**Fan Liu**

**Email: fan.liu@wustl.edu**

**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