MERVIN NGUYEN

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EDUCATION

University of California, Irvine — Irvine, California

B.S. in Computer Engineering, Dean's Honor List — **December 2025**

GPA : 3.94

Coursework :Software Engineering Project in C, Advanced C Programming, Object-Oriented Systems and Programming, Network Analysis II, Electrical Engineering Analysis, Organization of Digital Computers, Computer Architecture, Digital Systems Laboratory, Real-Time Logic Design.

Leadership : IEEE at UCI, Community Outreach of Engineering Student Council, Communication and Marketing Chair of Institute of Printed Circuits Club, Professional Development Chair of Pi Alpha Phi, FUSION at UCI.

EXPERIENCE

Innova Electronics Corporation | Irvine, CA — May 2024 - Present

Embedded Systems Engineer Intern — **IAR Embedded Workbench | ARM-Cortex M | FatFs**

- Developed the **5610** and **5210 OBD2 Scan Tools**, using C, leveraging various third-party libraries and APIs for enhanced diagnostic capabilities.
- Designed and implemented a **testing framework** for optimizing **read/write performance** for an **embedded MultiMediaCard (eMMC)** on the **Renesas R7FA6M5BH3CFC microcontroller**, increasing throughput performance by **78%**.
- Revised the **File Allocation Table (FAT) file system** database to minimize the behavior of **fragmentation** by allocating contiguous space for files to improve stability.
- Utilized **J-Link** and **IAR Embedded Work Bench** to modify file handles, manage buffer pointers, and ensure accurate error handling and logging in **storage media operations.**
- Integrated **CI/CD pipelines** through **GitLab**, facilitated comprehensive unit testing, and maintained clear, thorough documentation.

UCI FSAE Electric Racing Team | Irvine, CA — January 2024 - Present

Embedded Systems Engineer — **Raspberry Pi | CANBus | Teensy**

- Implemented a **fault board** and **sensor board Central Control Module**, supervising **motor output** and **fault monitoring** while facilitating diagnostic data transmission, ensuring proper functioning of **safety circuits**.
- Led and executed a **digital dashboard** on a **Raspberry Pi** using **React** and **Node.js**, enhancing data visualization and user interface by displaying the current **state of charge**, **IMD fault**, **Pre-Charge Circuit**, and speed.
- Established a **CANBus network** to enable seamless communication among **Electronic Control Units**, ensuring cohesive operations and data exchange.
- Deployed a **push-to-start** feature in **C++** by generating a **debounce algorithm** reading current and previous value to initiate key value.

SigmaTronix, Inc. | Santa Ana, CA — June 2023 - September 2023

Electrical Test Engineer Intern

- Performed electrical and functional tests utilizing a **Multimeter**, **Teradyne Optima 7300 Inspection System**, and **MyData TP9-UFP** for the development of **100+ PCBs** for **Intel**, **MX Imaging**, **Relativity**, and **Marvell**.
- Facilitated the fabrication process by leading PCB Assemblers and Quality Control Technicians, overseeing a comprehensive **Bill of Materials**, and effectively managing **time constraints** while addressing **design defects** for customer satisfaction.
- Performed **SMD soldering** and **soft soldering** in preparation of electrical testing using **Bed of Nails testing** and **X-ray imaging systems**.

INVOLVEMENT

Micromouse | Institute of Electrical and Electronics Engineers — October 2023 - May 2024

Embedded Software Engineer — **STM32Cube | KiCad | Soldering**

- Lead a year-long embedded systems project with **STM32 microcontoller** for programming in C, focusing on designing a **micromouse**, utilizing **electronic components**, **selection**, and **pathfinding algorithm implementation**.
- Utilized **embedded C** to construct code with a micromouse simulator, developing **maze representation data structures**, and implementing **unit tests** for various drivers, including **motors**, **encoders**, and **IR sensors**.
- Leveraged control functions, including **PID**, to optimize mouse navigation, prototyping various algorithms for the robotic "mouse" to achieve optimal maze-solving with shortest completion time at the **UCLA IEEE All-America Micromouse Competition**.

ACADEMIC PROJECTS

Battle Disc : Miniaturized Ping Pong | Arduino — May 2023

Collaborated Embedded Systems Project — **C++ | Adafruit Libraries | I2C Communication Protocol**

- Led a team of **2 engineers** to develop an embedded system game with Arduino Uno using **PlatformIO** and **Fritzing**, end goal of deploying **50+ systems** for after-school programs.
- Programmed in C++ with **Adafruit_GFX** and **Adafruit_SSD1306** libraries, introducing specific in-game movements/motion controls of the game.
- Designed a **board schematic**, incorporating **I2C communication** to display data on an **I2C OLED display**.

TECHNICAL SKILLS

Microcontrollers : Teensy, STM32, AtMega328P, ESP32, Renesas.

Languages : C, C++, Python3.

Operating Systems : Linux, Windows, FreeRTOS, Bare Metal.

Hardware Tools : Oscilloscope, Multimeter, DC Power Supply, J-Link.

Software Tools : Git, Jira, Gitlab, LVGL.

Environments/IDEs : Visual Studio, Xilinx Vivado, Arduino, STM32Cube, IAR Embedded Work Bench, Eclipse, Altium, KiCad, Code::Blocks.