

Vanessa Isabel Roque

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EDUCATION

California State University, Fullerton

B.S./M.S in Computer Engineering, Minor in Computer Science

Graduation Date: May 2025

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 discrepancies and design conflicts.
- Conducted site visits to oversee the installation of key components in interconnected electrical systems across several large scale commercial projects, totaling over **200,000 ft²**.

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 electrical interferences.

PROJECTS

Traffic Controller | Real-time centralized control system

September 2024

- Created an embedded system to simulate a real-world traffic intersection 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 promote 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++, Linux, SPI, I2C, HTML, Javascript, TailwindCSS, Swift, SwiftUI

Tools: VS Code, Git, GitHub, Bash, Code Composer Studio, XCode, SvelteKit, MySQL, Core Data, Vite