Nicholas Tang

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Portfolio — GitHub — LinkedIn

Education

UC Santa Cruz Sept 2024 – Jun 2027
B.S. Computer Science, EE Minor GPA: 3.9
Relevant Coursework: Data Structures & Algorithms, Intro to Electronic Circuits, 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
- Developped tooling to debug and test software for throttle control
- Designed schematic for UART↔USB for quick debugging and logging using FT320XQ on KiCad
- Designed and implemented software handling communication at 500 kHz over CAN bus
- Ensured safe power delivery to LV systems, car shutoff when undervolting through relay actuation
- Built on top of MbedOS, RTOS for STM32 MCUs; CMake with ninja for building and flashing to ARM-Cortex M based MCU

Planetary Cloud Tracking Research — UCSC Earth and Planetary Sciences (C) Jun 2025 – Present
- Exploring computer vision algorithms to track wind patterns on Jupiter and other planetary atmospheres.
- Using CMake to manage complex, large-scale projects
- Implementing image processing algorithms in C
- Solving Euler-Largrange equations with C and numerical integration

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), Siemens NX, Soldering
Languages: English (Fluent), French (Conversational), Cantonese (Spoken)