Rian Borah

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Research Interests

Robot Learning & Manipulation, Reinforcement Learning, Optimization & Control, Computer Vision

Education

Carnegie Mellon University — *Pittsburgh, PA*
M.S. *Robotic Systems Development* — Aug 2026 – May 2028

- GPA: 4.0/4.0
- Selected coursework: Manipulation, Estimation, & Control, Deep RL, Advanced Multimodal ML, Multi-Robot Planning & Coordination, Embodied AI Safety, Learning for 3D Vision, Convex Optimization, Computer Vision

University of California, Santa Cruz — *Santa Cruz, CA*
B.S. *Computer Engineering* — Sep 2021 – Mar 2024

- **Graduated in 2.5 years**. Concentration in Digital Hardware
- Activities: President – Entrepreneurship Club, Undergraduate Researcher – Rolandi Bioelectronics Lab
- Selected coursework: Applied ML, Mechatronics, Analog & Digital Design, IoT, Agile Hardware Design

Summer School: University of California, Berkeley — *Berkeley, CA*
Physics: Classical Mechanics — Summer 2021

Summer School: University of California, Los Angeles — *Los Angeles, CA*
Microeconomics — Summer 2021

Industry & Research Experience

SyncQ — *New Delhi, India*
VP of Engineering — May 2025 – Present

- Leading engineering, operations, strategy, sales, and development

SOLO World Partners — *Detroit, MI*
Robotics & Computer Vision Engineer — Oct 2024 – Apr 2025

- Transformer-based vision models, Reinforcement Learning

TDK InvenSense — *San Jose, CA*
Engineer Intern — Jun 2024 – Sep 2024

- SmartRobotics Team, Research & Development Division
- Developed embedded firmware, and kernel drivers for high-speed sensor data & signal processing.
- Wrote sensor fusion algorithms & Madgwick's filter for pose estimation using 9 DOF industrial IMUs.
- Built a haptic bilateral teleoperation system for detecting physiological tremors in Movement Disorder patients.

Rolandi Bioelectronics Lab — *Santa Cruz, CA*
Undergraduate Researcher — Jan 2023 – Jun 2023

- Developing Bioelectronic devices for intelligent control of wound regeneration, under the DARPA-BETR program.

Not-So-Slow Slugs, High-Performance Computing (HPC) Club — *Santa Cruz, CA*
Member — Aug 2023 – Nov 2023

- Competing in IndySCC at SuperComputing '23 Conference. Optimizing Molecular Dynamics with GROMACS.

Selected Projects

Chisel AI Accelerator — Feb 2024 – Present

- Built a generator for parametric systolic arrays, akin to Google's TPU
- Skills: Chisel, Agile Hardware Development

6502 Emulator — Aug 2023 – Present

- Cycle accurate 6502 emulator in C++

Leadership Experience

SCEE (Student Creativity and Entrepreneurial Empowerment) *Santa Cruz, CA*
President – UC Santa Cruz Startup & Entrepreneurship Club Feb 2022 – Mar 2024

VCIC (Venture Capital Investment Competition) *Provo, UT*
Lead – UC Santa Cruz, 2024 Undergraduate West Regionals Feb 2024

Venture into Management Program, Peek Program *Remote*
Harvard Business School Jun 2023

Teaching Experience

CSE 120: Computer Architecture (Undergraduate) Group Tutor x2 *UC Santa Cruz*

Honors & Awards

- **Stanford Exposure to Research & Graduate Education (SERGE) Scholar** (Stanford University) 2022
- **Above and Beyond Computer Science (ABCS) Fellow** (Meta) 2022
- **Undergraduate Dean's Scholarship** (University of California, Santa Cruz) 2021
- **International Student Entrance Scholarship** (University of Waterloo; one of 20/year) 2021

Test Scores

GRE: 170/170Q, 163/170V (Total: 333); **SAT:** 790/800Q, 740/800V (Total: 1530)

Technical Skills

Programming: C/C++, Python, Chisel, Verilog
Domains: Robotics, Embedded Systems, Computer Architecture, Computer Vision, Machine Learning
Skills: Sensors, MEMS, Reinforcement Learning, Hardware Emulation