

Harry Eldridge

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Education

Johns Hopkins University

PHD IN COMPUTER SCIENCE

Baltimore, MD

2021 - 2025 (expected)

Georgetown University

M.S. IN COMPUTER SCIENCE

GPA: 4.0

Washington, DC

September 2017 – May 2018

BS IN COMPUTER SCIENCE, MINOR: MATHEMATICS

GPA: 3.8; Magna Cum Laude

September 2013 – May 2017

Experience

Johns Hopkins University

PHD STUDENT, PROFESSORS MATTHEW GREEN AND ABHISHEK JAIN

Baltimore, MD

January 2021 – Present

- Performed cryptography research on a variety of topics, including increasing privacy for Bluetooth tracking devices such as Apple AirTags, novel methods for private software telemetry, protocols for detecting misbehaving devices in IoT deployments, and government compliance for anonymous cryptocurrencies.

MITRE

CRYPTOGRAPHY INTERN / PART-TIME CONTRACTOR

McLean, VA

May 2022 - December 2023

- Researched the application of a novel lattice problem to cryptography

Appian Corporation

SECURITY ENGINEER

Tysons Corner, VA

August 2018 – January 2021

- Designed a system using AWS Lambda and Google Chat to automatically verify with Domain Administrators that actions taken on highly privileged accounts were deliberate
- Maintained a log aggregation and alerting system of all Windows Event Logs for a 1000 employee company using Apache NiFi, Elasticsearch, Kibana, and AWS S3, Athena, and Lambda
- Deployed and managed a self-hosted GitLab installation with autoscaling runners, using AWS EC2, Terraform, Docker, and Ansible
- Using Terraform, designed and deployed an AWS Security Suite (Guardduty, Cloudtrail, Detective) for an AWS organization supporting over 500 engineers, and over 1000 customer sites
- Designed and deployed a pipeline for creating and hardening machine images, then scanning them to ensure compliance requirements are met using Tenable.io, Python, and Terraform, Ansible, and AWS EC2
- Built a security infrastructure monitoring system to check if periodic tasks are running and display a dashboard showing which services are currently down
- Designed and deployed a service to scan Twitter and Pastebin for potential data leaks using Python, Docker, and Amazon ECS

Georgetown University

RESEARCH ASSISTANT, PROFESSOR ADAM O'NEILL

Washington, DC

May 2018 – August 2018

- Researched instantiating random oracles in the Fujisaki-Okamoto encryption scheme using extractable hash functions

Publications

- Harry Eldridge, Aarushi Goel, Matthew Green, Abhishek Jain, Maximilian Zinkus. **One-Time Programs from Commodity Hardware**. *Theory of Cryptography Conference*, 2022
- Harry Eldridge, Gabrielle Beck, Matthew Green, Nadia Heninger, Abhishek Jain. **Abuse-Resistant Location Traction: Balancing Privacy and Safety in the Offline Finding Ecosystem**. *Usenix*, 2024
- Pratyush Tiwari, Harry Eldridge, Matthew Green, Abhishek Jain. **Succinct Privacy-Preserving Blueprints for Threshold Comparison**. *In Submission*, 2025
- Harry Eldridge, Aditya Hegde, Brennan Brimhall, Gabrielle Beck, Matthew Green. **MDSS-STAR: Private Heavy-Hitters through Multi-Dealer Secret Sharing**. *In Submission*, 2025

Notable Projects

- A web application that takes two images and generates an image of one “morphing” into the other, originally built with Python, Django, NumPy, and Pillow, and deployed using Terraform, Ansible, and Amazon EC2, later rewritten using React and WebAssembly: <https://animorphgenerator.com>
- A data-first static site generator built with Python: <https://skip.harryeldridge.com>
- A framework for the interactive watermarking of large language models

