

MERVIN NGUYEN

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EDUCATION

University of California, Irvine	Irvine, California
<i>B.S. in Computer Engineering, Dean's Honor List</i>	March 2026
Coursework : Advanced C Programming, Object-Oriented Systems and Programming, Advanced Data Structures & Algorithms, Network Analysis II, Electronics I, Computer Architecture, Digital Systems Laboratory.	
Involvement : FSAE Electric Racing, 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

UCI FSAE Electric Racing Team Irvine, CA	January 2024 - Present
<i>Lead Embedded Software Engineer</i>	Raspberry Pi CANBus Teensy
<ul style="list-style-type: none">Implemented a fault board (Teensy 4.0) and sensor board (Teensy 4.1) Central Control Module, supervising motor output and fault monitoring while facilitating diagnostic data acquisition, 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.Utilized UART communication between a Teensy 4.0 and a Raspberry Pi 4 to display data on the digital dashboard.Implemented SPI communication between the fault board and the sensor board (Teensy 4.1) using a CAN Bus (TJA1050 receiver).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.Recruited and onboarded 4 Embedded Systems Engineers, introducing them to the daisy-chain safety circuit design and complete C++ codebase to accelerate project integration for the 2024 Formula SAE Michigan competition.	

Innova Electronics Corporation Irvine, CA	May 2024 - November 2024
<i>Software Engineer Intern</i>	IAR Embedded Workbench ARM-Cortex M FatFs
<ul style="list-style-type: none">Developed the 5610 and 5210 OBD2 Scan Tools, using C, leveraging various third-party libraries and APIs for enhancing diagnostic capabilities.Designed and implemented a testing framework for optimizing read/write performance for an embedded MultiMediaCard (eMMC) on the Renesas R7FA6M5BH3CFC microcontroller, achieving a 78% increase in throughput performance.Revised the File Allocation Table (FAT) file system database to minimize the behavior of fragmentation by allocating contiguous space for files, enhancing system stability and performance.Utilized J-Link and IAR Embedded Work Bench to modify file handles, manage buffer pointers, and implement accurate error handling and logging in storage media operations.Integrated code deployment and validation through CI/CD pipelines hosted through GitLab, facilitating comprehensive unit testing, and maintained thorough documentation, reducing deployment and integration time for firmware release updates.	

SigmaTronix, Inc. Santa Ana, CA	June 2023 - September 2023
<i>Electrical Test Engineer Intern</i>	STM32Cube KiCad BGA
<ul style="list-style-type: none">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.Gained hands-on expertise with Automated Optical Inspection (AOI) systems to capture and analyze inner PCB surface images, identifying issues in terms of displacement and polarity to ensure quality assurance.	

ACADEMIC PROJECTS

Micromouse Institute of Electrical and Electronics Engineers	October 2023 - May 2024
<i>Embedded Software Engineer</i>	STM32Cube KiCad PWM
<ul style="list-style-type: none">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.	

Battle Disc : Miniaturized Ping Pong Arduino	May 2023
<i>Collaborated Embedded Systems Project</i>	C++ Adafruit Libraries I2C Communication Protocol
<ul style="list-style-type: none">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, FPGA, Renesas.	
Languages : C, C++, Python3, VHDL, SystemVerilog, JavaScript (TypeScript), Java, Go.	
Frameworks : React, Node.js, Next.js, Vue.js, TailwindCSS.	
Operating Systems : Linux, Windows, FreeRTOS, Bare Metal.	
Hardware Tools : Oscilloscope, Multimeter, DC Power Supply, J-Link, Spectrum Analyzer.	
Software Tools : Git, Jira, Gitlab, GitHub, GitBucket, LVGL.	
Environments/IDEs : Raspberry Pi, NVIDIA Jetson Orin, Visual Studio, Xilinx Vivado, STM32Cube, IAR Embedded Work Bench, Eclipse, Altium, KiCad, IntelliJ.	