# Vanessa Isabel Roque

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## EDUCATION

**California State University, Fullerton** Graduation Date: **May 2025**
*B.S/M.S in Computer Engineering, Minor in Computer Science* GPA:**3.6**

**Korea University | Seoul, South Korea** **Fall 2023**
*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 square feet**.

**RESEARCH INTERN** | Summer Undergraduate Research Academy **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.
- Collaborate 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** **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** **September 2024 - Present**
- Developed a device that promotes a healthy sleep environment 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.
- Integrating Philips Hue RESTful API that allows the hub to control bedroom light color and intensity.
- Conducting tests in a team to ensure seamless integration of software and hardware.

**RECIPE KEEPER IOS APP** **Fall 2024 - Present**
- Developing an iOS app to simplify recipe management for effortless creating, updating and viewing recipes.

## 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.
- Designed and implemented 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