

# 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 and Robotics Engineering | **4.0 GPA** *Graduating May 2025*  
**Raisbeck Aviation High School**, Valedictorian of the 2021 Class | **4.0 GPA** *Graduated 2021*

## PROFESSIONAL EXPERIENCE

**Technical Lead**, iCode | Bellevue, WA

*June 2022 – Present*

- Taught over 250 total students, aged 6-16, by leading 24 different week-long courses in coding and engineering
- Created an educational YouTube channel on coding and robotics with over 40,000 views and 1,000 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. 2024*

- 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

**Web Developer**, Seattle Society of Flight Test Engineers | Tukwila, WA

*March – July 2018*

- Collaborated with a small group of students and met biweekly with Boeing Engineers to create a custom WordPress theme using HTML, CSS, JavaScript, and PHP

## PROJECTS

**Autonomous Mapping Robot**, ROS, Python | [kainakamura.com/project/rbe3002](https://kainakamura.com/project/rbe3002)

*Sept. – Oct. 2023*

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

**Pick-and-Place Robotic Arm**, MATLAB | [kainakamura.com/project/rbe3001](https://kainakamura.com/project/rbe3001)

*Sept. – Oct. 2023*

- 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

**Multi-Robot Collaboration**, C++ | [kainakamura.com/project/rbe2002](https://kainakamura.com/project/rbe2002)

*March – May 2022*

- Programmed and assembled three robots to work together to escape from a randomized grid-based maze
- Established inter-robot communication over Wi-Fi using ESP32 microcontrollers with MQTT messaging

**Solar Panel Replacer**, C++, SolidWorks | [kainakamura.com/project/rbe2001](https://kainakamura.com/project/rbe2001)

*Jan. – March 2022*

- 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](https://kainakamura.com/project/speedrun-showdown)

*2020 – 2022*

- Created Minecraft Speedrunning Plugin for an event with 32 world record-holding players and top content creators
- Instrumental in facilitating over \$10,000 in donations for Plant with Purpose through the plugin's integration

## LEADERSHIP

**Web-Tech Chair**, Sigma Pi Fraternity | [sigmapigammaiota.org](https://sigmapigammaiota.org)

*2023 – 2024*

- Responsible for maintaining and updating the website of the Gamma Iota chapter
- Organize and lead weekly committee meetings to discuss key initiatives and educate new members

**Lead Programmer**, FIRST Robotics Competition Team | Seattle, WA

*2017 – 2021*

- Facilitated software development for Skunk Works Robotics, FRC Team 1983
- Responsible for mentoring new programmers and conducting regular code reviews

## SKILLS

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