

# Dylan Tran

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## Education

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University of California, Irvine – B.S. in Computer Science (GPA: 3.54)

Expected Dec 2027

## Experience

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**Embedded Systems Engineer**, UCI Formula SAE EV – Irvine, CA

Dec 2025 – Present

- Engineered and optimized FSAE vehicle control software as a member of the embedded firmware subteam
- Diagnosed signal instability in the Accelerator Pedal Position Sensor (APPS) readings to achieve a smooth 0-100% linear torque output, by tracing signal noise to the Central Computer Module (CCM) using a multimeter
- Resolved critical 50-75% voltage spikes by using an external ADS1115 16-bit ADC via I2C, bypassing the Teensy 4.1's internal ADC and eliminating the need to rely on a temporary C++ software filtering workaround

**Software Engineer Intern**, Magic Hour – San Francisco, CA

Aug 2025 – Jan 2026

- Prototyped a generative virtual try-on feature for a YC-backed platform serving 5M+ users with \$2M in funding, utilizing ComfyUI and Qwen models to prototype workflows for personalized clothing simulations
- Engineered the backend for a real-time pose-matching tool deployed across Hong Kong metro stations, utilizing Flask and OpenCV to optimize video processing loops for sub-100ms latency on interactive displays
- Designed a rigorous data processing pipeline for generative audio, cleaning and normalizing voice datasets to support a text-to-speech model capable of synthesizing 100+ iconic voices

**Software Engineer Intern**, Narb – Remote

May 2025 – Sept 2025

- Developed a mobile client for a multi-model AI platform serving 20k+ users, achieving 6x faster response times
- Boosted user retention for a geo-location habit tracker and accelerated development by leveraging Claude Code
- Built scalable full-stack features with Next.js and Convex, integrating Clerk for secure user authentication to ensure data privacy and maintain session integrity across web and mobile platforms

## Projects

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**MangOS: Custom 64-bit x86-64 Operating System**

Nov 2025 – Present

- Collaborated with 4 developers to develop a modern 64-bit kernel from scratch using C and x86 Assembly
- Utilized the Limine bootloader to initialize the kernel on physical hardware and emulated systems
- Programmed low-level I/O drivers by directly interfacing with UART registers via Port I/O and managing memory-mapped video framebuffers, enabling real-time serial debugging logs and high-resolution graphics

**Custom Raspberry Pi Pico RGB Keypad**

Feb 2026 – Present

- Assembled an RGB Keypad using a Raspberry Pi Pico, developing a clone of the classic "Lights Out" puzzle game
- Prototyped the game loop, button matrix, and LED rendering in MicroPython to accelerate initial development
- Rewrote the firmware using the Raspberry Pi C SDK to optimize execution speed and memory management

**Software Rasterizer**

Aug 2025 – Sept 2025

- Built a CPU-based rasterizer in C++20, implementing a rendering pipeline without external graphics libraries
- Simulated modern graphics APIs (OpenGL, Vulkan, DirectX) by fully recreating their core rendering pipelines
- Programmed linear algebra functions to handle matrix transformations, perspective projection, and clipping

## Skills

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**Languages:** C++, C, x86-64 Assembly, MIPS Assembly, Python

**Embedded:** Arduino, Teensy, Raspberry Pi Pico, I2C, UART, ADC, PWM, GPIO, CAN bus, FreeRTOS

**Tools:** Linux, Git, Vim, CMake, Make, QEMU, KiCad, Google Test