Nathan Wachholz

me@nathanwachholz.com | github.com/n-wach

Experience

Google

Software Engineer, Google Distributed Cloud air-gapped — *Sept. 2023 – Present*

- Physical Networking Automation team. Air-gapped, on-prem equivalent of Google Cloud for sensitive workloads
- Large and complex product, involving over 60 teams and 500 developers. Frequent collaboration with other teams
- Ownership over 2 of 5 parts of NextGen automation stack, to support multiple switch vendors and scaling to over 500 racks. Redesigned secret rotation. Improved integration testing (3-4x faster) and E2E testing
- Sole developer for network automation on Appliance product, which is a half-rack DC for mobile workloads, and is critical to important contracts. High visibility and close collaboration with 5 adjacent teams to deliver features

Summer Internships — *2020, 2021, 2022*

- Project Zero security team: contributed to SockFuzzer, a deterministic scheduler for fuzzing multi-threaded programs. Specifically targeted Apple's XNU kernel. Reported CVE-2022-40304
- Cloud PA: developed a machine learning pipeline for detecting anomalies in behavior on admin.google.com
- Research PA: worked with 2 other interns to prototype a website for discussions of recorded university lectures

SIONYX

Software Engineering Contractor — *Mar. 2022 – June 2022*

- Built tooling and software to automate camera QA (testing and calibration) in production factories
- Developed a library and demo app for camera configuration and video streaming over USB and TCP/IP

Teledyne FLIR

Software Engineering Intern — *May 2018 – June 2021*

- Under CTO Group, helped accelerate company-wide data curation and machine learning efforts: optimized queries on flirconservator.com; added automatic integration testing; streamlined developer workflow by creating and open-sourcing conservator-cli
- Under Unmanned Aerial Vehicles, designed and built demos for existing hardware, as well as prototyped future products. Full ownership of several projects, with electrical, mechanical and software aspects.
- Created library for controlling infrared cameras from Python over TCP/IP and BLE. Developed automated testing framework for firmware validation, which was used to improve QA efficiency in the factory

Education

University of California, Santa Barbara

M.S. Computer Science, College of Engineering — *Sept. 2022 – June 2023*

- Research in Computational Geometry with Professor Subhash Suri

B.S. Computing, College of Creative Studies — *Sept. 2019 – June 2022*

- Data Structures and Algorithms, Discrete Mathematics, Formal Languages and Automata, Compilers, Computer Architecture, Operating Systems, Offline and Online Graphics, Hardware/Software Interface
- Undergrad Research, Competitive Programming, Graduate Security Seminars, Hacking with Shellphish

Projects

Self-playing Guitar: Capable of playing any MIDI file. Showcased at local museums, Makerfaire, and Meta HQ
Camino: Low-level interrupt-based library for controlling an Arduino from Python over serial port
cqdm: Drop-in replacement of the popular tqdm Python package, 4.5x faster using C-Extensions
Protractr: Geometric constraint solver, with export to LaTeX. Made in Typescript with HTML5 canvas
More projects available from my website and blog.

Technical Skills

Languages: Golang, Python, C++, C, Java, Javascript, Typescript, HTML/CSS
Technology: Kubernetes, Docker, GraphQL, Flask, React, Electron, Android
Security: Reversing, binary exploitation, IDA, Ghidra, libFuzzer
CTFs (on a team of 4): 2nd in CSAW 2020, 1st in CSAW 2018, 1st in picoCTF 2018, 1st in picoCTF 2017
Other: git, gdb, Linux, XNU, Bazel, Solidworks, machining, 3d printing, laser cutting