

# Charles Zhao

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## WORK EXPERIENCE

**Lawrence Livermore National Laboratory** May – Aug 2023, 2024  
*Cybersecurity Intern, 40 hrs/wk* Livermore, CA

- Improved development efficiency for lead developers by building unit and integration tests using Python (sqlite3, psycopg2, pytest), reducing debugging time and ensuring CI/CD compatibility.
- Built a dynamic web application for the Department of Homeland Security using the MEAN stack (MongoDB, Express, Angular, Node), delivering a scalable and efficient solution for enhanced data management.
- Developed a Python script to efficiently parse reports and identify suspicious IP addresses and domains interacting with a network, improving threat detection and network security monitoring.

## EDUCATION

**Virginia Tech** Blacksburg, VA  
*Master of Engineering in Computer Engineering* May 2025

- Developed a custom C++ stager within a sandboxed environment to study and evaluate modern antivirus evasion techniques, including process injection and dynamic API resolution.

*Bachelor of Science in Computer Engineering, Major in Networking & Cybersecurity* May 2024

- Magna Cum Laude; IC CAE Scholar; **SFS CyberCorps Scholar**

## PROJECTS

### Personal Website

- Built and actively maintain a personal portfolio website using the Bootstrap framework, HTML, CSS, and JavaScript.

### Domain Sinkhole & Network Traffic Analysis

- Deployed a local DNS sinkhole using Pi-hole and Raspberry Pi to filter and block unwanted domains across all devices on my home network.
- Actively learning about the captured DNS queries using Wireshark and documenting my findings on GitHub.

### Malicious File/URL Scanner

- Designed and delivered a Python-based antivirus scanner for attachments and URLs, leveraging VirusTotal's API to effectively detect and mitigate malicious software embedded in emails.

### Microcontroller Programming

- Implemented real-time state machine logic through a word guessing game, a burger making game, and a Tamagotchi game, on the TI's MSP432P401R microcontroller, in C.

## CERTIFICATIONS, SKILLS & INTERESTS

- **Certifications:** CompTIA Security+; Cranium AI Red Team Certification
- **Skills:** Python; C++; CLI; Wireshark; Nmap; Git; HTML; Linux; Bash
- **Interests:** Radio Frequencies; Stocks; OSINT; Utah; Rush Hour