Colin Davidson

colrdavidson@gmail.com | colrdavidson.github.io | github.com/colrdavidson

EXPERIENCE

Independent Software Engineer
2022 – Ongoing

GravityMoth

- Built and shipped Spall, a fast, user-friendly profiler with both a web and native frontend, supporting manual tracing and full instrumentation, capable of tracing through 55+ million functions per second, loading large JSON traces 10x faster than Google's official profiler, Perfetto. Has custom parsers for PDB and DWARF on Linux, MacOS, and Windows.
- Made major contributions to the Odin language, wrote the DNS resolver, linux and MacOS netstack bindings, a lock-free scalable threadpool to help the compiler scale to 32+ cores, and the timezone conversion library.
- Wrote a Linux-focused DWARF debugger with a Go+SPA JS web frontend, and a dynamic ELF loader, working towards a more portable and observable software ecosystem.

Senior Systems Engineer
June 2024 – April 2025

Roadio, Inc.

- Designed and launched product backend infrastructure from the ground up in Go and Python to manage firmware releases and system interactions for a bike-and-moped-focused computer vision collision detection system.
- Interviewed and built out the interview process for technical hiring.
- Documented the backend API and embedded hardware platform to improve comms between the firmware and app software teams.

Senior Software Engineer
2022

Arbitrary Execution

- Developed emulation and debugging tools for smart contract bytecode VMs to help the security analysis team find smart contract vulnerabilities.

Head of Engineering
2019 – 2021

BlueRoof Learning

- Designed and built scalable frontend and backend infrastructure using JS and Go for display, hosting, and development of user-created music education content.
- Developed hiring process from scratch to help bring in backend and frontend developers with strong web skills that could hit the ground running fast.
- Worked with clients to understand their unique needs and issues enabling us to improve and expand educational content delivery options, connect students with best-fit teachers, and tune student progress tracking.

Principal Software Engineer
2017 – 2019

ManTech

- Designed and built a tunnel-in-tunnel multi-endpoint VPN stack, assembling a testing benchtop full of Cisco switches, NUCs running VYOS with USB NICs and a lot of VLAN tagging.
- Built out a trampoline injection debugger on a MIPS linux 2.6.x kernel stack to live-inspect and fix a custom kernel module doing fancy iptables configuration with significant performance issues.
- Chased and solved issues with an ESXi cluster having spurious drive failures, created custom infrastructure benchmarking tools in Go to chase down and resolve drive issues.
- Built a live network protocol analyzer in C using WolfSSL to debug failures in our handshake protocol for server/client comms issues across satellite modems.
- Created a JS/React frontend to configure network infrastructure in a tight timeframe to save an important project for the company, and built out a parallel job graph DAG resolver in both Python and Go to speed up infra configuration.

TECHNICAL SKILLS

Core Languages: C, Go, JavaScript
Other Languages: Python, Odin, MIPS and X86 Assembly, Bash, SQL, HTML, CSS
Technologies: Linux kernel, Git, WASM
Operating Systems: Linux, MacOS, FreeBSD, Windows