Jonathan Kim

Summer 2026 Intern - Embedded/Firmware Engineer

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Education

Master of Science - Embedded Systems **Sept. 2025 - Expected Dec. 2026**
University of California, Irvine **Irvine, California**
Courses: *Embedded System Modeling and Design, Internet of Things (IoT) Systems and Software*

Bachelor of Science - Management Information Systems **Sept. 2018 - June 2022**
Santa Clara University **Santa Clara, California**

Professional Experience

Embedded Software Engineer Contractor **Sept. 2025 - Present**
Mirae Opus **Diamond Bar, California**

- Designed an ESP32-based speech-to-text and text-to-speech device integrated with LLM APIs over Wi-Fi. Implemented I²S interfaces for the microphone, speaker, and amplifier, and I²C communication for a 9-axis IMU.
- Implemented FreeRTOS and used interrupts to create a scalable system for additional features.
- Applied DMA transfer and transmitted audio/IMU data to a local web server providing a real-time dashboard of system activity.
- Designed a 4-layer PCB board housing an ESP32 C6 WROOM module, USB-C port, speaker amplifier, battery management, impedance matching, and various ESD, hot-plug, and over-current protections.
- Worked in a Linux environment writing C/C++, not Arduino.

Full Stack Software Developer **Jan. 2023 - Oct. 2024**
Leidos QTC Health Services **San Dimas, California**

- Developed and maintained .NET enterprise applications vital to the business's core revenue stream, contributing to revenue growth from $500 million to over $1 billion annually. As a member of the team responsible for core user-facing applications, I ensured seamless functionality during this period of rapid expansion.
- Core applications facilitated appointment scheduling between medical providers and veterans worldwide. They also efficiently displayed relevant information and medical documents, many spanning thousands of pages.
- Developed a robust backend using C#, frontend in JavaScript/jQuery, enhancing user experience for scheduling medical appointments.
- Integrated a PDF compression service, significantly improving document processing speeds and resolving critical business bottlenecks.
- Developed 50% of the code for a feature that digitized labor-intensive medical paperwork, previously done manually. This improvement has enhanced the efficiency of care delivery for tens of thousands of veterans.

Projects

STM32 Sentry Turret **April 2025**

- Built a sentry turret that shoots Nerf bullets using a STM32, no HAL library, direct bit register configuration.
- Wrote and implement own drivers for PWM, UART, I2C, and interrupts without any libraries.
- Controlled turret through interrupt-based UART wireless keyboard commands.
- Modified Nerf gun, designed turret in Fusion 360, 3D-printed and assembled structure.

Technologies & Languages

Technologies: FreeRTOS, UART, I2C, SPI, Linux, Kicad, Fusion 360, STM32, ESP32
Languages: C/C++, Python, C#, HTML/CSS, JavaScript, SQL.