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Fort Collins, Colorado
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Phillip Johnson

Software Engineer

Portfolio
GitHub
LinkedIn

Technical Skills

- **Languages:** C/C++, Python, JavaScript/TypeScript, Bash, Swift
- **Development Best Practices:** CI/CD, Agile, DevOps
- **Frameworks & Tools:** React, Next.js, Flask, FastAPI, Docker, NeoVim, tmux, Linux, Git/GitHub/GitLab
- **Embedded & IoT:** nRF Connect SDK, Zephyr RTOS, MQTT (AWS IoT Core), Firmware Development, Logic Analyzers, Oscilloscopes
- **Cloud & Databases:** AWS (DynamoDB, IoT Core), SQLite, MySQL, RESTful & WebSocket APIs

Additional Skills

- **Research & Engineering:** Hardware Reverse Engineering, Embedded Security Analysis, Co-author of iFIPSEC 2024 Paper
- **Soft Skills:** Problem Solving, Collaboration, Technical Communication, Independent Research

Job Experience

Hardware Reverse Engineer **May 2023 — June 2024**
Colorado State University *Fort Collins, CO*

- Conducted research on hardware reverse engineering as a framework for improving embedded device security.
- Recreated embedded C++ firmware and replicated hardware design using logic analyzers and oscilloscopes.
- Performed lab experiments demonstrating a verified hardware attack on an IoT sensor device.
- Co-authored an iFIPSEC 2024 conference paper on hardware reverse engineering methodologies (DOI).

Project Experience

Full-Stack IoT Dashboard
JavaScript, C++, Python, Bash, React 19, Flask, DynamoDB, AWS IoT Core, Docker

- Built a complete IoT dashboard system including ESP32 firmware, Flask API backend, and React front-end interface.
- Implemented real-time communication via WebSockets, RESTful APIs, and MQTT through AWS IoT Core.
- Used Docker to create a reproducible multi-service developer environment and Bash automation scripts for orchestration.

IoT Research Projects
C++, nRF Connect SDK, Zephyr RTOS, SAADC, AWS IoT Core, DynamoDB

- Developed embedded firmware for nRF9160DK to collect and transmit sensor data via MQTT to AWS IoT Core.
- Utilized SAADC and hardware tools (oscilloscope, logic analyzer) to reverse engineer black-box IoT device behavior.
- Documented findings and demonstrated firmware efficacy in a peer-reviewed research publication.

Portfolio E-Commerce Website
JavaScript, Next.js, React 18, Flask, SQLite

- Designed and developed a responsive e-commerce web app with Next.js and Flask-based REST API.
- Implemented secure user authentication and optimized performance through server-side rendering.

iOS Application
Swift, SwiftUI, NSPersistentCloudKitContainer

- Built a Swift iOS app to manage and recommend user album collections using iCloud and Core Data synchronization.

Personal Portfolio Website
Static HTML + CSS, GitHub Pages

- Created reactive static portfolio hosted using GitHub Pages.

Education

Colorado State University **Fort Collins, CO**
Bachelor of Science in Computer Science

- Co-author, iFIPSEC 2024 Conference Paper on Hardware Reverse Engineering
- Concentration: Networking and Security
- Minor: Mathematics