

Kyle Westhaus

Westhaus.3@osu.edu | 60 Sunnyridge Lane, Dayton, OH 45429 | 937-550-6384

OBJECTIVE

Seeking a full-time security engineering position applying cybersecurity and software engineering skills gained from work experience and personal projects, available starting September 2022.

EDUCATION

The Ohio State University, Columbus, OH | B.S. in Computer Science Engineering May 2022
Overall GPA (4.00 scale): 3.93
Honors: Recipient of Maximus scholarship, Dean's List (All Semesters)

WORK EXPERIENCE

- Microsoft Corporation** Redmond, Washington | Vulnerability Research Intern May 2021 - August 2021
- Discovered, root-caused, and developed a proof of concept for an arbitrary kernel memory disclosure
 - Wrote syzkaller descriptions to improve a syscall fuzzer's coverage of the kernel attack surface
 - Communicated technical details and security risk of vulnerabilities to code owners
- Caesar Creek Software Inc**, Miamisburg, Ohio | Cybersecurity Engineering Intern January 2021 - April 2021
- Reverse engineered boot process of customized Linux-based OS and injected initramfs to gain root access
 - Wrote 5,000 words documenting attack surface of devices by common networking brand
 - Completed training for developing ROP exploits, interfacing with UART and JTAG, bootstrapping embedded Linux, reverse engineering and implementing a custom protocol, and DLL-injecting Windows executables
- Garmin Ltd**, Olathe, Kansas | Software Engineering Intern June 2020 - August 2020
- Designed, implemented, and tested transition between TLS libraries to free 6% of total flash storage
 - Wrote and debugged multithreaded security-critical C networking code in a custom OS for ARM devices
 - Managed changes and communicated integration instructions to code owned by multiple internal teams
- Kudu Dynamics LLC**, Chantilly, Virginia | Cybersecurity Engineering Intern May 2019 - August 2019
- Extended capabilities of an automated program security analysis system to create universal control flow graphs from abstract syntax trees for 12 interpreted languages
 - Improved setup to automatically spinup and connect emulators for confirmation of n-day vulnerabilities
 - Integrated automatic testing and linting using Gitlab and pytest to drive coverage to 90%

ENGINEERING PROJECTS

- Capture the Flag Competitions (CTFs)** | Independent Competition 2014 - Present
- Placed 1st in Ohio State CTF, top 3% in Hack-a-Sat DEFCON, and participated in 20+ other CTFs
 - Utilized standard tooling including Ghidra, AFL, Bochs, pwntools, Wireshark, Binwalk, and Aircrack-ng specializing in reverse engineering, network attacks, RF and Wifi cracking, and firmware analysis
 - Rapidly developed custom exploitation and analysis scripts for unfamiliar concepts and architectures
- Security Tool Implementation** | Information Security Course February 2020 - April 2020
- Implemented an Nmap-style network scanner in Python capable of crafting custom IP and TCP packets to send over raw sockets, allowing for advanced host detection, port scanning, and service identification
 - Incorporated IDS evasion tactics such as packet fragmenting, IP spoofing, and custom TCP options
 - Managed students with minimal prior security experience and educated team on low-level network security
- E-ZPass Radio Frequency Reverse Engineering** | Independent Research November 2018 - July 2019
- Reverse engineered RF protocol in use by 35 million toll booth devices and demonstrated capability for low-cost (\$80) replay and spoofing attacks with RTL-SDR and Osmo-FL2k hardware tools
 - Wrote a packet dissector and generator for TDMA transponders with C++ and GNU Radio
 - Responsibly disclosed findings and advised E-ZPass CEO on business implications of attacks

QUALIFICATIONS

- Programming Languages: Proficient in C and Python; prior experience with C++, Ruby, Java, and Matlab
- Environments: Extensive use of Linux, command line (including scripting), and version control (Git)

ACTIVITIES AND INTERESTS

- Cybersecurity Club President (1 year), Vice President (1.5 years), Active Member August 2018 - Present
- Tutor at Bridge Community Center in various subjects for refugee children January 2019 - March 2020
- Presenter at BSides Columbus Security Conference, Toll Booth RF Reverse Engineering March 2019
- Eagle Scout, Leadership Positions including Senior Patrol Leader and Philmont Crew Leader April 2016