David Adrian

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Education

University of Michigan, Ann Arbor, MI

PhD, Computer Science 2019

- Advisor: J. Alex Halderman
- Research Focus: Computer Security
- Dissertation: Using Large-Scale Empirical Methods to Understand Fragile Cryptographic Ecosystems

Masters of Science in Engineering, Computer Science Class of 2016

Bachelors of Science in Engineering, Computer Science Class of 2014

- Minor: Mathematics

Work Experience

Principal Engineer, *Nametag* 2020 - Present

- Nametag mediates PII between users and companies via a push notification approval flow (Stripe crossed with Duo for PII).
- Second employee, first non-executive hire.
- Backend service engineering and design, primarily in Go, with a focus and security, privacy, and anti-abuse.
- Led all cryptography engineering, including authorization token design and deployment, and mobile TPM key architectures.
- Built and defined product features, including all multi-device support and user flows, and automatic ID-based account recovery.

Cofounder and Engineering Manager, *Censys* 2017 - 2020

- Created Censys as a research project to expose Internet-wide measurement data during my PhD at the University of Michigan.
- Cofounded a startup to commercialize the Censys research project into an enterprise data offering and SaaS security product.
- Set company-wide engineering direction and vision as Censys grew to over 50 employees and over $3M annual recurring revenue, and a $15M Series A.
- Contributed to technical product direction, defining how our SaaS application and data offering interact.
- Designed and implemented engineering-wide service architecture supporting multiple data-driven products.
- Led data engineering team, responsible for collecting scan data on over 4B hosts, processing over 2B X.509 certificates, and providing terabytes of data to enterprise customers daily.
- Built ETL pipelines for data warehousing and search applications.
- Migrated data infrastructure from custom on-premise (datacenter) technology to Google Cloud and Apache Beam.
- Led the adoption of Kubernetes, container-based development, and a polyglot monorepo.
- Managed cross-Language build tooling, including code generation for Protobuf and gRPC.
- Worked in both individual contributor and management roles, with between 3 and 9 direct reports.
- Scoped and successfully delivered initial SaaS MVP, rescuing the project after two other engineering managers were unable to deliver.
- Created and led the adoption of a project tracking system for cross-team initiatives, leveraging JIRA and Confluence.

Software Engineering Intern, *Google Chrome Security* Summer 2016

- Worked on the Chrome TLS and X.509 stack
- Implemented OCSP Expect-Staple in order to measure the feasibility of OCSP Must-Staple.

Software Engineering Intern, *Duo Security* Summer 2013

- Two-factor authentication-as-a-service, using mobile phones as the second authentication factor and push notifications for login approval.
- Grew various Python backend subsystems to support new features; handled all bugs, feature requests, and security considerations for the Duo Unix client.
- Wrote a patch for OpenSSH to securely allow third-party authentication plugins.

Research Experience

Research Scientist, *Stanford Empirical Security Research Group* 2020 - Present

- Part-time work with Professor Zakir Durumeric at Stanford Computer Science.
- Focus on secure transports and secure protocol design and development.

PhD, *with Professor J. Alex Halderman* 2013 - 2019

- Computer security and Internet measurement research, concentrating on using global perspectives to gain insight into networks and cryptography.
- Created and maintain ZGrab, ZCrypto, and ZMap, open-source tools for high-speed Internet-wide measurement (available on GitHub).
- Maintain TLS and X.509 implementations, including certificate chaining, designed for measurement of the HTTPS ecosystem.
- Released Censys, a search engine for Internet-wide measurement data.
- Codiscovered the Logjam and DROWN attacks on TLS.

Whisper Project, *with Professor Robert P. Dick* 2011 - 2013

- Released MANES, an Android prototyping framework for mobile ad-hoc networks
- Released Shout, a user-facing censorship-resistant communication application built using MANES

Teaching Experience

Lecturer, *EECS 388: Intro to Computer Security* Fall 2016
Graduate Student Instructor, *EECS 388: Intro to Computer Security* Fall 2015
Graduate Student Instructor, *EECS 588: Computer Security* Winter 2015
Instructional Aide, *EECS 281: Data Structures and Algorithms* Winter 2014
Instructional Aide, *EECS 280: Programming and Data Structures* Fall 2013

Other Experience

Network Technician, *CAEN* 2011 - 2012

- Maintained over 700 wireless access points for the University of Michigan College of Engineering campus.
- Transitioned printing system from CAEN control to campus-wide IT department.
- Diagnosed and performed network troubleshooting as needed.
- Configured L2 access on managed switches from Cisco, Juniper, and Force10.

