

Andrew Peterson

SOFTWARE ENGINEER IN PERRIS, CA

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Experience

Qualcomm Institute (CALIT2)

San Diego, CA

QUANTUM COMPUTING INTERN (PART-TIME, CONCURRENT WITH B.S.)

July 2022 – December 2024

- Implemented BB84 quantum key distribution from academic specification in production JavaScript, including error correction and privacy amplification stages
- Built a frame-level AES-128-GCM video encryption pipeline over FFmpeg and WebRTC, with a simulated noisy channel that validated protocol correctness at configurable error rates
- Designed zero-server P2P media transport using Socket.IO signaling with cryptographic room isolation and real-time session telemetry
- Built a Python evaluation platform using PyTorch, scikit-learn, and Qiskit to train and compare 10 model architectures (CNN, SVM, quantum-hybrid) across multiple datasets in single automated runs, replacing manual notebook-based workflows
- Designed concurrent training orchestration with thread-safe model registry, SSE-streamed live progress, and Dockerized CI for hardware-independent reproducibility

RIT Esports

Remote

WEB DEVELOPER

August 2020 – May 2022

- Built and deployed a MERN-stack platform via Docker serving 2,400 monthly active users across 6 varsity esports teams; maintained 99.9% uptime on DigitalOcean with Nginx reverse proxies

Projects & Leadership

San Diego CTF

Co-FOUNDER & INFRASTRUCTURE LEAD

December 2020 – May 2022

- Co-founded and built infrastructure for San Diego's largest annual cybersecurity competition, serving 900+ competitors across 20+ countries over two annual events
- Designed challenge instance orchestration, automated submission handling, and a PostgreSQL-backed scoring pipeline deployed with Terraform
- Built a Discord bot framework for real-time participant communication, team registration, and automated announcements to 900+ concurrent users
- Recruited and coordinated challenge authors; managed end-to-end event operations across time zones on competition day

Portfolio Site (andypeterson.dev)

- Multi-application deployment with four independent sub-apps (project demos, API endpoints) orchestrated under a single Docker Compose stack with GitHub Actions CI/CD

ACM Cyber at UCSD

COMPETITION COMMITTEE & PRESIDENT & CONTENT COMMITTEE LEAD

2020 – 2023

- Built the organization's knowledge management infrastructure in Notion, creating a persistent documentation system for onboarding, procedures, and institutional knowledge
- Authored training materials and led hands-on CTF workshops teaching offensive and defensive security techniques to members of varying skill levels
- Managed organizational compliance, coordinated with university administration, and maintained continuity across leadership transitions

Skills

Languages Python, Java, C/C++

Skills Agentic AI (Claude, Ollama, Kiro), Kubernetes, RAG

Education

University of California, San Diego

La Jolla, CA

B.S. COMPUTER SCIENCE

Sep 2020 – Dec 2024