# Nicholas Tang

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Portfolio — GitHub — LinkedIn

## Summary

Computer Science student (GPA 3.9) with hands-on experience in embedded systems, physics-based simulation, and teaching. Skilled in C/C++, Python, and system-level programming. Fascinated by the intersection of computing, aerospace, and physics, with experience spanning NASA sustainability infrastructure, CAN bus systems, and cloud/wind pattern tracking on Jupiter.

## Education

**UC Santa Cruz** Sept 2024 – Jun 2027
B.S. Computer Science with Electrical Engineering Minor GPA: 3.9
*Relevant Coursework:* Data Structures & Algorithms, Intro to Electronic Circuits (+ Lab), Differential Equations

## Experience

**Firmware Engineer — Formula Slug, FSAE** (C++) Sept 2024 – Present
- Implemented automatic lap counting using GPS data and converting to local coordinate plane with a flat-Earth approximation and tolerance of ± 10 meters
- Designed and implemented software handling communication at 500 kHz over CAN bus.
- Built on top of MbedOS, RTOS for STM32 MCUs; CMake with ninja for building and flashing to MCU
- Developed tooling to test hardware/software; collaborated with team of ∼100.

**Planetary Cloud Tracking Research** (C) Jun 2025 – Present
- Exploring computer vision algorithms to track wind patterns on Jupiter and other planetary atmospheres.
- Implementing image processing algorithms in C
- Soon to be parallelized using either CUDA or compute shaders

**Instruction Officer — Google Developer Groups on Campus** Mar 2025 – Present
- Increased attendance by 30% in Data Structures & Algorithms sessions.
- Planned and hosted workshops; implemented participation-boosting initiatives.

**Vice President & Coding Branch Leader — BOBTutor** 2021 – 2022
- Organized and led 3 coding programs; mentored 5 new team members.
- Coordinated schedules and developed resources to streamline teaching.

## Projects & Other Experience

**Lead Systems Engineer — NASA's NPWEE Program** June 2025 – Aug 2025
- Worked on mid-air battery swap infrastructure for electric planes.
- Spearheaded design and writing for the final proposal of 7 pages.
- Researched airspace management and aviation systems; workforce development program.
- Collaborated on a team of 12.

**WindowWise — ACMHacks** (Node.js, Python) Oct 2024
- Enables passive cooling systems instead of HVAC by solving heat equation
- Optimizes climate control while reducing energy waste by 100%.

**Three-Body Problem Simulator** (Python) 2025
- Built a numerical physics engine simulating gravitational interactions of three bodies in 2D.
- Implemented ODE solvers and visualization of orbital trajectories.

**Ray Tracing in One Weekend** (C++) 2025
- Implemented a physically-based rendering engine in C++.

## Leadership & Activities

**Formula Slug** — Software + Firmware Engineering Member
**Association for Computing Machinery (ACM)** — Member
**Google Developer Groups on Campus** — Instruction Officer, Workshop Organizer

## Skills

**Programming Languages:** Python, C/C++, Java, C#, Node.js
**Programming Tools:** Linux, Git/GitHub, GNU Make, Vim, Valgrind, Docker
**Lab Tools:** Oscilloscope, Power Supply, Multimeter, Circuit Design (KiCad), Soldering **Languages:** Python, C/C++, Java, C#, Node.js
**Tools:** Linux, Git/GitHub, GNU Make, vim, Valgrind, Docker
**Languages:** English (Fluent), French (Conversational), Cantonese (Spoken)