# Rafael Delwart

Robotics Engineer

### About Me

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 coding, electrical systems, and 3D modeling.

### **Major Projects**

#### 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 real-time 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/Website/

### **Most Relevant Courses**

### 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

## Work Experience

## UCSC, Santa Cruz, CA

 $\label{lem:condition} \begin{array}{ll} \textit{Undergraduate Tutor} - \textit{ECE167: Sensors and Sensing} \\ \textit{Supervisor: Professor Collen Josephson (cjosephson@ucsc.edu)} \end{array}$ 

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

**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.

# Education

# 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

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

# Contact

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