

Caleb Rotello

GRADUATE RESEARCH ASSISTANT · QUANTUM ERROR MITIGATION

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Education

Colorado School of Mines

M.S. IN QUANTUM ENGINEERING

Golden, Colorado

May 2021 - Aug. 2022

- Thesis title: *Symmetry Protected Subspaces in Quantum Simulations*
- Advisor: Dr. Eliot Kapit, Associate Professor
- 4.0 GPA

Colorado School of Mines

B.S. IN COMPUTER SCIENCE

Golden, Colorado

Aug. 2018 - May 2021

- 3.78 GPA, 4.0 Major GPA
- Transamerica C-MAPP Scholar, 2020

Skills

Quantum Computing

VQE, QAOA, RFQA, Quantum Simulations, Adiabatic Theorem, Perturbation Theory

Classical Computing

Finite Automata, Lexical Analysis, AST, Simulated Annealing, Dynamic Programming

Programming Languages

Quantum Gate Model, C++, Python, OCaml, R, Matlab, Mathematica

Software

Cirq, Lex, Yacc, Git, LaTeX

Hardware

7K Cryostat, SQUID, Clean Room, Photolithography, Evaporator, VNA Calibration & Measurement

Work Experience

National Renewable Energy Laboratory

QUANTUM COMPUTING ERROR MITIGATION INTERN

Golden, Colorado

Nov. 2021 - Present

- Discovered an algorithm to identify a class of symmetry in quantum systems
- Implemented discoveries for quantum post-selection
- Wrote gate-model quantum simulations for verification
- Collaborated with researchers across disciplines

Colorado School of Mines

GRADUATE RESEARCH ASSISTANT

Golden, Colorado

May 2021 - Present

- Wrote and successfully defended a thesis
- Implemented novel quantum optimization algorithms
- Submitted quantum code to Google's Sycamore processor
- Worked with other students to design quantum algorithms

Invitae

BIOINFORMATICS INTERN

Boulder, Colorado

May 2021 - Aug. 2021

- Created analysis code for research on acute myeloid leukemia
- Implemented software to pair RNA alpha and beta sequences across multiple cells
- Met with biologists and machine learning experts to develop technical goals
- Wrote and refactored R and Python code

ArcherDX

RESEARCH & DEVELOPMENT SOFTWARE INTERN

Boulder, Colorado

May 2020 - Aug. 2020

- Wrote and implemented novel algorithms to efficiently detect DNA sample errors
- Contributed to AMP chemistry analysis software for cancer genomics
- Wrote and refactored C++ and Python code
- Worked on a Scrum team

Contracting with County Police Departments

HEALTH & WELLNESS APP DEVELOPER

Denver, Colorado

Jun. 2019 - Dev. 2019

- App development in XCode
- Wrote secure API calls to AWS Lambda
- Developed application backend to securely handle personal information
- Worked with non-technical professionals to determine development goals

Valor Christian High School

IT INTERN

- Planned projects and supervised interns
- Administration of 640 Apple devices, from hardware maintenance to software deployment
- Directed setup and maintenance with Aerohive wireless access points
- Resolved user and helpdesk tickets

Highlands Ranch, Colorado

Dec. 2017 - Dec. 2018

Extracurricular Activity

Boy Scouts of America

EAGLE SCOUT

- Created, planned, and led an Eagle Scout service project
- Was an elected leader of a scout-led troop

Colorado

Jan. 2011 - Dec. 2018

Creative Writing Club

VICE PRESIDENT

- Organized biweekly meetings with students
- Planned writing exercises

Colorado School of Mines

Sep. 2021 - May 2022

High Grade Art Journal

POETRY EDITOR

- Participated in jury sessions for submitted writing
- Helped create final journal order

Colorado School of Mines

2022 Edition

Honors & Awards

2020 **4th Place**, HackCU VI Hackathon

2019 **Semifinalist**, RASC-AL

CU Boulder

NASA