

Andy Peterson

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Education

University of California, San Diego
Bachelor of Science, Computer Science

La Jolla, CA

Experience

QUALCOMM INSTITUTE

Quantum Intern

La Jolla, CA
Jul 2022 – Dec 2024

- Lead a software project to develop an end-to-end quantum-encrypted video communication application
- Pursued exploration into using Grover's quantum search algorithm for constraint satisfaction to solve /nonograms
- Managed a team of 3 other interns under the supervision of Dr Nikola Alic in developing an educational quantum computing lab at UC San Diego

ACM CYBER AT UCSD

San Diego CTF Competition Developer

La Jolla, CA
Dec 2020 – Jun 2022

- Worked alongside a team to create the backend, interface, and challenges for San Diego's largest annual cybersecurity competition, giving hundreds of competitors across 20 countries an engaging way to test their cybersecurity skills
- Built infrastructure in Typescript and PostgreSQL using Discord.JS

MATHNASIUM

Mathematics Instructor and IT Support

Temecula, CA
Mar 2020 – Sep 2021

- Taught over 75 students mathematics across a broad range of concepts using the Mathnasium methodology
- Provided remote and in-person technical support to parents and students, troubleshooting issues with hardware, software, and network connectivity

Projects

Grover's Algorithm for Constraint Satisfaction (<https://andypeterson.dev/nonograms>)

- Developed quantum simulations in Qiskit for solving constraint satisfactions via nonograms using Python and Qiskit
- Achieved successful implementation up to 25 qubits

BB84 Quantum Key Distribution (<https://andypeterson.dev/quantumvideo>)

- Captured, encoded, and encrypted video and audio packets across connected devices using Python, websocket, ffmpeg, opencv, and flask
- Set up attenuated mode-locked laser and single-photon detectors to facilitate key-exchange

Skills & Interests

Programming Languages: Python, Javascript/Typescript, C, C++, Java, SQL

Technical: Qiskit, Matplotlib, NumPy, Scikit-learn, Node.js, PyTorch

Laboratory: freespace photonics, oscilloscope, atomic force microscope, optical tweezer, server management

Certifications: CompTIA IT Fundamentals