

# Aaron Lichtman

SECURITY AND SOFTWARE ENGINEER

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## Experience

### Security Engineer

#### PRODUCT SECURITY (NATIVE ASSURANCE) — META

Seattle, WA  
June 2022 - Present

- Created threat models and documented attack surfaces in order to effectively prioritize security review efforts.
- Conducted security reviews of high-risk surfaces. Implemented mitigations that eliminated vulnerabilities.
- Triaged whitehat reports for the bug bounty program, established payout guidelines, and created proof of concept exploits.
- Built systems to detect and prevent security issues before they reach production.

### Security Engineer

#### RED TEAM / INCIDENT DETECTION & RESPONSE (IDR) — META

Remote  
April 2022 - June 2022

- Expanded EDR capabilities, improved case investigation tooling, and triaged the incident queue.
- Worked the incident response oncall, and coordinated response at company-wide scale.
  - Including patching `log4j` on day 0 for critical services.
- Reverse engineered malware, and created signatures to automatically identify and prevent it from running.

### Software Engineer

#### KERNEL SECURITY FOR FACEBOOK PORTAL (ANDROID-BASED VIDEO CONFERENCING DEVICE) — META

Remote  
Sept 2020 - April 2022

- Led hardening efforts for `PortalOS` by using sanitizers, fuzzers, and modern security mitigations.
- Built fuzzing harnesses using `AFL`. Used `UBSAN` / `ASAN` / `MSAN` / `TSAN` to find hundreds of bugs.
  - Including a set of PJSIP memory corruption vulnerabilities: `CVE-2022-39244` (9.8 CVSS).
- Created factory resource monitoring systems to eliminate resource-related manufacturing issues, saving millions of dollars.

### Software Engineering Intern

#### AUTHENTICATION E2E TEAM — FACEBOOK

Menlo Park, CA  
Summer 2019

- Worked on a team securing authentication across the entire Facebook universe of apps, including Whatsapp and Instagram.
- Designed, implemented and deployed a solution to prevent internal attackers from obtaining access to user accounts and data.
- Improved monitoring and auditing capabilities in `C++` for more than 1 billion daily authentication attempts.

### iOS Software Engineering Intern

#### iOS CORE TEAM — WAYFAIR

Boston, MA  
Summer 2018

- Developed a furniture sharing iMessage extension in Swift for the Wayfair iOS app.
- Addressed challenging iOS security issues, balancing customer experience and data security.

### CS125 Course Developer — Plagiarism Detection Software

#### UNIVERSITY OF ILLINOIS CS DEPARTMENT (WORKING UNDER ASST. PROF. GEOFF CHALLEN)

Champaign, IL  
2018

- Designed plagiarism detection software that applies machine learning to code metrics and behavioral indicators.
- Analyzed natural language and performed static analysis using `NLTK` and `ANTLR`.

### CS125 Course Assistant — Java Programming Fundamentals

#### UNIVERSITY OF ILLINOIS CS DEPARTMENT (WORKING UNDER ASST. PROF. GEOFF CHALLEN)

Champaign, IL  
2017

- Taught fundamentals of Java programming, algorithm design, and data structures in weekly two-hour lab sections.
- Worked one-on-one with students in office hours to help them develop a deeper understanding of computer science.

## Open Source Software

### Malware Techniques

2019

#### A LIBRARY OF LINUX AND MACOS MALWARE TECHNIQUES

- Researched Linux and macOS malware, and implemented anti-VM, anti-debugging, anti-analysis and persistence measures.
- Designed a Linux kernel (4.6 – 4.18) rootkit that hooks syscalls and is undetected by standard rootkit checkers.
- Developed educational malware in a variety of languages, including: C, x86, Bash, Python, and Objective-C.

### Stronghold

2018

#### MACOS HARDENING TOOL

- Developed software that guides users through step-by-step secure configuration for macOS.
- Secured 56k+ macOS workstations; earned over 1k stars on GitHub.

### shallow-backup

#### OPEN SOURCE SOFTWARE

2018

- Developed a tool for developers to easily create backups of installed packages and dotfiles, and automatically push them to a remote Git repo.
- Used by 70k+ developers to minimize system backup size; earned over 1k stars on GitHub.

## Education

### University of Illinois at Urbana-Champaign

#### B.S. IN COMPUTER SCIENCE AND LINGUISTICS

Champaign, IL  
May 2020

- Graduated with honors. Included on the Dean's List: 2017, 2018, 2019, 2020
- **Courses:** Discrete/Data Structures, Algorithms, Computer Architecture, Systems Programming, Computer Security, Digital Forensics

## Skills

### Certs

OSCP

### Languages

Python, C / C++, Rust, Node.js, bash / zsh

### Tools

macOS, Linux, Ghidra, Wireshark, VMware / VirtualBox, Volatility, Git