

Caleb Rotello

GRADUATE RESEARCH ASSISTANT · QUANTUM ERROR MITIGATION

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Summary

Current Site Reliability Engineer at start-up company Kasa. 7+ years experience specializing in the backend development, infrastructure automation, and computer hacking/security. Super nerd who loves Vim, Linux and OS X and enjoys to customize all of the development environment. Interested in devising a better problem-solving method for challenging tasks, and learning new technologies and tools if the need arises.

Work Experience

National Renewable Energy Laboratory

Golden, Colorado

QUANTUM COMPUTING ERROR MITIGATION INTERN

Nov. 2021 - Present

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

Colorado School of Mines

Golden, Colorado

GRADUATE RESEARCH ASSISTANT

May 2021 - Present

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

Invitae

Boulder, Colorado

BIOINFORMATICS INTERN

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

Boulder, Colorado

RESEARCH & DEVELOPMENT SOFTWARE INTERN

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

Honors & Awards

INTERNATIONAL

2018	Finalist , DEFCON 26th CTF Hacking Competition World Final	Las Vegas, U.S.A
2017	Finalist , DEFCON 25th CTF Hacking Competition World Final	Las Vegas, U.S.A
2014	Finalist , DEFCON 22nd CTF Hacking Competition World Final	Las Vegas, U.S.A
2013	Finalist , DEFCON 21st CTF Hacking Competition World Final	Las Vegas, U.S.A
2011	Finalist , DEFCON 19th CTF Hacking Competition World Final	Las Vegas, U.S.A

DOMESTIC

2015	3rd Place , WITHCON Hacking Competition Final	Seoul, S.Korea
2017	Silver Prize , KISA HDCON Hacking Competition Final	Seoul, S.Korea
2013	Silver Prize , KISA HDCON Hacking Competition Final	Seoul, S.Korea

Presentation

DevFest Seoul by Google Developer Group Korea

Seoul, S.Korea

PRESENTER FOR <HOSTING WEB APPLICATION FOR FREE UTILIZING GITHUB, NETLIFY AND CLOUDFLARE>

Nov. 2017

- Introduced the history of web technology and the JAM stack which is for the modern web application development.
- Introduced how to freely host the web application with high performance utilizing global CDN services.

6th CodeEngn (Reverse Engineering Conference)

Seoul, S.Korea

PRESENTER FOR <DEFCON 20TH : THE WAY TO GO TO LAS VEGAS>

Jul. 2012

- Introduced CTF(Capture the Flag) hacking competition and advanced techniques and strategy for CTF

Writing

A Guide for Developers in Start-up

Facebook Page

FOUNDER & WRITER

Jan. 2015 - PRESENT

- Drafted daily news for developers in Korea about IT technologies, issues about start-up.

Program Committees

2016 **Problem Writer**, 2016 CODEGATE Hacking Competition World Final

S.Korea

2013 **Organizer & Co-director**, 1st POSTECH Hackathon

S.Korea

Education

Colorado School of Mines

Golden, Colorado

M.S. IN QUANTUM ENGINEERING

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

Golden, Colorado

B.S. IN COMPUTER SCIENCE

Aug. 2018 - May 2021

- 3.78 GPA, 4.0 Major GPA

Extracurricular Activity

PoApper (Developers' Network of POSTECH)

Pohang, S.Korea

CORE MEMBER & PRESIDENT AT 2013

Jun. 2010 - Jun. 2017

- Reformed the society focusing on software engineering and building network on and off campus.
- Proposed various marketing and network activities to raise awareness.

PLUS (Laboratory for UNIX Security in POSTECH)

Pohang, S.Korea

MEMBER

Sep. 2010 - Oct. 2011

- Gained expertise in hacking & security areas, especially about internal of operating system based on UNIX and several exploit techniques.
- Participated on several hacking competition and won a good award.
- Conducted periodic security checks on overall IT system as a member of POSTECH CERT.
- Conducted penetration testing commissioned by national agency and corporation.