Aiden Fox Ivey

Experience

Tristero
Software Engineer – (Remote) USA
Jan 2024 - May 2024

- Recommended and implemented the adoption of a robust key derivation function (KDF) in the runtime, significantly enhancing cryptographic security.
- Optimized fly.io deployment pipeline, reducing Docker image build time by 90% (from 7.3 to 0.7 seconds), dramatically improving CI/CD.
- Developed a custom git history analysis tool to detect and report inadequately obfuscated private keys, enhancing repository security.

Cosine Networks
Firmware Developer – Waterloo, ON
Apr 2023 - Aug 2023

- Presented a Wireguard-based security system to investors at Collision Conference 2023.
- Built a router authentication server using asynchronous Rust and gRPC.
- Developed a cross-platform Rust library with FFI bindings for Swift, enabling native GUI applications on iOS, macOS, and Windows.
- Wrote and cross-compiled a Rust-based OpenWRT module to MIPS64.

Huawei Canada
Network Researcher – Markham, ON
Sep 2022 - May 2023

- Contributed to experimental setup and literature review that resulted in MLACC, presented at APNET23.
- Utilized Pytorch and SciPy to study link-level network traffic patterns.
- Reduced size of a C++ and NodeJS based WebRTC testbench by 17% while retaining feature parity.

Government of Ontario
Developer – Toronto, ON
Jan 2022 - Apr 2022

- Built a document scanning and classifying RNN tool using PyTorch.
- Wrote image processing code to align and clean up scanned documents before applying OCR.
- Used Google's Tesseract for OCR and fed results into an RNN for classification, resulting in 15% higher accuracy and 5% less false positives than the proprietary alternative.

Links

abfoxive@uwaterloo.ca

519-574-5740

github.com/aidenfoxivey

linkedin.com/in/aidenfoxivey

aidenfoxivey.com

Languages and Tools

Python, Go, Rust, Java, OCaml

C, C++, ARM Assembly

VHDL, Verilog

HTML, CSS, JS, Express

FastAPI, PyTorch, LLVM

Docker, Github Actions, AWS

Education

University of Waterloo
2021 - 2026
Progressing towards BASc in Computer Engineering

Open Source PRs

- python/cpython #11449
- edgelesssys/ego #255
- edgelesssys/ego #254
- construct/construct #1062
- sublimelsp/LSP #2354
- llvm-project/llvm #68537

Projects

Custom CRC8 ASIC
tinytapeout.com/runs/tt07/901/

- Designed an application specific integrated circuit (ASIC) that combinationally generates the CRC-8 checksum of the input bits using Verilog and Python.
- Submitted ASIC design to be TinyTapeout to be printed on a wafer in November 2024.

Lox Tree Walk Interpreter
github.com/aidenfoxivey/olox

- Created a tree walk interpreter for the language Lox using OCaml with support for garbage collection, closures, and scoped variables.

Mersenne Twister
github.com/aidenfoxivey/GoTinyMT

- Created an efficient and maintainable mersenne twister implementation in Go for random number generation.
- Showed that for a finite number of samples (<1000), the next output can be predicted.

Linux Executable Packer
github.com/aidenfoxivey/Elf-Stuffer

- Wrote a Linux executable (ELF) packer and parser compatible with 32, 64 bit executables.
- Contributed several ELF parser schemas to an upstream Python project.