Computer Skills

Languages: C, C++, Go, Java, Javascript, Python, Rust, Swift, Typescript
Platforms/Frameworks: Android, Celery, iOS, Pylons, Node.js, POSIX, Pyramid, React (Native)
Datastores: Bigtable, Elasticsearch, Kafka, MySQL, MongoDB, Postgres, Redis, RocksDB
Data Processing: Apache Airflow, Apache Beam, Bigquery, Google Cloud Dataflow, Jupyter
Infrastructure: AWS, Bazel, Cloudformation, Docker, Google Cloud, Grafana, Kubernetes, Prometheus, Salt
Project Management: Agile, Asana, Confluence, Github, Gitlab, JIRA, Kanban, Notion

Conference Publications

On the Origin of Scanning: The Impact of Location on Internet-Wide Scans
Gerry Wan, Liz Izhikevich, David Adrian, Katsunari Yoshioka, Ralph Holz, Christian Rossow, and Zakir Durumeric
ACM Internet Measurement Conference (IMC), 2020.

Tracking Certificate Misissuance in the Wild
Deepak Kumar, Zhengping Wang, Matthew Hyder, Joseph Dickinson, Gabrielle Beck, David Adrian, Zakir Durumeric, J. Alex Halderman, and Michael Bailey
IEEE Symposium on Security and Privacy (Oakland), 2018.

Measuring small subgroup attacks against Diffie-Hellman
Luke Valenta, David Adrian, Antonio Sanso, Shaanan Cohney, Joshua Fried, Marcella Hastings, J. Alex Halderman, and Nadia Heninger.
Network and Distributed System Security Symposium (NDSS), 2017.

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

DROWN: Breaking TLS Using SSLv2
Nimrod Aviran, Sebastian Schinzel, Juraj Somorovsky, Nadia Heninger, Maik Dankel, Jens Steube, Luke Valenta, David Adrian, J. Alex Halderman, Viktor Dukhovni, Emilia Käsper, Shaanan Cohney, Susanne Engels, Christof Paar, and Yuval Shavitt
USENIX Security Symposium, 2016.

Neither Snow Nor Rain Nor MITM... An Empirical Analysis of Email Delivery Security
Zakir Durumeric, David Adrian, Ariana Mirian, James Kasten, Kurt Thomas, Vijay Eranti, Nicholas Lidzborski, Elie Bursztein, Michael Bailey, and J. Alex Halderman
ACM Internet Measurement Conference (IMC), 2015.

Imperfect Forward Secrecy: How Diffie-Hellman Fails in Practice
David Adrian, Karthikeyan Bhargavan, Zakir Durumeric, Pierrick Gaudry, Matthew Green, J. Alex Halderman, Nadia Heninger, Drew Springall, Emmanuel Thomé, Luke Valenta, Benjamin VanderSloot, Eric Wustrow, Santiago Zanella-Béguelin and Paul Zimmermann.
ACM Conference on Computer and Communications Security (CCS), 2015.
Best Paper Award!

A Search-Engine Backed by Internet-Wide Scanning
Zakir Durumeric, David Adrian, Ariana Mirian, Michael Bailey, and J. Alex Halderman
ACM Conference on Computer and Communications Security (CCS), 2015.

Performance and Energy Consumption Analysis of a Delay-Tolerant Network for Censorship-Resistant Communication
Yue Liu, David R. Bild, David Adrian, Gulshan Singh, Robert P. Dick, Dan S. Wallach, and Z. Morley Mao
ACM Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2015.

The Matter of Heartbleed
Zakir Durumeric, Frank Li, James Kasten, Johanna Amann, Jethro Beekman, Mathias Payer, Nicolas Weaver, David Adrian, Vern Paxson, Michael Bailey, and J. Alex Halderman
ACM Internet Measurement Conference (IMC), 2014.
Best Paper Award!

Workshop Publications

Zippier ZMap: Internet-Wide Scanning at 10 Gbps
David Adrian, Zakir Durumeric, Gulshan Singh and J. Alex Halderman
USENIX Workshop on Offensive Technologies (WOOT), 2014.