

# 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, Operating Systems, Databases and File Systems, Artificial Intelligence, Computer Architecture, Computer Networks, Linear Algebra

## 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%**.

### 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 ft<sup>2</sup>**.

### 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 | Embedded C, TIVA-C, Code Composer Studio

- 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 | LIFX API, Bash, Python, Javascript, HTML, TailwindCSS, I2C

- 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.
- Wrote automation scripts to streamline device configuration, data collection, environmental monitoring, and testing, enhancing usability and efficiency.
- Interfaced the microcontroller with a touchscreen to display a clock, enable sleep configuration, view sleep data, and view environmental data.

### Recipe Keeper iOS App | Swift, SwiftUI, Core Data

- Developing an iOS app to simplify recipe management for effortless creating, updating and viewing recipes

## EXTRACURRICULARS

### Board Member | Association for Computing Machinery

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

### Lead Software Developer | Engineering Design Club

- 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, MatLab, ARM, Swift, SPI, HTML, Javascript, SvelteKit, TailwindCSS, SwiftUI

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