Gaukas Wang

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Education

University of Colorado Boulder — Boulder, CO
Electrical and Computer Engineering
Bachelor of Science (B.Sc.) *summa cum laude* — *2018 - 2021*
Doctor of Philosophy (Ph.D.), Advisor: Prof. Eric Wustrow — *2022 - est. 2027*

Research Area/Interest

Anti-Censorship: Measure and analyze new censorship systems, build circumvention systems/solutions. Priority
Computer Networking: Build and improve various network systems.
Privacy: Design and implement new Privacy Enhancement Technologies.
Cybersecurity: More general topics including Cryptography, Web security, and Software Reverse Engineering

Selected Publications

Extended Abstract: Oscur0: One-shot Circumvention without registration — FOCI 2024
M. Chen, J. Wampler, A. Alaraj, G. Wang, E. Wustrow

Just add WATER: WebAssembly-based Circumvention Transports — FOCI 2024
E. Chi, G. Wang, J.A. Halderman, E. Wustrow, J. Wampler

MRTOM: Mostly Reliable Totally Ordered Multicast — ICDCS 2023
Z. Liu, D. Grunwald, J. Izraelevitz, G. Wang, S. Ha

Chasing Shadows: A security analysis of the ShadowTLS proxy — FOCI 2023
G. Wang, Anonymous, J. Sippe, H. Chi, E. Wustrow

Acuerdo: Fast Atomic Broadcast over RDMA — ICPP 2022
J. Izraelevitz, G. Wang, R. Hanscom, K. Silvers, T.S. Lehman, G. Chockler, A. Gotsman

On-going Research

Leveraging flexibility of WebAssembly in building censorship-resistant pluggable transports
Designing a novel network transport with good flexibility/pluggability using WebAssembly

Investigating potential censorship on TLS-over-TLS
Examining rumors about a certain censorship mechanism targeting TLS handshake in a tunnel

Portraying Identifiable Response Ossification
Revealing the fundamental characteristics contributed to Active Probing vulnerabilities

Selected Projects

W.A.T.E.R.: WebAssembly Transport Executable Runtime — Since 2023
Next-generation engine for WebAssembly-based network transport protocols

TLS/QUIC Fingerprinting — Since 2021
Fingerprinting TLS and QUIC connections through Deep Packet Inspection (DPI)

- **clienthellod** A TLS ClientHello and QUIC Initial Packet parser for fingerprinting purposes
- **uTLS** Low-level access TLS ClientHello mimicry library allowing low-level access to TLS Handshake
- **uQUIC** Low-level access QUIC Initial Packet mimicry library allowing low-level access to QUIC Handshake
- **TLSFingerprint.io** Online museum for collected TLS client fingerprints on a network tap at CU Boulder
- **quic.TLSFingerprint.io** Online museum for collected QUIC client fingerprints on a network tap at CU Boulder

Common Vulnerabilities and Exposures
*Individual contributions to the **CVE® Program***

- **CVE-2021-36539** Unbound File Access vulnerabilities in Canvas LMS by *Instructure, Inc.*
- **CVE-2021-28681** DTLS Man-in-the-Middle(MITM) risks in pion/webrtc by *Pion*

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Professional Experience

Fullstack Software Engineer — C++, Javascript, PHP, Python, SQL
Intelepeer Cloud Communications LLC — *Aug 2021 - June 2022*

Research Experience

Graduate Student Researcher — Censorship, Cybersecurity, Network
University of Colorado Boulder — *Aug 2022 - Present*

Network Engineering Researcher — Network, Censorship
University of Colorado Boulder, with Psiphon, Inc. — *July 2021 - Apr 2022*

Undergraduate Student Researcher — Network, Censorship
University of Colorado Boulder (Mentored Independent Study Program) — *Jan 2021 - May 2021*

Undergraduate Research Assistant — Distributed Systems, Network, RDMA
University of Colorado Boulder — *Apr 2020 - Apr 2021*

Teaching Experience

Teaching Assistant
University of Colorado Boulder

ECEN 4133/5133: Fundamentals of Computer Security — *Fall 2023*
ECEN 4313/5313: Concurrent Programming — *Fall 2020 / Fall 2022*
ECEN 1310: C Programming for ECE — *Spring 2020 / Spring 2021*

Awards & Other Honors

ECEE Outstanding Accomplishment Award — May 2021
ECEE Excellence Fellowship — Aug 2022