Edward Adam Payzant

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Experience

Software Engineer May 2021 – Present
Cisco Systems *Ottawa, Ontario, Canada*

- Member of the Switch Integrated Security Feature (SISF) team for the network operating system IOSXE, where we developed a distributed network security feature to track IPv4 and IPv6 hosts across the network to improve network insights and block IP/MAC address spoofing attempts
- Developed internal white box testing framework in C to replace the unsupported legacy system, maintaining backwards compatibility while introducing advanced capabilities like function mocking
- Introduced new, asynchronous alternatives to existing synchronous APIs, enabling API consumers to invoke them more frequently without blocking and improving overall system scalibility
- Developed black box and performance testing suites in Python to validate end-product functionality and detect performance regressions with all tests configured to run nightly
- Used GDB and debug logs to identify root causes of customer-reported defects, enabling prompt issue resolution and improving customer satisfaction
- Collaborated with internationally distributed test teams to create a comprehensive test plan, ensuring functional validation of the new features without introducing regressions, leading to improved feature stability
- Integrated an AI based tool into our nightly regression pipeline to identify unique failures and generate problem summaries, streamlining failure triage and boosting team productivity

HERE Intern May. 2018 – August 2018
Oak Ridge National Laboratory *Oak Ridge, TN, USA*

- Worked independently to improve performance and accuracy of research software in Python using Numpy, SciPy, and Matplotlib for parameter optimization of high-temperature corrosion patterns
- Collaborated with the material scientists to ensure the resulting product had all desired features and produced accurate results, increasing productivity by both being faster than the previous Excel based solution and offering greater accuracy

Education

Carleton University Ottawa, Ontario, Canada
Bachelor of Computer Science *Sept. 2017 – June 2021*

Projects

RiscV Kernel | *Zig, Embedded, RISCV ASM, UART*

- Developed a minimal RISCV MicroKernel written in Zig and assembly
- Implemented a UART interface as a basic testing and debugging console
- Utilized OpenSBI to boot into supervisor mode
- Created a virtual memory allocator using SV39

doit.rs | *Rust, FFI, Linux, PAM*

- Developed a privilege escalation for Linux akin to sudo or doas while utilizing Rust's memory safety to ensure resiliance against buffer overflow attacks
- Implemented support for authentication via shadow and Pluggable Authentication Module (PAM)
- Utilized FFI to interface with the PAM library's C API

Personal Site | *Rust, Leptos, Vercel, TailwindCSS*

- Developed a portfolio website using the Leptos Framework, a JSX inspired framework in Rust
- Utilized Vercel and Github actions to deploy and host the website

Technical Skills

Languages: C, Python, Rust, C++, Go, Javascript, Zig
Technologies: Linux, RiscV, gRPC, Tokio, Svelte, OpenCV, Docker, PostgreSQL, TailwindCSS, Keras/Tensorflow, ChatGPT APIs
Developer Tools: Git, Valgrind, GDB, Make, CMake