

KAI NAKAMURA

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SUMMARY

Highly motivated and academically accomplished student pursuing a double major in Computer Science and Robotics Engineering, with strong programming skills and a track record of successful projects.

EDUCATION

Worcester Polytechnic Institute, B.S. Computer Science, Robotics Engineering | **4.0 GPA** *Graduating May 2025*

Raisbeck Aviation High School, Valedictorian of the 2021 Class | **4.0 GPA** *Graduated 2021*

PROJECTS

Stair Climbing Quadruped Robot, ROS, C++

Mar. '24 – Present

- Implementing live climbing of full-sized stairs on a Unitree Go1 quadruped robot without prior map knowledge
- Applying a custom model-predictive controller with pseudospectral collocation for real-time trajectory optimization

Autonomous Mapping Robot, ROS, Python | kainakamura.com/project/slam-robot

Mar. – May '23

- Developed an autonomous robot that utilizes LIDAR sensors and SLAM for simultaneous mapping and localization
- Created efficient algorithms for frontier exploration, pathfinding, localization, pure pursuit, and obstacle avoidance

Pick-and-Place Robotic Arm, MATLAB | kainakamura.com/project/robot-arm

Sep. – Oct. '23

- Programmed a 4-DOF serial robotic manipulator in MATLAB to pick up and sort colored objects
- Implemented forward and inverse kinematics, trajectory generation, and a robust computer vision system

Solar Panel Replacer, C++, SolidWorks | kainakamura.com/project/solar-panel-replacer

Jan. – Mar. '22

- Designed and manufactured a robot to autonomously replace solar panels on a miniature house
- Utilized SolidWorks to create a four-bar linkage system, gripper mechanism, and compound gearbox

Open Source Plugin for Charity, Java | kainakamura.com/project/speedrun-showdown

Dec. '20 – Dec. '22

- Minecraft Speedrunning Plugin for an event with 32 world record-holding players and top content creators
- Assumed full responsibility for designing and developing the plugin to align with the event staff's requirements
- Instrumental in facilitating over \$10,000 in donations for Plant with Purpose through the plugin's integration

EXPERIENCE

Technical Lead, iCode | Bellevue, WA

May '22 – Aug. '24

- Taught over 250 total students, aged 8-16, by leading 24 different week-long courses in coding and engineering
- Created an educational YouTube channel on coding and robotics with over 45,000 views and 1,500 watch hours
- Provided meaningful feedback on class materials and student dynamics in weekly status reports to parents
- Led diverse courses including Robotics, AI & Machine Learning, Digital Art, Game Development, Drone AI, Java

Kaicycle Market Analysis, Kaicycle Urban Farm and Composting | Wellington, New Zealand

Jan. – Mar. '24

- Investigated expansion strategies for Kaicycle, an urban farming/composting initiative in Wellington, New Zealand
- Conducted in-person interviews in New Zealand to assess the purchasing decisions of business customers
- Published a comprehensive 114-page report, detailing actionable recommendations for Kaicycle's compost sales

SKILLS

Python, Java, C/C++, JavaScript, TypeScript, ROS, Linux, MATLAB, HTML, CSS, AWS, SQL, Git, Vim, React, Next.js, SolidWorks, Autodesk Inventor, Slack