Fan Liu

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Education

Ph.D. in Computer Science, Washington University in St. Louis, America.	**09/2023-now**
Master of Engineering in Cybersecurity, Washington University in St. Louis, America.	**09/2021-05/2023**
Bachelor of Engineering in Information Security, Sichuan University, China.	**09/2012-07/2016**

Publications

Security and Performance Characteristics of QUIC and HTTP/3

F Liu, P Crowley

Proceedings of the 10th ACM Conference on Information-Centric Networking, 2023

Project and Research Experience

Security and Performance Characteristics of QUIC and HTTP/3 (Rust)   **08/2022-now**
- Conducted an in-depth exploration of the security and performance features inherent in the recently standardized QUIC and HTTP/3 networking protocols, juxtaposed against their traditional TCP-based counterparts
- Developed and scrutinized applications and protocols grounded in QUIC and HTTP/3, leveraging the OpenTelemetry suite of open-source measurement tools and platforms to ensure a comprehensive analysis

Hacker Mindset Training (Kali)   **08/2022-12/2022**
- Applied hacking techniques to compromise systems, collect data, and perform tasks falling within the recognized scope of a "hacker."
- Explored diverse techniques, including OSINT, social engineering, physical security, network security, web security, and Windows/Linux security, to enhance proficiency in offensive security strategies

Pac-Man AI Project (Python)   **01/2022-05/2022**
- Implemented BFS, DFS, UCS, Greedy, and A* searches in Python to enable Pac-Man to navigate efficiently to its objectives
- Executed multiagent minimax and expectimax algorithms, showcasing adept problem-solving capabilities
- Employed model-based and model-free reinforcement learning algorithms to enhance Pac-Man's decision-making prowess

Adversarial Attacks and Defenses (Python)   **01/2022-05/2022**
- Extracted features from PDFs based on content information or logical structure, implementing classifiers and creating a tool for detecting PDF malware using supervised learning
- Formulated decision-time (evasion) attacks on PDF malware detectors and implemented an innovative defensive paradigm known as iterative retraining
- Engineered a poisoning attack on computer classification using neural networks, demonstrating a deep understanding of adversarial techniques

Buffer Overflow Vulnerability Exploit (Linux Tools, Python)   **01/2022 – 05/2022**
- Conducted a comprehensive examination of execution within the gdb command, extracting the return address on the stack and determining the offset between the buffer and the return address
- Aligned shellcode, incorporated safe padding, and added the desired return address to construct a payload, showcasing expertise in exploiting buffer overflow vulnerabilities

Work Experience

Cybersecurity Solution Engineer (KnownSec Technology Security Inc., Beijing, China)   **05/2018-08/2021**
I successfully designed and implemented cybersecurity solutions for Fortune 500 companies, exceeding client expectations and achieving a 95% customer satisfaction rate. By leading bidding meetings and providing expert consultations across information security, I consistently delivered solutions that garnered multiple customer appreciation letters.

Java Software Engineer (Digital China Information Service Company Ltd., Shanghai, China)   **07/2016-05/2018**
I designed, deployed, and maintained the core banking application system for Shanghai HuaRui Bank, ensuring stability and scalability for millions of users. By implementing thorough testing, improving documentation, and optimizing system performance, I achieved high code coverage, reduced processing time, and minimized downtime and data breaches.

Skills and Certifications

Programming & Technologies Skills: Java, Python, Rust, C, C++, JavaScript, SQL, Linux tools, MATLAB, Wireshark, CTF, Eclipse, GitHub, Burp Suite, Kali Linux, Virtualization (Virtual Box), Cloud Service (AWS)

Certifications:

CISA (Certified Information System Auditor)

CISP (Certified Information Security Professional)

CISAW (Certified Information Security Assurance Worker)

Network security work training course for telecommunications and Internet industries

Honors and Awards

Dean's Select PhD Fellowship	2022
Travel Grant in ACM ICN 2023	2023
The National Scholarship in China	2013
Sichuan University's Second-Class Scholarship	2014
Sichuan University's Third-Class Scholarship	2016