Computer Vision, Natural Language Processing, Stochastic Processes, Artificial Intelligence, Linear Algebra, Probability and Statistics</li></ul>	

## RESEARCH EXPERIENCE

<b>Human-Centered AI and Robotics Group</b> , Rice University <i>Graduate Researcher, Advised by Prof. Vaibhav Unhelkar</i>	Aug. 2025 – Present Houston, TX
<ul style="list-style-type: none"><li>◦ Created realistic simulation environment to evaluate reinforcement learning agents trained with LLM-generated hierarchical rewards.</li></ul>	
<b>Robotics: Perception and Manipulation Lab</b> , University of Minnesota, Twin Cities <i>Undergraduate Researcher, Advised by Prof. Karthik Desingh</i>	Dec. 2022 – May 2025 Minneapolis, MN
<ul style="list-style-type: none"><li>◦ Trained robotic manipulation policies using behavior cloning with image and force-torque data on a contact-rich peg-in-hole insertion task. [Project Page]</li><li>◦ Evaluated robustness of 8 pretrained vision encoders in a novel 6-DoF bimanual peg-in-hole insertion task with respect to peg/hole shape and grasp variations. [Project Page]</li><li>◦ Leveraged the Blender Python API to programmatically generate large-scale datasets of cap and bottle geometries that vary widely in size and shape. [Project Page]</li></ul>	
<b>CERL Lab</b> , Washington University in St. Louis <i>Undergraduate Researcher (NSF REU), Advised by Prof. Yevgeniy Vorobeychik</i>	May 2024 – Aug. 2024 St. Louis, MO
<ul style="list-style-type: none"><li>◦ Utilized reinforcement learning and imitation learning algorithms with image inputs to teach a simulated autonomous vehicle to maneuver around static obstacles in its path. [Project Page]</li><li>◦ Implemented a system of data collection in the CARLA simulation, automatically annotating over 1000 images for object detection model training.</li><li>◦ Constructed a ROS node to deploy trained object detection models on a real-world autonomous agent in a scaled-down urban environment.</li></ul>	

## PUBLICATIONS

### CONFERENCE PUBLICATIONS

- C1. Zhiqin Qian, **Ryan Diaz**, Sangwon Seo, and Vaibhav Unhelkar, “Hierarchical Reward Design from Language: Enhancing Alignment of Agent Behavior with Human Specifications,” in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2026.
- C2. **Ryan Diaz**, Adam Imdieke, Vivek Veeriah, and Karthik Desingh, “AugInsert: Learning Robust Visual-Force Policies via Data Augmentation for Object Assembly Tasks,” in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025.
- C3. Chahyon Ku, Carl Winge, **Ryan Diaz**, Wentao Yuan, and Karthik Desingh, “Evaluating Robustness of Visual Representations for Object Assembly Task Requiring Spatio-Geometrical Reasoning,” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2024.

## PRESENTATIONS

<b>Oral/Poster: IEEE/RSJ IROS 2025</b> “Learning Robust Visual-Force Policies via Data Augmentation for Object Assembly Tasks”	Oct. 2025 Hangzhou, CN
<b>Poster: WashU STEM Poster Palooza</b> “Vision-Based Algorithms for Obstacle Detection and Avoidance in Autonomous Vehicles”	Aug. 2024 St. Louis, MO
<b>Video: UMN Undergraduate Research Symposium</b> “Augmenting a Dual-Arm Contact-Rich Robotic Manipulation Task with Force-Torque Data”	Dec. 2023 Minneapolis, MN
<b>Poster: UMN Summer Undergraduate Research Expo</b> “Imitation Learning for Spatio-Geometry Driven Assembly Task with Dual-Arm Manipulator”	Aug. 2023 Minneapolis, MN
<b>Poster: UMN Undergraduate Research Symposium</b> “Large-Scale Object Generation for Learning Robotic Manipulation Tasks”	Apr. 2023 Minneapolis, MN

TEACHING EXPERIENCE

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<b>CSCI 4521: Applied Machine Learning</b> <i>Undergraduate Teaching Assistant</i>	Spring 2025 <i>University of Minnesota, Twin Cities</i>
<b>MATH 5652: Introduction to Stochastic Processes</b> <i>Undergraduate Paper Grader</i>	Spring 2025 <i>University of Minnesota, Twin Cities</i>
<b>CSCI 2033: Elementary Computational Linear Algebra</b> <i>Undergraduate Teaching Assistant</i>	Spring 2023, Fall 2023, Fall 2024 <i>University of Minnesota, Twin Cities</i>
<b>CSCI 4511W: Introduction to Artificial Intelligence</b> <i>Undergraduate Teaching Assistant</i>	Spring 2024 <i>University of Minnesota, Twin Cities</i>
<b>CSCI 1933: Introduction to Algorithms and Data Structures</b> <i>Undergraduate Teaching Assistant</i>	Summer 2023 <i>University of Minnesota, Twin Cities</i>
<b>UMN Taylor Tutoring Center</b> <i>Undergraduate Peer Tutor</i>	Fall 2022 <i>University of Minnesota, Twin Cities</i>

ACADEMIC SERVICE

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<b>Conference Reviewer</b> <i>ICRA (2025), IROS (2025)</i>
<b>Undergraduate Peer Reviewer</b> <i>Minnesota Undergraduate Research and Academic Journal (MURAJ) (2024-2025)</i>

AWARDS AND HONORS

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IROS Student and Developing Countries (SDC) Travel Award	Aug. 2025
UMN College of Science and Engineering Dean’s List (x8)	Dec. 2021 – May 2025
CRA Outstanding Undergraduate Researcher Award (Honorable Mention)	Jan. 2025
UMN Undergraduate Research Opportunities Program (UROP) Award (x2)	Aug. 2023 – Aug. 2024
UMN Prof. Hans H. Dalaker Mathematics Scholarship Award	Jun. 2024
UMN Hopper-Dean Foundation Computer Science Scholarship Award	Jun. 2024
UMN Ella Thorp Mathematics Scholarship Award	May 2023
UMN Undergraduate Research Scholarship (URS) Award	Jan. 2023

TECHNICAL SKILLS

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<b>Languages:</b> Python, Java, C, C++, JavaScript, HTML, MATLAB, Bash, LaTeX
<b>Libraries:</b> PyTorch, Tensorflow, OpenCV, NumPy, ROS(2), Transformers (HuggingFace), MuJoCo
<b>Software:</b> Git, Linux, Blender