# River M. Adkins

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## Education

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

## Skills

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|---|---|
| Programming Languages + Tools: | Python, ROS2, MATLAB, JavaScript, C, Assembly, Processing, R |
| Design: | SolidWorks, OnShape, Adobe Illustrator, Rhino, Grasshopper |

## Work 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 used: ROS2, Python, 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 used: MATLAB, Rhino, Grasshopper

**Applied Invention** — Cambridge, MA
*Software Engineer 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, Terraform, 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 reguate emotions.
- Collaborated on an HRI study using storytelling robots. Co-authored a published paper here.
- Tools used: Processing, Arduino, Circuit Design

## Projects

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

## Extracurricular Activities

**East Campus President** *Leader* — Aug 2022 – Present
Held various leadership roles in East Campus student government, including dorm president, vice president, hall chair, and room assignment chair. Led large-scale events such as Pumpkin Drop, a concert, and a carnival.