# **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:**

CSE 100/L: Logic Design (A-) CSE 101: Data Structures (B) CSE 107: Prob. & Stats (B-) CSE 12: Assembly (A) CSE 16: Discrete Math (B) CSE 20: Python (B) CSE 30: Prog. Abstractions (B) ECE 13: C Programming (A-) Electrical & Mech. Engineering: ECE 129A/B/C: Project for Professor Deamer (A) ECE 242: Applied Feedback Control (A) ECE 141: Feedback Control Systems (A) ECE 171/L: Analog Elec. (A-) ECE 167/L: Sensors (B+) Lab (A+) ECE 121/L: Embedded Systems (A) ECE 118: Mechatronics (A) ECE 103/L: Signals & Systems (A+) ECE 101/L: Circuits (B+)

#### Math & Physics:

ECE 9: Statics & Mechanics (B) MATH 19A: Calc I (B+) MATH 19B: Calc II (B) MATH 21: Linear Algebra (A) MATH 23A: Vector Calc (B) PHYS 5A/L: Physics I (B+) Lab (A) PHYS 5C/N: Physics III (B+) Lab (A) AM 20: Math Methods II (A-) ECE 10: Kinematics (A+)

## Work Experience

UCSC, Santa Cruz, CA

Undergraduate Tutor — ECE167: Sensors and Sensing Supervisor: Professor Collen Josephson (cjosephson@ucsc.edu) Winter Quarter 2025

Led tri-weekly lab sessions 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.

## 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: 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

## References

 $\label{eq:prof.David Deamer} ({\tt deamer} @ {\tt soe.ucsc.edu}) \bullet {\tt Prof. Collen Josephson} ({\tt cjosephson} @ {\tt ucsc.edu}) \bullet {\tt Prof. Zouheir Rezki} ({\tt zrezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Zouheir Rezki} ({\tt rezki} @ {\tt ucsc.edu}) \bullet {\tt rof. Collen Josephson} ({\tt rof. ucsc.edu}) \bullet {\tt rof. Collen Josephson} ({\tt rof. ucsc.edu}) \bullet {\tt rof. Collen Josephson} ({\tt rof. ucsc.edu}) \bullet {\tt rof. ucsc.edu} \bullet {\tt rof$ 

## Contact

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