

Alexander Hamilton

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Education

University of California, Santa Cruz – Robotics Engineering, Bachelor of Science

Expected 06/2028

GPA - 3.82

Skills & Certifications

Java, Python, JavaScript, C, C++, React, Node.js, REST APIs, AWS, Git, NVIDIA Isaac Sim, Isaac Lab, ROS2, OpenClaw

Winner, NemoClaw NVIDIA x ASUS Hackathon @ UCSC

March 2026

Java IT Specialist, Certiport

May 2023

Experience

Student Researcher, University of California, Santa Cruz – Santa Cruz, CA

March 2026 – Present

- Developing LLM-guided robotics workflows in NVIDIA Isaac Sim/Isaac Lab for autonomous planning and control
- Designing a PiCarX architecture that maps LLM-generated plans to reusable robot primitives, sensors, and actions
- Building simulated experiments to evaluate prompt-conditioned agents, legible autonomy, and real-time adaptation

Software Lead, Patribots – San Diego, CA

Aug 2022 – June 2024

- Led a team of 10 using GitHub Projects and Agile methodologies to coordinate development and meet milestones during 6-week build seasons, devoting 400 hours a year for 3 years
- Tuned acceleration curves for motors to achieve positional precision of ± 3 centimeters via autonomous navigation
- Engineered live PID-controlled arm trajectories using inverse kinematics, reducing scoring time by 53% to 0.67s
- Discretized swerve-drive kinematics to correct odometry skew by 87.5% during simultaneous translation and rotation
- Architected Java logic to guarantee motor configuration settings were applied despite unreliable vendor API behavior
- Developed a shooting-while-driving algorithm that maintained 92% shooting accuracy with less target calibration
- Designed a modular autonomous path system that combined reusable path segments for procedural path generation
- Reduced simulation startup time by 80% (≈ 13 s) by skipping physical hardware configuration for simulated motors
- Built a Java-based robot simulator mirroring physical hardware logic, cutting programming stabilization time from 6 weeks to 2 weeks by decoupling software testing from hardware build cycles

Assistant Director, iD Tech – Stanford, CA

May 2025 – Aug 2026

- Promoted from Instructor to Lead Instructor to Assistant Director across two seasons, taking increased responsibility
- Co-developed Node.js/WebSocket automation across 60 computers for scheduling, messaging, and synced transitions
- Root-caused site-wide network outages to failing Ethernet extenders and switches through targeted testing

Student Intern, X Academy – Santa Cruz, CA

Jan 2025 – May 2025

- Mentored high school teams building underwater robots using Raspberry Pi, ROS, computer vision, and external APIs
- Implemented network control pipelines to pass controller inputs from a host computer to a Raspberry Pi
- Integrated live camera streaming from Raspberry Pi to a computer for real-time robot feedback and navigation

Projects

Hydroclawnics - Autonomous Hydroponic AI Agent (NVIDIA Hackathon Winner)

devpost.com/software/hydroclawnics

- Built a full-stack autonomous AI agent on NVIDIA NemoClaw + Nemotron 3 Super to fully manage a hydroponic farm
- Designed a React and Three.js dashboard with live agent reasoning, 3D farm visualization, and pod health charts
- Developed an edge-to-cloud data pipeline that streamed Arduino sensor readings through a Python serial bridge
- Connected sensor telemetry, agent reasoning, and dashboard state for real-time farm monitoring

SOS Medfield - Offline Emergency Medical Assistant

devpost.com/software/sos-medfield

- Built a completely offline React Native app that routes emergencies to structured CPR and first-aid protocols
- Integrated Google Gemma 4 to classify user input and select curated JSON guidance instead of hallucinating advice
- Created a hands-free mode using local speech-to-text and text-to-speech to guide users through decision trees

Robotics Hours Dashboard

github.com/patribots4738/signin-site

- Built a React-based attendance logging system for a 100+ member robotics team, replacing a Google Forms workflow that caused name mismatches and restricted daily entries; used daily since 2023
- Leveraged Apps Script modules to scrape Firebase hourly, linking data to Google Sheets for leadership review
- Created an interactive calendar developer panel inspired by Google Calendar to edit hours when user error happens