

# Kelly Kaoudis

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## Employment

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

09/2022 - now

- Tech lead and contributor for application security, cloud security, ML, and blockchain threat models.
- Mentor for grad student "winternship" on distributed system attack surface and trust boundary mapping.
- Creating and maintaining internal documentation and templates for threat modeling and risk assessment.
- Leading and contributing to novel program analysis and file formats analysis research working with other Trail engineers, external industry partners, and external academic partners.
- Contributing to open-source DARPA SafeDocs research tooling (PolyTracker, PolyFile) in Python and C++.
- Creating and contributing to DARPA, ARPA-H, IARPA, and SBIR funding proposals.

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

01/2016 - 08/2022

- Wrote internal proposals for, coordinated, and 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.
- Application security-focused review and threat modeling throughout the SDLC for projects across Twitter.
- Technical "design shepherd"; connected design authors across Twitter to reviewers in other orgs/teams.
- Contributed to 2021 cross-org tech stack change evaluations for Scala 3 and Java.
- Designed & built static analysis CI/CD integrations and rulesets for other engineering teams.
- Designed & taught internal classes (threat modeling, attacker identification, OWASP Top 10, new-hire).
- Onboarded new colleagues; mentored junior and mid-level colleagues as well as summer interns.
- Vulnerability Disclosure Program external researcher reports triage and payouts rotation member.
- Conducted paired interviews for teams throughout the infosec org including Application Security; conducted initial phone screens for prospective Application Security engineers.
- On-call software engineering rotation member.

## Education

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

2015

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

2013

## Publications

### Academia

- 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", SOSP 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

- Artur Cygan, **Kelly Kaoudis**, Emilio López, "Eclipse JKube Security Assessment", Trail of Bits, September 2023. [bit.ly/3FS2I54](https://bit.ly/3FS2I54)
- **Kelly Kaoudis**, Will Brattain, "OIDC For HashiCorp Vault Access in GitHub Actions Workflows", Trail of Bits, August 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.
- **Kelly Kaoudis**, Sick Codes, "Pwning IPv4 parsing", DEFCON 29, 2021. [bit.ly/2U88n2B](https://bit.ly/2U88n2B); also presented at 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", Strangeloop 2017. [bit.ly/2CiLm1T](https://bit.ly/2CiLm1T)

### Other Talks

- **Kelly Kaoudis**, "Systems security in practice: threat modeling at Trail of Bits", invited guest lecture for Rice Univ. COMP 427 Intro to Computer Security, Spring 2023. [bit.ly/3r9eYtL](https://bit.ly/3r9eYtL)
- **Kelly Kaoudis**, "Introduction to bug bounty", invited guest lecture for Rice Univ. COMP 427 Intro to Computer Security, Spring 2022. [bit.ly/3vCu62M](https://bit.ly/3vCu62M)