Zane Ma

Postdoctoral Researcher
Georgia Institute of Technology
School of Electrical and Computer Engineering
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POSITIONS

2021 – PRESENT	**Postdoctoral Researcher**, *Georgia Institute of Technology* Advisor: Manos Antonakakis

EDUCATION

2015 – 2021	**Doctor of Philosophy** in Computer Science, *University of Illinois at Urbana-Champaign* Advisor: Michael D. Bailey Committee: Adam Bates Yuile, Gang Wang, Nikita Borisov, Zakir Durumeric
2008 – 2012	**Bachelor of Arts** with Honors in Chemistry, *Princeton University* Advisior: Erik J. Sorensen

RESEARCH SUMMARY

My research focuses on a data-driven approach to computer security, with an emphasis on secure identity in networked systems. My current research examines TLS, CAs in the web PKI (web server authentication), user authentication, DNS names, and the usability of web server identity. Prior research characterized the rapidly evolving internet landscape—IoT botnets, cryptocurrency miners/abuse, ICS devices, and realtime web protocols.

FELLOWSHIPS AND AWARDS

2021	CS Graduate Student Outstanding Service Award
2020 – 2021	Mavis Future Faculty Fellowship
2020 – 2021	Yunni & Maxine Pao Memorial Fellowship
2019	Best Paper Award, The Web Conference (WWW)

PUBLICATIONS

Tracing Your Roots: Exploring the TLS Trust Anchor Ecosystem
Zane Ma, James Austgen, Joshua Mason, Zakir Durumeric, Michael Bailey. *ACM Internet Measurement Conference (IMC '21).* November 2021.

Accepted: 55 / 196 submissions (28.1%)

What's in a Name? Exploring CA Certificate Control
Zane Ma, Joshua Mason, Manos Antonakakis, Zakir Durumeric, Michael Bailey. *USENIX Security Symposium (Sec '21).* August 2021.

Accepted: 248 / 1319 submissions (18.8%)

WebSocket Adoption and the Landscape of the Real-Time Web
Paul Murley, Zane Ma, Joshua Mason, Michael Bailey, Amin Kharraz. *The Web Conference (WWW '21).* April 2021.

Accepted: 357 / 1736 submissions (20.6%)

Measuring Identity Confusion with Uniform Resource Locators
Joshua Reynolds, Deepak Kumar, Zane Ma, Rohan Subramanian, Meishan Wu, Martin Shelton, Joshua Mason, Emily Stark, Michael Bailey. *ACM Conference on Human Factors in Computing Systems (CHI '20).* April 2020.

Accepted: 760 / 3126 submissions (24.3%)

The Impact of Secure Transport Protocols on Phishing Efficacy
Zane Ma, Joshua Reynolds, Joseph Dickinson, Kaishen Wang, Taylor Judd, Joseph D. Barnes, Joshua Mason, Michael Bailey. *Workshop on Cyber Security Experimentation and Test (CSET '19).* August 2019.

Accepted: 19 / 61 submissions (31.1%)

OUTGUARD: Detecting In-Browser Covert Cryptocurrency Mining in the Wild
Best Paper Award
Amin Kharraz, <u>Zane Ma</u>, Paul Murley, Charles Lever, Joshua Mason, Andrew Miller, Nikita Borisov, Manos Antonakakis, Michael Bailey. *The Web Conference (WWW '19).* May 2019.

Accepted: 225 / 1247 submissions (18.0%)

Measuring Ethereum's Peer-to-Peer Network
Seoung Kim, <u>Zane Ma</u>, Siddarth Murali, Josh Mason, Andrew Miller, Michael Bailey. *ACM Internet Measurement Conference (IMC '18).* November 2018.

Accepted: 43 / 174 submissions (24.7%)

Understanding the Mirai Botnet
<u>Zane Ma</u>, Manos Antonakakis, Tim April, Michael Bailey, Matt Bernhard, Elie Bursztein, Jaime Cochran, Zakir Durumeric, J. Alex Halderman, Luca Invernizzi, Michalis Kallitsis, Deepak Kumar, Chaz Lever, Joshua Mason, Damian Menscher, Chad Seaman, Nick Sullivan, Kurt Thomas, Yi Zhou. *USENIX Security Symposium (Sec '17).* August 2017.

