

Paul Halvorsen

Sr Software Developer
Email: paul_halvorsen@halvo.me
Last Updated: August 25, 2025

Personal Blog: <https://flow.halvo.me>
Phone: +1-410-236-4665
Citizen of the United States

Summary

I'm a Software Engineer with over 13 years development and 17 years professional experience, with exposure to Rust, C, Python, PHP, Go, JavaScript, Java, and C++ languages; various SQL databases; JQuery and Pytest frameworks; Docker containerization; and Rest API, NATS, JSON, XML, and nginx technologies.

Work Experience

Binary Defense

Sr Software Engineer: April 2022 - Present

- Rust development using cargo, cmake, and cross compilation
- Python development using pyenv, pipenv, cython, docker build environment, gitlab pipelines, and static compilation
- Develop security alarms for Windows, Linux (Debian and RedHat), and MacOS
- Written RFC and ADR to drive design and decision making on project direction
- Design and build containment for all platforms upon detected compromise
- Design and build secure key exchange and connections

Kyrus Tech

Sr Software Engineer: Nov 2020 - April 2022

- Perform test driven development: C, Python/Pytest, Docker, GitLab CI/CD
- Build covert communications and file transfers proxy: HTTPS, Apache Thrift, Rest API
- Design compact router fingerprinting and vulnerability analysis: Android, HTTPS, TCP/IP, Stream-Cypher Encryption
- Modify existing code to suppress system logging from Linux Kernel module: various Linux Kernel versions, Ghidra

Parsons

Cyber Security Software Engineer: Apr 2018 - Nov 2020

- Continue development of covert Windows application: C, C++, Python
 - Build modular solution for plugin architecture
 - Design custom API for minimal data transfer to back-end
 - Encrypt storage and comms using AES shared key to maintain confidentiality and integrity
- Build prototype back-end service for file storage and search: Java, Tomcat, Niagarafiles (NiFi), nginx, Hadoop, MySQL, LDAP, RBAC
 - Create API for uploading files via web interface or CLI
 - Track and maintain multi-level user access
 - Generate metadata for searching

NSA

Security Software Engineer: Nov 2011 - Apr 2018

- RedTeam DevOps development of browser enumeration, manipulation, and exploitation: PHP, JavaScript, JQuery, CSS, Python, MySQL, Java, Apache, Tomcat, Linux, Windows, Chrome, Firefox, Safari, IE, Edge
 - Design Rest and JSON API to transfer data between targets, server, and UI
 - Deliver covert JavaScript to targets for enumeration and exploitation
 - Design front-end to provide a dynamic UI with real time target data and graphs and charts for in-depth data
 - Design MySQL database to hold and quickly query enumeration and exploitation data
 - Update PHP back-end for security and performance
- Advise and develop vulnerability mitigation strategies for various military and government customers
- Train and provide SOPs to NSA RedTeam operators for various tools

Systems Engineer: Sept 2009 - Nov 2011

- Deploy, maintain, and monitor 30+ systems with 130+ Red Hat Enterprise Linux (RHEL) servers: LDAP, DNS, Apache, NiFi, Hadoop, Apache, Puppet, DHCP, PXE
- Develop and deploy monitoring, reporting, and issue correcting scripts: Python
- Organize, train, and participate in team performing 24x7 call-in rotation
- Responsible for 5+ domestic and foreign system deployments

Salisbury University

Software Developer: Nov 2006 - May 2008

- Funded through the Wallops Flight Facility (NASA)
- Provide simplified UI and scenario builder for the Satellite Tool Kit (STK): Managed C++
- Design risk assessment scenarios for launch vehicles and UAVs over the DELMARVA peninsula
- Collaborate with Geographic Information Science (GIS) for mapping

Lab Administrator: Sept 2007 - May 2009

- Support Math and CS departments at SU
- Maintain the Linux labs on campus: dual boot OpenSUSE, WindowsXP, and OpenSUSE server
- Perform backups, updates, user management (LDAP), disk quotas, and remote access

Education

- **University of Maryland Baltimore Campus:** Masters in Computer Science; 2013. Thesis: “Stateless Detection of Malicious Traffic: Emphasis on User Privacy”
- **Salisbury University:** Bachelors in Computer Science; 2009. Magna Cum-Laude
- **Security+** (Expired): ID: COMP001021281239; Exp Date: 04/04/2024
- **Royal Military College (RMC Canada):** Training in OpenBSD development and administration

Miscellaneous

- **RedBlue Conference:** Presented combination web enumeration/exploitation tool
- **National Conference for Undergrad Research (NCUR):** Presented development of STK scenario building and manipulation
- **SANS Courses:** Staying up-to-date on security research
- **Homelab:** Running email, cloud storage, gitea, DNS, multimedia, geneology, and static web page services
- **Web Admin for PTA:** Setup and maintain a Wordpress site