Jeremy Erickson

jeremy@jeremy-erickson.com

EDUCATION

UC DAVIS | DAVIS, CA
MS IN COMPUTER SCIENCE
Grad. Mar 2012
Thesis: "An Investigation of Privacy
Leaks in Android Applications"

BS IN COMPUTER SCIENCE
Grad. Dec 2010
Highest Honors

WEBSITE

jeremy-erickson.com

SKILLS

PLATFORMS
Linux • Kubernetes • Docker
Open Policy Agent (OPA)
Android • OpenWRT • SGX

PROGRAMMING
Go/Golang • Python • Rego
C • Bash • Java

TOOLSETS
Identity and Access Management:
Istio • OAuth2 • OIDC • SAML
WebAuthn • CTAP2 • FIDO2
Fingerprints • Facial ID • Vein Scanning

Development:
Buildkite CI/CD • Terraform • git
Humio logging • Prometheus • PagerDuty
GitHub Enterprise

Networking:
Istio and Kubernetes Service Mesh
iptables • eBPF • tcpdump
aircrack-ng • hostapd / wpa_supplicant

Virtualization:
KVM • Xen • LibVMI

Data Storage:
Spanner • Redis
Cloud Object Storage (GCS, S3)
RDS/MySQL • SQLite • PostgreSQL

Data Transfer:
gRPC • Protobuf • HTTP2
JSON • YAML • XML

MISCELLANEOUS
vim • i3wm • markdown • LaTeX
License-conscientious

WORK EXPERIENCE

CRUISE | STAFF SECURITY ENGINEER
October 2021 – Current | Seattle, WA
- Architect and SME for Cruise Authorization (AuthZ) infrastructure, coalescing piecemeal auth solutions into unified, flexible, continuously updated, and distributed enforcement of authorization policy across 100+ kubernetes clusters and 2000+ cloud apps
- Collaborates across organizational boundaries to achieve major milestones:
    - Vehicle-to-cloud authentication using mTLS client certs; saved ProdEng from hiring a new team for alternative during return-to-market timeline
    - Cluster-ingress authentication migration for all apps at Cruise by default
    - Sidecar-based AuthZ enforcement middleware, transparently integrated with Istio identities for easy-setup service-to-service authentication
- Splits time between writing code, code review, working with stakeholders to architect new initiatives, supporting customer teams, incident response, writing RFCs and user guides, promoting teammates' professional development

DUO SECURITY | ENGINEERING TECHNICAL LEAD
May 2020 – Sept 2021 | Ann Arbor, MI
- Provided technical leadership for the formation of a new passwordless engineering team to create Duo's new passwordless product line, including the teaching of weekly technical sessions to quickly bring new hires up to speed
- As passwordless team lead, guided team in architectural discussions and encouraged a team culture of continuous documentation
- As passwordless technical SME, derisked technical approaches, wrote and reviewed code, and identified and fixed vulnerabilities before they impacted customers
- Worked closely with product team to define feasible scope, timeline, and priority of core product and product features

DUO SECURITY | SENIOR SECURITY R&D ENGINEER
Sept 2018 – May 2020 | Ann Arbor, MI
- Performed analyses on biometric options for passwordless auth
- Created SAML auth integration for Istio/Kubernetes service mesh
- Developed early prototype of passwordless auth feature on Duo mobile
- Developed first open-source WebAuthn client library for Android
- Created open-source tooling suite for interfacing with Apple T2 chip
- Regularly published research findings on Duo Labs website

UNIVERSITY OF MICHIGAN | DOCTORAL CANDIDATE
Sept 2015 – Aug 2018 | Ann Arbor, MI
- Evaluated feasibility of enforceable contracts in autonomous vehicle platooning
- Invented home router access control mechanism that prevents MAC/ARP/mDNS spoofing attacks with full legacy device compatibility
- Prototyped enclave-based crypto library for cloud platform root of trust
- Developed transparent RNG subversion using malicious hypervisor

SANDIA NATIONAL LABS | SENIOR R&D S&E CYBERSECURITY
Dec 2010 – Aug 2017 | Livermore, CA
- Developed Linux kernel analysis modules for VM introspection
- Virtualized hardware features of Android devices on minimega platform
- Core developer for FARM, a distributed malware analysis framework
- Built and maintained multiple private OpenStack cloud clusters
- Performed vulnerability assessments on Sandia infrastructure

PATENTS

Chandrasekaran, Nitish Krishna Kaveri Poompatnam, Roman Porter, Jeremy Erickson and Tim Hofmann (Aug. 2024). 'Dynamic permissions management for cloud workloads'. US20240291866A1.

