

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*
Advisor: Erik J. Sorensen

RESEARCH SUMMARY

My research takes 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, Zane Ma, 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, Zane Ma, 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

Zane Ma, 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, Zane Ma, 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, Zane Ma, 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, Zane Ma, 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

2021 – PRES.	Kleanthis Karakolios	PHD	Adversarial ML for DNS reputation.
2021 – PRES.	Thomas Papastergiou	PHD	5G SDN Network Defenses.
2021 – PRES.	Konstantinos Karakatsanis	PHD	Email abuse and data sharing.
2021 – PRES.	Athanasios Avgetidis	PHD	Malware DNS lifecycle dynamics.
2021 – PRES.	Aaron Faulkenberry	PHD	DNS name registration abuse.
2021 – PRES.	Kevin Valakuzhy	PHD	Automated APT malware analysis.
2021 – PRES.	Kevin Sam Tharayil	PHD	DNS flow-stitching.
2021 – PRES.	Anthony Boueid	MASTERS	Web tracking via DNS/SMTP/HTTP.
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: Web scanning 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 browser security indicators.
2016 – 2017	Alex Mitsdarfer	MASTERS	Thesis: Institutional Active Directory usage.

SERVICE

Professional

2023	IEEE Symposium on Security and Privacy (S&P)	<i>Program Committee</i>
2022	ACM Conference on Computer and Communications Security (CCS)	<i>Program Committee</i>
2018	ACM Internet Measurement Conference (IMC)	<i>Student PC</i>

Institutional

2019 – 2021	Engingeering Graduate Student Advisory Committee	<i>General Member</i>
2018 – 2021	CS Graduate Student Organization	<i>General Member</i>
2016 – 2021	CS Graduate Ambassador	
2019 – 2020	CS Committee on Broadening Participation in Computing	<i>Student Member</i>
2017 – 2019	Senate Committee on IT	<i>Student Member</i>
2017 – 2018	CS Graduate Student Organization	<i>Social Chair</i>
2016 – 2018	Students Advising Graduate Education	<i>General Member</i>

INVITED TALKS

Conferences & Forums

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

Seminars & Guest Lectures

Nov. 2021	WebPKI and Trust <i>Stanford CS249i Guest Lecture</i>
Sept. 2021	Understanding the Trust Relationships of the Web PKI <i>Georgia Tech Cybersecurity Lecture Series</i>
Apr. 2020	Fundamentals of Phishing: A Usability Perspective <i>UC San Diego Security Seminar</i>
Mar. 2020	Grad school life: Finding the best fit <i>Illinois CS Graduate Student Recruitment</i>
Aug. 2018/2019	Graduate School: A pioneering journey through the Wild West <i>Illinois CS Graduate Student Orientation</i>
Nov. 2017	Understanding the Mirai botnet <i>University of Chicago Security Seminar</i>

RESEARCH INTERNSHIPS

Jun 2018 – Jul 2018	Manos Antonakakis GEORGIA TECH
Jun 2016 – Aug 2016	Vern Paxson ICSI, UC BERKELEY