

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 team of 3 other interns under the supervision of Dr Nikola Alic in developing a quantum computing teaching lab at UC San Diego
- Spearheaded developing software to facilitate end-to-end quantum-encrypted video communication
- Pursued exploration into using Grover's quantum search algorithm for constraint satisfaction by way of nonograms

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

Temecula, CA
Mar 2020 – Sep 2021

- Delivered effective math instruction using the Mathnasium thinking constructs to 75+ students across a broad range of concepts and levels
- Provided remote and in-person technical support to clients, 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