Accepted: 85 / 522 submissions (16.3%)

The Security Impact of HTTPS Interception
Zakir Durumeric, <u>Zane Ma</u>, Drew Springall, Richard Barnes, Nick Sullivan, Elie Bursztein, Michael Bailey, J. Alex Halderman, Vern Paxson. *Network and Distributed Systems Symposium (NDSS '17).* February 2017.
Accepted: 68 / 423 submissions (16.1%)

Security Challenges in an Increasingly Tangled Web
Deepak Kumar, <u>Zane Ma</u>, Zakir Durumeric, Ariana Mirian, Joshua Mason, Michael Bailey, J. Alex Halderman. *World Wide Web Conference (WWW '17).* April 2017.

Accepted: 164 / 966 submissions (17.0%)

An Internet-Wide View of ICS Devices
Ariana Mirian, <u>Zane Ma</u>, David Adrian, Matthew Tischer, Thasphon Chuenchujit, Tim Yardley, Robin Berthier, Josh Mason, Zakir Durumeric, J. Alex Halderman, Michael Bailey. *IEEE Conference on Privacy, Security, and Trust (PST '16).* December 2016.

Accepted

Teaching

Spring 2021	**CS 461: Intro to Comp. Security**	Teaching Assistant
Fall 2020	**CS 461: Intro to Comp. Security**	Teaching Assistant*
Spring 2020	**CS 461: Intro to Comp. Security**	Teaching Assistant
Fall 2019	**CS 461: Intro to Comp. Security**	Teaching Assistant
Spring 2019	**CS 461: Intro to Comp. Security**	Teaching Assistant
Spring 2018	**CS 461: Intro to Comp. Security**	Teaching Assistant
Fall 2015	**CS 241: System Programming**	Teaching Assistant*

Outstanding instructor rating (top 10%)

Mentorship

2020 – 2021	**James Austgen**	Undergrad	Mapping IoT root certificate stores from firmware.
2019 – 2020	**Zhengdai Hu**	Undergrad	Working on CA audit/policy analysis.
2018 – 2019	**Kaishen Wang**	Masters	Thesis: Malicious web content from domain blacklists.
2017 – 2018	**Siddarth Murali**	Masters	Thesis: Ethereum neighbor inference.
2017 – 2018	**Simon Kim**	Masters	Thesis: Ethereum P2P network measurement.
2017 – 2018	**Joseph Dickinson**	Undergrad	Thesis: Tracking changes in browser security indicators.
2016 – 2017	**Alex Mitsdarfer**	Masters	Thesis: Institutional Active Directory usage.

Service

Institutional

2019 – 2021   **Engineering Graduate Student Advisory Committee**
General Member
2018 – 2021   **CS Graduate Student Organization**
General Member
2016 – 2021   **CS Graduate Ambassador**
2019 – 2020   **Computer Science Committee on Broadening Participation in Computing (BPC)**
Student Member
2017 – 2019   **Senate Committee on IT**
Student Member
2017 – 2018   **CS Graduate Student Organization**
Social Chair
2016 – 2018   **Students Advising Graduate Education**
General Member

Professional

2018   **IMC Student TPC**
Student member

Invited Talks

Conferences & Forums

Nov. 2021   **Tracing Your Roots: Exploring the TLS Trust Anchor Ecosystem**
ACM Internet Measurement Conference (IMC '21)
Oct. 2021   **Exploring CA Certificate Control**
CA/Browser Forum
Aug. 2021   **What's in a Name? Exploring CA Certificate Control**
USENIX Security Symposium (Sec '21)
Aug. 2019   **The Impact of Secure Transport Protocols on Phishing Efficacy**
Workshop on Cyber Security Experimentation and Test (CSET '19)
Feb. 2018   **Mirai and the Future of IoT botnets**
M3AAWG: 42nd General Meeting
Aug. 2017   **Understanding the Mirai botnet**
USENIX Security Symposium (Sec '17)

Seminars & Guest Lectures

Sept. 2021   **Understanding the Trust Relationships of the Web PKI**
Georgia Tech Cybersecurity Lecture Series
Apr. 2020   **Fundamentals of Phishing: A Usability Perspective**
UC San Diego Security Seminar
Mar. 2020   **Grad school life: Finding the best fit**
Illinois CS Graduate Student Recruitment
Aug. 2018/2019   **Graduate School: A pioneering journey through the Wild West**
Illinois CS Graduate Student Orientation
Nov. 2017   **Understanding the Mirai botnet**
University of Chicago Security Seminar

Research Internships

Jun 2018 – Jul 2018   **Manos Antonakakis**
Georgia Tech

Jun 2016 – Aug 2016   **Vern Paxson**
ICSI, UC Berkeley