

# Kelly Kaoudis

hi@kellykaoud.is ~ https://kellykaoud.is

## Employment

### Trail of Bits, Research - Senior Security Engineer

09/2022 - now

- Tech lead and contributor for threat modeling engagements incorporating elements of Mozilla Rapid Risk Review (RRA), NIST SP 800-154, and NIST SP 800-53.
- Tech lead and contributor for secure code review and secure infrastructure review engagements leveraging static and dynamic tooling as well as manual source code review.
- Mentor for grad student "winternship" on distributed system attack surface and trust boundary mapping.
- Creating and maintaining internal documentation and templates for threat modeling engagements.
- Leading and contributing to novel academic and industry research projects working with other Trail engineers, external industry partners, and external academic partners.
- Contributing to open-source dynamic program analysis and file formats analysis tooling (Polytracker, Polyfile) in Python and C++ with LLVM.
- Creating and contributing to DARPA, ARPA-H, IARPA, and SBIR funding proposals.

### Twitter, Application Security - Senior Software Engineer & Tech Lead

08/2019 - 08/2022

- Wrote proposals and design docs for, coordinated, led local, cross-team, and cross-functional projects.
- Designed & built application security code in Scala and Java within Twitter Front End (TFE) reverse proxy.
- Designed & built serverside and clientside security libraries in Scala and JS for use across Twitter.
- Onboarded new colleagues; mentored junior and mid-level colleagues.
- Application security-focused review and threat modeling throughout the SDLC for projects across Twitter.
- Maintained and simplified the Scala CSP violation reporting endpoint used by all Twitter domains.
- Technical "design shepherd"; connected design authors across Twitter to reviewers in other orgs/teams.
- Contributed to 2021 cross-org tech stack evaluation groups for Scala 3 and Java.
- Designed & built Checkmarx and Trufflehog SAST CI/CD integrations and rulesets for other teams.
- Helped design, teach, and maintain Twitter's internal security classes (threat modeling, attacker identification, OWASP Top 10, new-hire security onboarding).
- Vulnerability Disclosure Program report triage and payouts coordination rotation member; maintained and simplified VDP Jira ticket automation in Python.
- Conducted paired interviews for teams throughout the infosec org including for Application Security; conducted hiring-manager phone screens for prospective Application Security engineers.
- Member of four-person production software on-call rotation.

### Twitter, developer.twitter.com - Software Engineer II

01/2017 - 08/2019

- Designed and built developer.twitter.com revenue recognition, tax, and billing features and services.
- Designed and built authorization features integrating Twitter user authentication in IAM service.
- Redesigned IAM service following Domain Driven Design patterns, reducing time-to-prod for simple features from ~1 week to ~1 day.
- Mentored graduate summer-term intern and Software Engineer I colleagues.
- Member of six-person production software on-call rotation.

### Twitter, Developer & Enterprise Solutions - Software Engineer I

01/2016 - 01/2017

- Designed, built, and maintained always-on end-to-end load and correctness test clients.
- Wrote end to end tests and feature tests for Developer & Enterprise Solutions microservices and systems.
- Cross-team Developer & Enterprise Solutions organization production release coordination.
- Member of five-person release engineering rotation.

## Education

University of Colorado - Boulder, M.S., Computer Science

2015

University of Colorado - Boulder, B.S. & B.A., Journalism, Computer Science, French

2013

## Publications and Talks

### Academia

- Evan Sultanik, Marek Surovič, Henrik Brodin, **Kelly Kaoudis**, Facundo Tiesca, Carson Harmon, Lisa Overall, Joseph Sweeney, Bradford Larsen, "PolyTracker: Whole-Input Dynamic Information Flow Tracing", ACM ISSTA 2024. Won *Distinguished Tool Award*. [bit.ly/4cksGMw](https://bit.ly/4cksGMw)
- Fangfei Yang, Bumjin Im, Weijie Huang, **Kelly Kaoudis**, Anjo Vahldiek-Oberwagner, Chia-Che Tsai, Nathan Dautenhahn, "Endokernel: A Thread Safe Monitor for Lightweight Subprocess Isolation", Usenix Security 2024. [bit.ly/3XRnQmj](https://bit.ly/3XRnQmj)
- Yi Chien, Vlad Bădoiu, Yudi Yang, Claire Huo, **Kelly Kaoudis**, Hugo Lefevre, Pierre Olivier, Nathan Dautenhahn, "CIVSCOPE: Analyzing Potential Memory Corruption Bugs in Compartment Interfaces", SOSOP KISV (Proceedings of the 1st Workshop on Kernel Isolation, Safety and Verification pp. 33-40), 2023.
- Fangfei Yang, Weijie Huang, **Kelly Kaoudis**, Anjo Vahldiek-Oberwagner, Nathan Dautenhahn, "Endokernel: Programmable and Extensible Subprocess Isolation", New Security Paradigms Workshop (NSPW), 2023.
- **Kelly Kaoudis**, Henrik Brodin, Evan Sultanik, "Automatically Detecting Variability Bugs with Hybrid Control and Data Flow Analysis", LangSec (IEEE S&P Workshops), 2023. [bit.ly/3pBZ1vG](https://bit.ly/3pBZ1vG), [bit.ly/3O8JD3H](https://bit.ly/3O8JD3H)
- Yudi Yang, Weijie Huang, **Kelly Kaoudis**, Nathan Dautenhahn, "Automating Program Reasoning with the Object Encapsulation Model", LangSec (IEEE S&P Workshops), 2023. [bit.ly/3JFFHV6](https://bit.ly/3JFFHV6)
- Aimee Coughlin, **Kelly Kaoudis**, Eric Keller, "Augmenting Cloud Architectures to Support Decentralized Applications", IEEE Integrated Management, 2017. [bit.ly/2lihaKO](https://bit.ly/2lihaKO)

