

# Gaukas Wang

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## Education

**University of Colorado Boulder**

Boulder, CO

*Electrical and Computer Engineering*

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

May 2021

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

(est.) May 2027

## Research Area/Interest

**Anti-Censorship:** Censorship Measurement, Analysis, Circumvention/Evasion

**Computer Network:** Network Measurement, Optimization, Security

**Privacy:** Application/User Fingerprint, Online Privacy Violation

**Cybersecurity:** Application Security, Cryptography, Malware Analysis

## Selected Publications

**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*

## On-going Research

**Fingerprinting QUIC Clients/Connections**

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

**Building Censorship-Resistant Pluggable Transport with WebAssembly**

*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*

- **clienhellod** 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

**Helios**

2021

*Cloud-native remote watchdog for server cluster status monitoring*

**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*

## Professional Experience

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### Fullstack Software Engineer

*Intelepeer Cloud Communications LLC*

C++, PHP, Python, MySQL, REST API

*Aug 2021 - June 2022*

## Research Experience

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### Graduate Researcher

*University of Colorado Boulder*

Censorship, Cybersecurity, Network

*Aug 2022 - Present*

### Temporary Network Research Engineer

*Psiphon, Inc., Refraction Networking*

Network, Censorship

*July 2021 - Apr 2022*

### Undergraduate Independent Researcher

*University of Colorado Boulder (Independent Study Program, mentored)*

Network, Censorship

*Jan 2021 - May 2021*

### Undergraduate Research Assistant

*University of Colorado Boulder*

Distributed Systems, Network, RDMA

*Apr 2020 - Apr 2021*

## Teaching Experience

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### 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*