

# Nicholas Tang

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[Portfolio](#) — [GitHub](#) — [LinkedIn](#)

## Education

### UC Santa Cruz

B.S. Computer Science, EE Minor

Sept 2024 – Jun 2027

GPA: 3.95

*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 from CAN bus with a flat-Earth approximation and tolerance of  $\pm 10$  meters
- 10 MHz UART communication with VN-200 for performant IMU, GPS data
- Firmware for regenerative braking and PID-based traction control
- Built on top of MbedOS, RTOS for STM32 MCUs; CMake with ninja for building and flashing to ARM-Cortex M based MCU
- Ensured safe power delivery to LV systems, car shutoff when ADC detects undervolting through relay actuation
- Developed tooling to debug and test software for throttle control

### 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.
- Exposure to and translation between HDF5, NetCDF, TIFF, etc.
- Using CMake to manage complex, large-scale projects
- Implementing image/signal processing algorithms in C
- Solving Euler-Lagrange equations and numerical integration

## Projects & Other Experience

### Musical Auto-Transcribe DSP

Dec 2025 – Present

- Turns audio files into human readable musical notation
- Applying FFT algorithms, Hann windowing, and general signal denoising

### 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.

## Leadership & Activities

### Formula Slug — Software + Firmware Engineering Member

### Association for Computing Machinery (ACM) — Member

### Google Developer Groups on Campus — Former 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

**Misc:** DSP, FFT(W)

**Languages:** English (Fluent), French (Conversational), Cantonese (Spoken)