Jackson Sippe

sippejw · sipperior.com · jackson-sippe · jackson.sippe@colorado.edu

EDUCATION

University of Colorado Boulder — May 2026
Doctor of Philosophy in Computer Science — *Advised By: Eric Wustrow*

University of Colorado Boulder — December 2024
Master of Science in Computer Science — *GPA: 3.86/4.0*

Appalachian State University — May 2021
Master of Business Administration — *GPA: 3.82/4.0*

Appalachian State University — May 2020
Bachelor of Science in Computer Science — *GPA: 3.55/4.0*

PROJECTS

GFW Report | *Rust, PF_RING, Bash, Python, DPDK* — August 2022 – Present
- Monitoring the deployment of censorship on DNS, TLS, and QUIC by China's Great Firewall (GFW) that is actively impacting over 1 billion users
- Leveraging university network tap to reverse engineer the logic behind the censor
- Creating censorship circumvention solutions used by tools with over 100 million users

TLS Fingerprint | *Rust, C, PF_RING* — August 2021 – Present
- Maintain Rust library responsible for capturing over 20 million TLS connections per day on university networks
- Tune PF_RING Zbalance deployment to optimize performance on resource constrained servers
- Enhance fingerprint methodology to support changes such as the randomization of TLS extensions by Google Chrome
- Transition library to be built on top of a modern Retina/DPDK stack and add QUIC support

Refraction Networking | *Rust, PF_RING* — May 2023 – Present
- Maintain existing server deployments and troubleshoot failures
- Deploy new instances, configure instances to specific network capabilities
- Monitor deployment health and client success through centralized metrics platform Kibana

BART | *Python* — August 2019 – May 2020
- Developed an interface for the uArm Swift Pro to conduct image paint strokes
- Maintained an Ubuntu server for all project members to access the arm and conduct experiments
- Trained GAN model to generate artistically styled images
- Presented the work at the State of North Carolina Undergraduate Research and Creativity Symposium

PUBLICATIONS

How the Great Firewall of China Detects and Blocks Fully Encrypted Traffic — USENIX Security 2023
M. Wu, J. Sippe, D. Sivakumar, J. Burg, P. Anderson, X. Wang, K. Bock, A. Houmansadr, D. Levin, E. Wustrow

Open to a fault: On the passive compromise of TLS keys via transient errors — USENIX Security 2022
G. Sullivan, J. Sippe, N. Heninger, E. Wustrow

Aggressive Internet-Wide Scanners: Network Impact and Longitudinal Characterization — CoNEXT 2023
A. Anand, M. Kallitsis, J. Sippe, A. Dainotti

Chasing Shadows: A security analysis of the ShadowTLS proxy　　　　　　FOCI 2023
G. Wang, J. Sippe, H. Chi, E. Wustrow
A Fresh Look at ECN Traversal in the Wild　　　　　　　　　　　　　　Preprint
H. Lim, S. Kim, J. Sippe, J. Kim, G. White, C. Lee, E. Wustrow, K. Lee, D. Grunwald, S. Ha

Awards & Honors

CSAW Applied Research Contest Winner　　　　　　　　　　November 2023
NYU Tandon School of Engineering　　　　　　　　　　　　　　　　*$1,000*

USENIX Security Travel Grant　　　　　　　　　　　　　　August 2023
USENIX Association　　　　　　　　　　　　　　　　　　　　　*$1,300*

Speaking

Paper Presentations
How the Great Firewall of China Detects and Blocks Fully Encrypted Traffic | **USENIX Security 2023**　　　August 2023

Interviews
When will VPN be blocked? / How censorship works in China | **Privacy Accelerator**　　　September 2023

Professional Experience

University of Colorado Boulder | *Graduate Research Assistant*　　　August 2021 – Current

Appalachian State University | *Graduate Research Assistant*　　　August 2020 – May 2021

Worxstr | *Co-Founder*　　　November 2020 – December 2022

ECRS | *Full Stack Developer*　　　December 2018 – August 2019

Skills

Languages: Rust, Python, Go, C/C++, LaTeX
Tools: Git/GitHub, Bash, Linux
Libraries: NumPy, Matplotlib, PyTorch, PF_RING, DPDK