Raymond Yu

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Education

University of Washington Seattle, WA

Bachelor of Science in Computer Science and Mathematics *Sep. 2022 – June 2026*

- GPA: 3.85/4.0
- Related Courses: Social Reinforcement Learning (Grad), Reinforcement Learning (Grad), Computer Vision, Deep Learning, Machine Learning, Algorithms, Autonomous Robots, Data Structures & Parallelism, Hardware/Software Interfaces, Databases

Robinson Center for Young and Capable Scholars Seattle, WA

UW Academy *Sep. 2022 – June 2026*

- Withdrew from high school at the end of 10th grade to enroll as a freshman at the University of Washington through the Robinson Center, joining a small cohort of thirty academically advanced and highly motivated students.

Research Experience

AI Robotics Research Assistant June 2024 – Present

Washington Embodied Intelligence and Robotics Development (WEIRD) Lab *Seattle, WA*

- Automating a Real-to-Sim-to-Real pipeline in IsaacLab by adding automatic data collection, a hierarchical system to solve long-horizon tasks, and automatic 3D reconstruction of articulated objects.
- Contributed to an open-sourcing effort of robotics foundational models by conducting multi-task evaluation benchmarks along with leading efforts in sim2real by training others to use the real world stack.
- Advisor: Abhishek Gupta
- Collaborations: UW, Nvidia, AI2, CMU, KAIST

PRIOR Research Intern January 2024 – Present

Allen Institute for AI *Seattle, WA*

- Developed a cutting-edge, seasonally invariant self-supervised change detection model, surpassing state-of-the-art performance benchmarks, trained on a dataset of over 30M satellite images.
- Proposed OPTIMUS for filtering vast amounts of satellite data to extract a diverse and representative set of images, significantly reducing the annotation effort required by Amazon Mechanical Turk workers.
- Designed and deployed a dynamic annotation interface with integrated time series visualization.
- Mentors: Favyen Bastani, Piper Wolters

Computer Vision & Robotics Research Assistant January 2024 – April 2024

Reasoning, AI, and VisioN (RAIVN) Lab *Seattle, WA*

- Are Vision-Language Models (VLM) Capable of Physical Reasoning?
- Lead an effort to develop a procedural 3D scenario generation method inside Robosuite (Mujoco based) simulator for benchmarking VLM performance on physical reasoning tasks in robotics.
- Advisor: Ranjay Krishna

Work Experience

Teaching Assistant - CSE311 (Discrete Mathematics) June 2024 – Present

Paul G. Allen School for Computer Science and Engineering *Seattle, WA*

- Supported lectures, ran weekly quiz sections to 30+ students, hosted office hours, graded assignments, hosted 1-on-1's with students.
- Assisted in creating weekly homework and exam questions as a member of the content team.
- Managed course logistics including updating course webpage, sending announcements to students.

Software Engineer January 2023 – January 2024

Husky Robotics *Seattle, WA*

- Contributed to the achievement of long-term objectives and secured 2nd place at CIRC 2023.
- Led the development and integration of the mission-control system by enhancing UI/UX with real-time telemetry data capture, rover simulation, and dynamic navigation features.

Calculus & Linear Algebra Tutor June 2023 – Sept. 2023
University of Washington Math Study Center *Seattle, WA*

- Tutored 10-50 students daily in Calculus I-III as well as Linear Algebra, assisting them in grasping fundamental concepts and problem-solving techniques.

Teaching Assistant - Saturday Enrichment Program March 2023 – June 2023
University of Washington Robinson Center *Seattle, WA*

- Led neuroscience, robotics, computing, and physics sections for over a 40 students.
- Facilitated small group conversations with students, participated in classroom activities, evaluated and documented student work, performed experiments or demonstrations and monitored student safety.

Projects

RialToX: A Multi-Robot Real-to-Sim-to-Real Framework April 2024 – June 2024

- Contributed to the development of a real-to-sim-to-real pipeline, focusing on extending it to support multi-robot control policies (Decentralized PPO) to train in simulation on handcrafted tasks that involve collaboration.
- Addressed challenges in scaling multi-robot systems to real-world applications by optimizing simulation coverage of the state space, reducing the need for extensive data collection, and simplifying simulation engineering, while ensuring safer training environments that mitigate risks associated with real-world testing.

Autonomous MuSHR Car January 2024 – April 2024

- Engineered a MuSHR car to drive autonomously around the Allen Center.
- Utilized ROS and Python for creating state estimation (particle filtering), control algorithms (MPPI, MPC, PID, PP), as well as planning techniques (A*, Lazy Search).

Publications

[1] **Raymond Yu**, Paul Han, Favyen Bastani, Piper Wolters. *OPTIMUS: Observing Persistent Transformations in Multi-temporal Unlabeled Satellite-data*, Submitted to IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2025.

Technical Skills

Languages: Python, Java, C/C++, SQL, JavaScript, HTML/CSS, R
Frameworks: IsaacLab, React, Node.js, Flask, JUnit, ROS, CAD
Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Vim, Unity3D, AWS
Libraries: PyTorch, TensorFlow, CUDA, pandas, NumPy, Matplotlib, OpenCV

Miscellaneous

Robinson Center Mentor Sept 2023 – June 2024
University of Washington Robinson Center *Seattle, WA*

- Mentored two Robinson Center Academy students, providing guidance on academic and career goals, emotional support, and opportunities for growth.
- Conducted weekly meetings to track mentees' progress, offer advice, and provide continuous support throughout their first year of university.