

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

Experience

Formula Slug (Formula Society of Automotive Engineers) @ UC Santa Cruz

Sept 2024 – Present

Firmware Engineer (C++)

- Developing firmware for a custom electric vehicle for the FSAE international collegiate competition.
- Implemented automatic lap counting using GPS data from CAN bus with a flat-Earth approximation and tolerance of ± 10 meters.
- Managed 10 MHz UART communication with VN-200 for performant IMU and GPS data acquisition.
- Developed firmware for regenerative braking and PID-based traction control on STM32 MCUs.
- Utilized MbedOS RTOS, CMake, and Ninja for building and flashing to ARM-Cortex M cores.
- Engineered safety-critical power delivery systems, implementing LV undervolting detection and relay actuation.

UCSC Earth and Planetary Sciences

Jun 2025 – Present

Planetary Cloud Tracking Research (C/C++)

- 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 with numerical integration

Projects & Other Experience

NASA's Professional Development Program (NPWEE)

June 2025 – Aug 2025

Lead Systems Engineer

- 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.

Musical Auto-Transcribe DSP

Dec 2025 – Present

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

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

Languages: C/C++, Python, Java, C#, Node.js, Bash

Embedded/HW: RTOS (MbedOS), STM32, CAN bus, UART, SPI, KiCad, Oscilloscopes

Tools/DevOps: Git, CMake, Ninja, Docker, Valgrind, GNU Make, GDB, Vim

Math/Theory: DSP, FFT, Numerical Integration, ODE Solvers, PID Control

AI/Productivity: LLM Prompt Engineering (Copilot, Gemini, Grok), Technical Documentation