

Ryan Diaz

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EDUCATION

Rice University <i>Doctor of Philosophy, Computer Science</i>	Aug. 2025 – Present <i>Houston, TX</i>
University of Minnesota, Twin Cities <i>Bachelor of Science, Computer Science and Mathematics</i>	Sep. 2021 – May 2025 <i>Minneapolis, MN</i>

- **Honors:** summa cum laude with high distinction (GPA 4.0/4.0)
- **Relevant Coursework:** Deep Learning for Robot Manipulation, Machine Learning, Data Analysis, Computer Vision, Natural Language Processing, Stochastic Processes, Artificial Intelligence, Linear Algebra, Probability and Statistics

RESEARCH EXPERIENCE

Human-Centered AI and Robotics Group , Rice University <i>Graduate Researcher, Advised by Prof. Vaibhav Unhelkar</i>	Aug. 2025 – Present <i>Houston, TX</i>
Robotics: Perception and Manipulation Lab , University of Minnesota, Twin Cities <i>Undergraduate Researcher, Advised by Prof. Karthik Desingh</i>	Dec. 2022 – May 2025 <i>Minneapolis, MN</i>
<ul style="list-style-type: none">◦ Created realistic simulation environment to evaluate reinforcement learning agents trained with LLM-generated hierarchical rewards.◦ Trained robotic manipulation policies using behavior cloning with image and force-torque data on a contact-rich peg-in-hole insertion task. [Project Page]◦ 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]◦ 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]	

- CERL Lab**, Washington University in St. Louis
Undergraduate Researcher (NSF REU), Advised by Prof. Yevgeniy Vorobeychik May 2024 – Aug. 2024
St. Louis, MO
- 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]
 - Implemented a system of data collection in the CARLA simulation, automatically annotating over 1000 images for object detection model training.
 - Constructed a ROS node to deploy trained object detection models on a real-world autonomous agent in a scaled-down urban environment.

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

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

TEACHING EXPERIENCE

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

ACADEMIC SERVICE

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

AWARDS AND HONORS

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

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