Erickson, Jeremy, Nicholas James Mooney, Jordan Matthew Wright, Nicholas Hamilton Steele, Mikhail Davidov and Richard Lee Barnes (Apr. 2022). 'Multi-party cloud authenticator'. US20220123950A1.

Erickson, Jeremy, Nicholas James Mooney, Jordan Matthew Wright, Nicholas Hamilton Steele and Mikhail Davidov (Oct. 2023). 'Multi-party cloud authenticator'. US11777917B2.

Erickson, Jeremy Lee, Nicholas Hamilton Steele and Nicholas James Mooney (May 2022). 'Policy enforcement and introspection on an authentication system'. US11323480B2.

Chiang, Ken, Levi Lloyd, Jonathan Crussell, Benjamin Sanders, Jeremy Lee Erickson and David Jakob Fritz (Mar. 2016). 'Malware detection and analysis'. US9294486B1.

PUBLICATIONS

Erickson, J., S. Chen, M. Savich, S. Hu and Z. M. Mao (2018). 'CommPact: Evaluating the Feasibility of Autonomous Vehicle Contracts'. In: 2018 IEEE Vehicular Networking Conference (VNC).

Erickson, Jeremy, Qi Alfred Chen, Xiaochen Yu, Erinjen Lin, Robert Levy and Z. Morley Mao (2018). 'No One In The Middle: Enabling Network Access Control Via Transparent Attribution'. In: Asia Conference on Computer & Communications Security (AsiaCCS). ACM.

Erickson, Jeremy Lee, Craig Shannon, Kina Winoto, Steven A Hurd, Christopher W Perr and Levi Lloyd (2015). Introduction to Cyber Technologies. Tech. rep. Sandia National Laboratories (SNL-CA), Livermore, CA (United States).

Choe, Yung Ryn, Michael Bierma, Jeremy Lee Erickson, David Jakob Fritz and Eric Gustafson (2014). 'Andlantis: Large-scale Android Dynamic Analysis.' In: Workshop on Mobile Security Technologies (MoST).

Stevens, Ryan, Clint Gibler, Jon Crussell, Jeremy Erickson and Hao Chen (2012). 'Investigating user privacy in android ad libraries'. In: Workshop on Mobile Security Technologies (MoST), p. 10.

Gibler, Clint, Jonathan Crussell, Jeremy Erickson and Hao Chen (2012). 'AndroidLeaks: automatically detecting potential privacy leaks in android applications on a large scale'. In: International Conference on Trust and Trustworthy Computing. Springer Berlin Heidelberg, pp. 291–307.

PROGRAM LEADERSHIP

CYBER TECHNOLOGIES ACADEMY | Founder
Oct 2013 – Sept 2015 | Sandia National Labs | Livermore, CA

CENTER FOR CYBER DEFENDERS | Program Lead
Apr 2012 – Sept 2014 | Sandia National Labs | Livermore, CA

TALKS

HACKING WITH THE HOMIES | Speaker
February 2021 | Detroit, MI
WebAuthn: Hands on with Duo

BLACK HAT USA | Speaker
August 2019 | Las Vegas, NV
Inside the Apple T2

ESCAR USA | Speaker
June 2018 | Ypsilanti, MI
CommPact: Exploring the Feasibility of Autonomous Vehicle Contracts

MERIT MCRCON | Invited Speaker
May 2017 | Dearborn, MI
No one in the Middle: Enabling network access control via transparent attribution

CYBER EDUCATION SYMPOSIUM | Panelist
Nov 2013 | Arlington, VA
Integrating a University Program into the Government and Private Sector

NATIONAL LABS INFORMATION TECHNOLOGY SUMMIT | Speaker
May 2013 | Santa Fe, NM
FARM 5 for Malware Analysis and Collaboration