

# Rafael Delwart

Robotics Engineer

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## About Me

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I am a Robotics Engineering graduate from UCSC, born and raised in San Francisco, with hands-on experience in microelectronics, programming microcontrollers, and automating complex systems. I am proficient in Kicad, C++, and SolidWorks, capable of simulating and developing real-world applications. I am a fast learner with practical expertise in leading a team, software development, electrical systems, and CAD design.

## Major Projects

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### Wet-Dry Cycler for RNA Production

Recruited and led a team to design and build an automated system to simulate early Earth conditions for non-enzymatic RNA synthesis, supporting origins-of-life research in collaboration with Dr. David Deamer.

### 3D Tracking Using an IMU for Rock Climbing

Developed an inertial measurement unit (IMU)-based tracking system for analyzing climber movement, improving performance insights, and motion visualization.

### Mechatronics Competition (2nd Place)

Led the development of a high-performance autonomous robotic system, integrating microcontrollers, sensors, and real-time feedback for competitive mechatronics tasks.

Detailed descriptions and documentation available at: [ramfi-d.github.io/Engineering-Portfolio/](https://ramfi-d.github.io/Engineering-Portfolio/)

## Work Experience

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### UCSC, Santa Cruz, CA

Undergraduate Tutor — ECE167: Sensors and Sensing

Supervisor: Professor Collen Josephson (cjosephson@ucsc.edu)

Led tri-weekly lab sessions for 100 plus students on sensor technologies and data processing. Covered sensing principles, calibration, signal filtering, ADC, and data acquisition. Guided students in practical lab applications using C programming and lab equipment.

## Skills

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**Programming:** Python, Kicad, C, C++, Verilog, MATLAB, Assembly, HTML, CSS, Latex.

**Math & Physics:** Strong background in advanced concepts.

**Systems Modeling:** Kinematics, dynamics, SolidWorks, OnShape.

**Electronics:** LTSpice, Circuit design, analysis, analog/digital systems.

**Projects:** Microcontrollers, sensors, 3D prototyping, technical documentation.

**Languages:** Fluent in French and English.

## Education

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### University of California, Santa Cruz (UCSC)

Robotics Engineering, Minor in Electrical Engineering

Sept 2020 - June 2025

Dean's Honor List (4 times)

Major GPA: 3.74

Honors Graduate in both fields

## References

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Prof. David Deamer (deamer@soe.ucsc.edu) • Prof. Collen Josephson (cjosephson@ucsc.edu) • Prof. Zouheir Rezki (zrezki@ucsc.edu)

## Most Relevant Courses

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### Computer Science:

Logic Design  
Data Structures  
Probability & Statistics  
Assembly  
Discrete Math  
Python  
Programming Abstractions  
C Programming

### Electrical & Mech. Engineering:

Project for Professor Deamer  
Applied Feedback Control  
Feedback Control Systems  
Analog Electronics  
Sensors & Sensing  
Embedded Systems  
Mechatronics  
Signals & Systems  
Circuits

### Math & Physics:

Statics & Mechanics  
Calculus I  
Calculus II  
Linear Algebra  
Vector Calculus  
Physics I  
Physics III  
Mathematical Methods II  
Kinematics