Vanessa Isabel Roque

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EDUCATION

California State University, Fullerton Graduation Date: **May 2026**
B.S/M.S in Computer Engineering, Minor in Computer Science GPA: **3.6**

Korea University | Seoul, South Korea
Study Abroad Reciprocal Exchange Program
Studied Computer Science at one of South Korea's most prestigious universities.

Relevant Coursework: Data Structures, Algorithms, Object-Oriented Programming, Databases, Operating Systems, Computer Networks, Embedded Systems, Computer Architecture, Real-Time Audio Processing, Signals and Systems, Electronic Circuits, Linear Algebra and Differential Equations, Multivariate Calculus

EXPERIENCE

Supplemental Instructor | *California State University, Fullerton* **January 2023 - Present**

- Guide Calculus III students through complex topics by hosting bi-weekly collaborative study sessions.
- Prepare relevant study materials to enhance student understanding, boosting students' grades by **10%**.

Electrical Engineering Intern | *Rosendin Electric Co.* **June 2024 - August 2024**

- Developed software-based electrical designs and specifications for power, lighting, and control systems.
- Used light-modeling software to create and analyze lighting designs for commercial buildings and perform **photometric calculations** ensuring standards are met for brightness, intensity and energy efficiency per **NEC**.
- Performed rigorous quality assurance and quality control inspections of schedules, and CAD models utilizing collaborative construction software to identify and mitigate discrepencies and design conflicts.
- Conducted site visits to oversee the installation of key components in interconnected eletrical systems across several large scale commerical projects, totaling over **200,000 ft^2**.

Research Intern | *Summer Undergraduate Research Academy at CSUF* **June 2024 - August 2024**

- Compared various wireless power transfer technologies and identified **magnetic resonance** as an improvement to current inductive technologies and a potential future trend for electric vehicles.
- Collaborated with a small team to build an **LLC resonant converter** and identify optimal tuning parameters, boosting charging efficiency by **12.5%** while minimizing unwanted eletrical interferences.

PROJECTS

Traffic Controller | *Real-time centralized control system* **September 2024**

- Created an embedded system to simulate a real-world traffic intersection using using the **TIVA-C Launchpad**, shift register, LEDs, and buttons effectively integrating hardware and software.
- Designed a **finite-state machine** to respond to binary switch inputs representing traffic and pedestrian activity, optimizing state transitions and timing with the SysTick timer and **Phase-Locked Loop (PLL)** clock management.
- Developed a test framework to validate state transitions and timing mechanisms, debugging hardware-software interactions under diverse conditions.

Smart Sleep Hub | *Smart device that improves your sleep environment* **September 2024 - Present**

- Developed a device to promotes healthy sleep habits by interfacing a **Raspberry Pi 5** with smart lights and sensors to test environmental factors affecting sleep, achieving a **15% improvement** in circadian rhythm alignment.
- Interfaced a **Raspberry Pi 5** with a touchscreen to display a clock, enable sleep configuration, and view sleep data.

EXTRACURRICULARS

Board Member | *Association for Computing Machinery* **2022 - present**

- Organize workshops that explored the boundaries of **artificial intelligence**, ensuring accessibility for participants.

Lead Software Developer | *Engineering Design Club* **2022 - present**

- Lead a team of engineers to design and develop a 3D-printed Pokeball with lighting and audio features.
- Engineered the circuit for the **Adafruit Feather** and programmed its functionality in **CircuitPython**.

Skills: Python, C/C++, ARM, Linux, SPI, I2C, HTML, Javascript, TailwindCSS, Swift, SwiftUI
Tools: VS Code, Git, GitHub, Bash, Code Composer Studio, XCode, SvelteKit, MySQL, Core Data, Vite