Kevin Nause

Computer Engineer | Ethical Hacker | Rustacean | Beekeeper

<Contact>

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github.com/Nauscar

<Programming>

Rust, C, C++, C#, x86 & ARM Assembly, Go, Python, Java

<Frameworks>

OpenCL, OpenMP, Hadoop, Thrift, Qt, ASP .NET

<Interests>

Embedded Systems, Photography, Performance Vehicles, Hockey

<Projects>

RP2040 Blink Twice
NRF52 Firmware Demo
Determinate
Persistant Variables

<About>

I enjoy low level programming on platforms such as embedded systems and operating systems. Computer security and static analysis are key interests of mine. I have been a Linux enthusiast since I typed “Hello World” for the first time and have adored penguins ever since. The first thing I do when I sit down at a computer is change the keyboard layout to Dvorak, plug in an IBM Model M keyboard, and set the monitor to portrait.

Education

2016 **Bachelor of Applied Science (B.A.Sc.)** — University of Waterloo
Computer Engineering

Full-Time Experience

Sep 2023 (to Present) **Nause Engineering, LLC** — Renton, Washington
Owner
- Started a business with $0
- Revenue from security consulting provides funding for product design
- See Contract Experience for latest security consulting experience

Feb 2020 (3 yrs 2 mos) **Microsoft** — Redmond, Washington
Senior SW/FW Engineer, Senior Security Software Engineer
- Lead security procedures between core, build, validation, and post-launch teams
- Vulnerability identification, mitigation, and incident response
- Performed threat modeling, static analysis, dynamic testing, and penetration testing
- Scoped security features and utilized cryptographic standards
- Communicated severity of known issues and compliance requirements
- Researched future security technologies for business success

Products: Microsoft Devices
Hardware: NXP i.MX RT ARM Cortex-M33
Languages Used: Rust, C, C++, x86 & ARM Assembly

Nov 2018 (1 yr 3 mos) **NCC Group** — Seattle, Washington
Senior Security Consultant
- Design audit for Bootloaders, RTOS, Linux, Android, and Windows
- Scoped and lead multi-week hardware focused client engagements
- Hardware teardown, flash dumping, bus probing
- Reverse engineering C, C#, and Java binaries
- Vulnerability assessment, code review, network penetration testing
- ARM shell code creation and control hijacking attacks
- Automotive (CAN SAE J1939) and Robotics (ROS) security experience

Languages Used: C, C++, ARM Assembly, Python, Go

Jul 2016 (2 yrs 5 mos) **Microsoft** — Redmond, Washington
SW/FW Engineer II, SW/FW Engineer
- Working on ECs for platforms with Intel CPUs and Nvidia GPUs
- Experience with power sequencing, battery, and thermal subsystems
- Implementing inter-bus communications via USB, UART, SPI, I2C, SMBus
- Working with communication protocols such as TCP/IP, HID, RS-232
- Proficient with oscilloscopes and logic analyzers
- Experience with schematics, reference manuals, and errata for hardware peripherals

Products: Surface Hub, Surface Laptop
Hardware: NXP/Freescale K22 ARM Cortex-M4
Languages Used: C, ARM Assembly, C#, PowerShell

Contract Experience

Sep 2023 to Present — **Tetrel Security** — Remote
Principal Security Consultant
- Hardware focused security assessments and research

Hardware: NVIDIA A100, ASPEED AST2600
Languages Used: Rust, C, C++, ARM Assembly, Python, Go

Aug 2015 (5 months) — **Pebble Technology** — Kitchener, Ontario
Embedded Firmware Engineer
- Implemented device drivers, recovery firmware, and system applications on the Pebble OS (based on FreeRTOS)
- Ported latest firmware to an older device with significantly less flash storage and a black and white screen
- Optimized anti-aliasing on 8-bit displays, and dithering on 1-bit displays

Products: Pebble, Pebble Time, Pebble Time Round
Hardware: STM32F4 ARM Cortex-M4, STM32F2 ARM Cortex-M3, TI CC2564
Languages Used: C, ARM Assembly, Python

Jan 2015 (4 months) — **Motorola** — Kitchener, Ontario
Security Engineer
- Discovered and patched vulnerabilities, resource leaks, and concurrency problems in Android OS, Motorola's MSM kernel, and Moto X sensor hub
- Used static analysis to assist in discovering security vulnerabilities
- Traced execution flow to isolate false positives or potential exploits

Products: Moto E/G/X, Moto 360
Hardware: TI OMAP 3, Qualcomm PM8921 PMIC, NXP 44701 NFC
Languages Used: C, C++, Java

Sep 2014 (8 months) — **Computer Aided Reasoning Group** — Waterloo, Ontario
Undergraduate Research Assistant, Unviersity of Waterloo
- Member of the Computer Aided Reasoning Group, reported to Dr. Vijay Ganesh
- Researched the topic of SAT solvers and their underlying heuristics
- Studied the relevance of backdoor variables and community structure for the VSIDS decision heuristic
- Experience with static analysis, symbolic execution, and Return Oriented Programming (ROP)

Languages Used: C, C++, x86 Assembly, Java

May 2014 (4 months) — **ON Semiconductor** — Waterloo, Ontario
Embedded Tools Developer
- Designed Bluetooth Low Energy GATT services for functions such as data streaming, audio streaming, and status updates
- Embedded programming with BLE enabled medical devices such as hearing aids, insulin monitors, and heart rate monitors
- Interfaced with Windows and Android client devices

Hardware: Nordic nRF51822 Bluetooth Low Energy Controller, ARM Cortex-M0
Languages Used: C, C++, Java, ARM Assembly

Sep 2013 (4 months) — **eSolutionsGroup** — Waterloo, Ontario
Mobile Developer
- Designed a real-time transit prediction system using GTFS data and protocol buffers
- Database design, MVC server communications, and mobile application development

Languages Used: C# (ASP .NET), SQL, JavaScript

May 2012 (16 months) — **Regional Municipality of York** — Richmond Hill, Ontario
Transit Management Systems
- Worked with GTFS data and real-time prediction feeds and contributed to the OneBusAway project
- Hands on work with transit embedded systems and fare management systems

Languages Used: C#, Java