Nathan Qiu

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Education

University of California, Santa Barbara Expected June 2028
Computer Science, B.S. *Santa Barbara, CA*

- GPA: 4.0/4.0
- Relevant Courses: Data Structures and Algorithms, Computer Architecture, Probability and Applied Statistics, C++ Problem Solving, Intermediate Python, Vector Calculus, Differential Equations, Linear Algebra

Experience

Cybersecurity Intern June 2026 – August 2026
AI Institute for Agent-based Cyber Threat Intelligence and Operation *Santa Barbara, CA*

- Developed a cybersecurity research framework to analyze vulnerability information leakage in public intrusion detection system (IDS) rules, using an LLM-based adversary to infer targeted CVEs from rule characteristics
- Generated and evaluated 417 IDS rule modifications to reduce vulnerability disclosure while measuring their impact on detection behavior
- Validated modified rules against synthetic exploit and benign network traffic, measuring detection degradation and false-positive behavior
- Found that only 8/417 modifications (1.9%) consistently prevented correct CVE inference across three trials; among modifications that introduced false positives, 10.5% substantially obscured the vulnerability

Projects

GrecoCam | *Face Detecting Security Camera* August 2026

- Built a real-time smart door camera on an NVIDIA Jetson Orin Nano that detects and recognizes visitors using YOLO face detection and Facenet512 embeddings
- Improved recognition under backlighting and rapid movement through face-region exposure metering, contrast enhancement, confidence-based triggering, and temporal voting

ExtendAble | *SB Hacks Best Hardware Winner* January 2026

- Built a voice-controlled robotic arm that detects and manipulates real-world objects using computer vision
- Implemented an end-to-end system integrating speech-to-text, LLM-based command parsing, YOLO and OpenCV object detection, and servo-level control via a FastAPI backend
- Developed a partition-based perception algorithm to estimate object position and execute reliable grasping

Chrono | *Computer Vision-Based Fitness Progress iOS App* December 2025 – January 2026

- Built a mobile app using React Native (Expo) with Supabase for authentication, storage, and user data management
- Designed a social media platform for lifters that allows friends and communities to share fitness progress photos with one another
- Developed a computer vision alignment pipeline that detects body position to automatically center daily check-in photos and create clean time-lapse videos displaying progress

RedditRadar | *Unwrapathon Insights Track Winner* October 2025

- Implemented a Reddit product review web app using Reddit comments scraped by Reddit's API
- Filtered comments through OpenAI API and a Python comment credibility weighting model to produce 95 percent accurate reviews (0-5 stars) and metrics (accessibility, cost, etc.) on any product reviewed by Reddit
- Built a full-stack system with a Next.js and Tailwind CSS frontend and a FastAPI backend and deployed the app on Vercel

Technical Skills

Languages: Python, C/C++, JavaScript, TypeScript, SQL, R
Security: Suricata, IDS Rule Analysis, Vulnerability Research, CVE/CWE Analysis, Network Traffic Analysis
ML and Computer Vision: PyTorch, TensorFlow, YOLO, OpenCV
Systems and Tools: Claude Code, Git/GitHub, Linux, Powershell, NVIDIA Jetson Orin Nano
Backend and Web: FastAPI, Next.js, React, React Native, Supabase