

Gaukas Wang

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Education

University of Colorado Boulder

Boulder, CO

Electrical and Computer Engineering

Bachelor of Science (B.Sc.) Latin Honor: *Summa Cum Laude*

May 2021

Doctor of Philosophy (Ph.D.), Advisor: Prof. Eric Wustrow

(est.) May 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 create privacy-enhancing technologies (PET).

Cybersecurity: More general topics including Cryptography, Web security, and Software Reverse Engineering

Selected Publications

Just add WATER: WebAssembly-based Circumvention Transports

arXiv, submitted to FOCI 2024

Erik Chi, G Wang, J. Alex Halderman, Eric Wustrow, Jack 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, TS Lehman, G Chockler, A Gotsman

Selected Research

Fingerprinting QUIC Clients/Connections

Investigating potential vulnerabilities on QUIC Client being identified with Deep Packet Inspection

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

Selected Projects

W.A.T.E.R.: WebAssembly Transport Executable Runtime

2023-

Next-generation engine for WebAssembly-based network transport protocols

Open Source

TLS/QUIC Fingerprinting

2021-

Fingerprinting TLS and QUIC connections with Deep Packet Inspection (DPI)

Open Source

- **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

CVE (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

Intelepeer Cloud Communications LLC

C++, Javascript, PHP, Python, SQL

Aug 2021 - June 2022

Research Experience

Graduate Student Researcher

University of Colorado Boulder

Censorship, Cybersecurity, Network

Aug 2022 - Present

Network Research Engineer

at Psiphon, Inc. through Refraction Networking

Network, Censorship

July 2021 - Apr 2022

Undergraduate Student Researcher

University of Colorado Boulder (Mentored Independent Study Program)

Network, Censorship

Jan 2021 - May 2021

Undergraduate Research Assistant

University of Colorado Boulder

Distributed Systems, Network, RDMA

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