

# 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

### 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

## Work Experience

### National Renewable Energy Laboratory

QUANTUM COMPUTING ERROR MITIGATION INTERN

Golden, Colorado

Nov. 2021 - Present

- Discovered an algorithm to identify symmetry protected subspaces 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

- Implemented quantum optimization algorithm for research
- Submitted loop quantum gravity simulation code to Google's Sycamore processor
- Wrote and successfully defended a thesis

### Invitae

RESEARCH & DEVELOPMENT INTERN

Boulder, Colorado

Summers 2020, 2021

- Created analysis code for research on acute myeloid leukemia
- Implemented ALPHABETR algorithm to pair RNA alpha and beta sequences across multiple cells
- Wrote and implemented novel algorithms to efficiently detect DNA sample errors with lexical analysis
- Refactored C++, Python, and R AMP chemistry analysis software

## Extracurricular Activity

### Boy Scouts of America

EAGLE SCOUT

Colorado

Jan. 2011 - Dec. 2018

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

### Creative Writing Club

VICE PRESIDENT

Colorado School of Mines

Sep. 2021 - May 2022

- Organized biweekly meetings with students
- Planned writing exercises

### High Grade Art Journal

POETRY EDITOR

Colorado School of Mines

2022 Edition

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