Vanessa Isabel Roque

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EDUCATION

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

Korea University | Seoul, South Korea **Fall 2023**
Study Abroad Reciprocal Exchange Program
Attended one of South Korea's most prestigious universities to cultivate a global perspective through an immersive cultural experience.

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, Hardware Security, Linear Algebra and Differential Equations, Multivariate Calculus

EXPERIENCE

CALIFORNIA STATE UNIVERSITY, FULLERTON | Supplemental Instructor **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%.

ROSENDIN ELECTRIC CO. | Electrical Engineering Intern **June 2024 - August 2024**

- Developed electrical designs and specifications for power, lighting, and control systems in Autodesk Revit.
- Used Visual Lighting to create comprehensive lighting designs for commercial buildings and perform photometric analysis to ensure standards for brightness, intensity and energy efficiency are met.
- Conducted QA QC in Bluebeam to identify potential issues in schedules, single line diagrams, and drawings.
- Attended site visits to inspect the installation of electrical components such as conduits, transformers, and fixtures.

SUMMER UNDERGRADUATE RESEARCH ACADEMY | Researcher **June 2024 - August 2024**

- Investigated various wireless power transfer technologies and identified magnetic resonance as an improvement to current inductive technologies and a potential future trend for electric vehicles.
- Built and tested a small-scale LLC resonant converter, collaborating with my research partner. We identified optimal tuning to improve charging efficiency and minimize interference from other devices.

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 FSM 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**

- Developing a device that promotes a healthy sleep environment by interfacing a Raspberry Pi with smart lights and sensors to test environmental factors affecting sleep.
- Interfaced a Raspberry Pi 5 with a touchscreen to display a clock, enable sleep configuration, and view sleep data.

EXTRACURRICULARS

ASSOCIATION FOR COMPUTING MACHINERY | Board Member **2022 - present**

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

ENGINEERING DESIGN CLUB | Member **2022 - present**

- Collaborated in 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 RP2040 RFM69 and programmed its functionality in CircuitPython.

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