Richard (Ricky) Parada

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EDUCATION

California Institute of Technology (Caltech)　　　　　　　　　　　　　Sep. 2024 – Present
PhD Student in Applied Physics | Advisor: Prof. Oskar Painter　　　　　　　　　　　*Pasadena, CA*

Stanford University　　　　　　　　　　　　　　　　　　　　　　Sep. 2019 – June 2024
*B.S. Engineering Physics, Quantum Science & Engineering Specialization | **GPA**: 3.85/4.3*　　*Stanford, CA*
M.S. Computer Science, Theoretical Computer Science Specialization

- **Favorite Courses**: Quantum Computing, Quantum Complexity Theory, Quantum Hardware, Quantum Control and Engineering, Machine Learning, Deep Learning, Computer Vision, Electronics and Photonics Laboratory

RESEARCH

Quantum Photonics Group, Caltech | *Painter Lab*　　　　Jun. 2023 – Sep. 2023, Sep. 2024 – Present

Working with Prof. Oskar Painter on engineering optomechanical devices with applications to hybrid quantum architectures consisting of acoustic and superconducting quantum circuits. Experimental work involves:

- designing a qubit module for high fidelity quantum state transfer from an optomechanical transducer;
- prototyping physical circuit layouts for a qubit chip within a larger remote entanglement experiment.

Edward L. Ginzton Laboratory, Stanford | *Mabuchi Lab*　　　　　　　　Jan. 2024 – Jun. 2024

Worked under the guidance of Prof. Hideo Mabuchi on quantum state propagation modeling of quantum networks using gradient-based/coherent control methods and trajectory simulations (SLH framework).

Department of Physics, Universidad de Santiago de Chile (USACH) | *Herrera Lab*　Jun. 2022 – Aug. 2022

Worked under Prof. Felipe Herrera to classify birefringent materials using Neural Networks (NNs). Calculated the Mueller matrix elements and Brewster's angle in reflection for Barium Borate (BBO) using polarimetry.

Department of Physics, Stanford | *Advanced Physics Laboratory*　　　　　　　Apr. 2022 – Jun. 2022

Worked with Prof. David Goldhaber-Gordon to measure the magnetic field near a pure Vanadium disk with a Hall sensor across a range of different temperatures (slow axis) and external magnetic fields (fast axis).

Department of Physics, Stanford | *Shen Laboratory*　　　　　　　　　　　Jun. 2021 – Aug. 2021

Worked with Prof. Zhi-Xun Shen to compute corrections on energy/momentum distribution curves (EDC/MDCs) of cuprate superconductor Bismuth strontium calcium copper oxide (BSCCO). Automated extension of the first Brillouin Zone on high T_c angle-resolved photoemission spectroscopy (ARPES) data.

PDMFC, Lisbon, Portugal | *Beyond Vision*　　　　　　　　　　　　　　Jun. 2020 – Mar. 2021

Proposing a new UAV testbed using Robot Operating System (ROS) and Machine Learning (ML) that procedurally generates and places 3D models to create realistic environments based on satellite imagery.

TEACHING

Department of Computer Science, Stanford | *Course Assistant (CA), CS 161*　　　Apr. 2023 – Dec. 2023

Prepared and taught weekly sections on algorithm design, prepared problem sets/exams, held office hours, monitored student Q&A forum, graded problem sets/exams, and refine ethics course content.

Department of Computer Science, Stanford | *Section Leader (SL), CS 106A/B/L*　　Sep. 2021 – Mar. 2023

Section lead weekly sections on programming abstractions and data structures, graded assignments, and helped students debug during office hours. Mentored incoming section leaders as a small group lead (SGL).

Residential Education, Stanford | *Resident Assistant (RA)*   Sep. 2021 – Jun. 2023

Managed 88 all frosh (2021-22) and upper class (2022-23) undergrads, budgeted dorm funds as house treasurer (2022-23), and planned kickass events to Yosemite, Disneyland, etc. Taught Frosh 101, an introductory course focused on easing the 1st year transition to life at Stanford (Fall 2021).

Code in Place, Stanford | *Head Teaching Assistant (TA), Virtual SL*   Spring 2020, 2021, 2023, 2024

Course staff for a project that launched during the COVID-19 pandemic, with thousands of students and hundreds of volunteer teachers participating from around the world each year learning to code. Duties included providing students assignment feedback, leading workshops for, holding office hours for, and hiring virtual SLs.

Breakout Mentors | *Kids Coding Mentor*   Jan. 2020 – Aug. 2021

Mentored middle school students in creating interactive projects using Java, Arduino, Unity, Python, and more. Projects ranged from implementing popular games such as Connect Four, Snake, and Pacman (with ghost agents embedded with basic AI logic) to wiring and programming a self-navigating Arduino Robot.

PUBLICATIONS

* denotes equal contribution

1. Ricky Parada, Piero Chiappina, and Oskar Painter. (2023). Design of a Qubit Module for High Fidelity State Transfer from Quantum Transducers. Preprint available at https://drive.google.com/file/d/1bgm7kcSLPthreUVNKtpM3ocQH3rYKbDT/view

2. Eshan Kemp*, Daniel P. Newton*, and Ricky Parada*. (2022). Hall Sensor Based Measurements of the Magnetic Phase Diagram of Superconducting Vanadium. Preprint at https://arxiv.org/abs/2209.01324

3. Justin Nakama*, Ricky Parada*, João P. Matos-Carvalho, Fábio Azevedo, Dário Pedro, and Luís Campos. (2021). Autonomous Environment Generator for UAV-Based Simulation. Appl. Sci. 2021, 11, 2185. https://doi.org/10.3390/app11052185

RELEVANT EXTRACURRICULARS

Stanford Quantum Computing Association (SQCA) | *Community Impact Chair*   Sep. 2021 – Jun. 2024

Organized speaker series at the intersection of Quantum Computing (QC) and social good. Collaborated with other internal/external organizations to develop initiatives that improve diversity, equity, and inclusion (DEI) within QC. Taught QC fundamentals to those interested in the field with little to no experience.

Cubot | *Personal Project*   Apr. 2020 – Jun. 2020

Programmed and constructed a Rubik's Cube Solving Robot built on top of a Raspberry Pi in bare-metal C. Wired a circuit powering 6 servomotors that precisely turns each face of the cube on command. Wrote a custom solver using 3-style, a technique used to solve the cube blindfolded (requires only one look).

SKILLS AND EXPERIENCE

Languages: English, Spanish, Thai
Programming: Java, C++, C#, Python, C, Assembly, Julia, JavaScript, Angular, MATLAB, Mathematica, Igor Pro
Tools/Packages: Arduino, Unity, PyTorch, Tensorflow, Keras, Qiskit, QuTiP, Braket, Sonnet
Certificates: LPS Qubit Collaboratory Quantum Computing Short Summer Course (2024)