### Industry

- Ian Smith, **Kelly Kaoudis**: "Cedar, Rego, and OpenFGA Policy Languages: Comparative Language Security Assessment", Trail of Bits, August 2024. [bit.ly/3TBLuQP](https://bit.ly/3TBLuQP)
- **Kelly Kaoudis**, "Systems security in practice: threat modeling at Trail of Bits", invited guest lecture for University of Toronto's CleverHans Lab, Spring 2024.
  - Also presented to UC Santa Cruz's Languages, Systems, and Data Seminar, Fall 2023.
  - Also presented to Rice University's COMP 427: Intro to Computer Security, Spring 2023. [bit.ly/3r9eYtL](https://bit.ly/3r9eYtL)
- **Kelly Kaoudis**, Shaun Mirani, Spencer Michaels, "Eclipse Mosquito Threat Model", Trail of Bits, Nov 2023.
- Artur Cygan, **Kelly Kaoudis**, Emilio López, "Eclipse JKube Security Assessment", Trail of Bits, Sept 2023. [bit.ly/3FS2I54](https://bit.ly/3FS2I54)
- **Kelly Kaoudis**, Will Brattain, "OIDC For HashiCorp Vault Access in GitHub Actions Workflows", Trail of Bits, Aug 2023. [bit.ly/3Qtdi7C](https://bit.ly/3Qtdi7C)
- Cliff Smith, Sam Alws, **Kelly Kaoudis**, Spencer Michaels, "Eclipse Jetty Threat Model and Code Review with Fix Review", Trail of Bits, June 2023. [bit.ly/3QRfvBB](https://bit.ly/3QRfvBB)
- Cliff Smith, Sam Alws, **Kelly Kaoudis**, Spencer Michaels, CVE-2023-36478, CVE-2023-36479, Eclipse Jetty, June 2023.
- **Kelly Kaoudis**, "Introduction to bug bounty", invited guest lecture for Rice University's COMP 427: Introduction to Computer Security, Spring 2022. [bit.ly/3vCu62M](https://bit.ly/3vCu62M)
- **Kelly Kaoudis**, Sick Codes, "Pwning IPv4 parsing", DEFCON 29, 2021. [bit.ly/2U88n2B](https://bit.ly/2U88n2B).
  - Also presented to CyberDT XSWG-14, Institute for Defense Analyses (IDA), July 2022. [bit.ly/3Q8hpo8](https://bit.ly/3Q8hpo8)
- Sick Codes, **Kelly Kaoudis**, Victor Viale, John Jackson, CVE-2021-29922, CVE-2021-29923, CVE-2021-29921, CVE-2021-29662, CVE-2021-28918, CVE-2021-33318, April 2021.
- **Kelly Kaoudis**, "Application Security at Scale", Datadog Bits of Security, April 2021. [bit.ly/3dYwDu5](https://bit.ly/3dYwDu5)
- **Kelly Kaoudis**, "Scaling Validation of Streaming Data Products at Twitter", Strange Loop 2017. [bit.ly/2CiLm1T](https://bit.ly/2CiLm1T)

### Academic Service

- Program Committee Member, Eleventh LangSec Workshop at IEEE Security & Privacy (Oakland), 2025.
- Artifact Evaluation Committee member, Usenix Security 2025.
- Artifact Evaluation Committee member, NDSS 2025.
- Program Committee member, Tenth LangSec Workshop at IEEE Security & Privacy (Oakland), 2024.