River M. Adkins

radkins@mit.edu · (540) 405–9385 · radkinz.com · github.com/radkinz

Education

Massachusetts Institute of Technology — Cambridge, MA
BS in Mechanical Engineering, Concentration in Robotic Design — September 2022 – May 2026
Relevant Coursework: Feedback Controls, Introduction to Robotics, Design of Electromechanical Systems, Fundamentals of Programming, Linear Algebra, Circuits, Toy Product Design

Skills

Programming Languages and Tools: Python, ROS2, C++, Git, Docker, CI/CD, Linux
Controls & Embedded: Control Theory, MATLAB, Simulink, ESP32, PlatformIO

Experience

MIT Laboratory for Information and Decision Systems — Cambridge, MA
Undergraduate Researcher — Feb 2025 – Present

- Built autonomous ground vehicles using Nvidia Orin AGX and ZED cameras, with Python-based ROS2 control stacks.
- Developed real-time person-following via onboard AprilTag tracking and visual odometry.
- Currently implementing human-robot co-manipulation and LLM-driven dialogue systems for collaborative task execution.
- Leading hardware/software integration and testing across embedded platforms in a research environment.
- Tools: ROS2, Python, 3D printing, Microcontrollers, Control Theory, Machine Learning

Self-Assembly Lab with Hyundai — Cambridge, MA
Undergraduate Researcher — Aug 2024 – Jan 2025

- Designed thermobimetal covers for passive thermal regulation in automotive and aerospace applications.
- Accelerated design iteration using a genetic algorithm and scripted evaluation of experimental tests, improving development speed and efficiency.
- Tools: MATLAB, Rhino, Grasshopper

Applied Invention — Cambridge, MA
Software Engineering Intern — Jun 2024 – Aug 2024

- Developed fault detection and recovery scripts for greenhouse control systems, significantly reducing time to identify and address hardware errors.
- Interfaced with embedded sensors to monitor system behavior and log anomalies.
- Tools used: Python, FastAPI, GitLab, Docker

MIT Media Lab — Cambridge, MA
Undergraduate Researcher — Feb 2023 – June 2024

- Developed creative visual feedback systems from wearable hardware to help individuals with ASD regulate emotions.
- Collaborated on an HRI study using storytelling robots. Co-authored: arxiv.org/abs/2502.00221.
- Tools used: Processing, Arduino, Circuit Design

Projects

2.12 Mobile Robot System — Built a full-stack ROS2 control pipeline on Jetson Nano for an autonomous bin-collecting robot. Implemented AprilTag-based perception, PID control, and sensor fusion.
Tools: ROS2, Python, Jetson Nano, OpenCV, OnShape, 3D Printing

Lobster Pot Recovery ROV — Designed control systems for a BlueROV system tested in real-world retrieval tasks. Integrated waypoint navigation and tuned PID parameters.
Tools: ArduSub, MAVLink, QGroundControl, Python, Control Theory

Leadership

East Campus President — Aug 2022 – Present
Oversaw dorm operations and logistics for 200 residents. Managed room assignments and coordinated high-impact events like Pumpkin Drop and campus-wide concerts.