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ZHIYUE LYU

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EDUCATION

Pittsburgh, PA **Carnegie Mellon University** **Aug. 2023 – May. 2025**

- M.S. in Information Security. GPA: 3.63/4.0.
- Core Courses: Distributed Systems; Network Security; Browser Security; Applied Information Assurance.

Xi'an, China **Xidian University** **Sep. 2019 – Jun. 2023**

- B.E. in Cyberspace Security. GPA: 3.8/4.0.
- Core Courses: Computer and Program Design; Data Structure and Algorithm Analysis; Database; Operating Systems; Computer Networks; Modern Cryptography; Software and System Security; AI Security.

PROFESSIONAL EXPERIENCE

Security Researcher, Intern **Huawei Technologies Co., Ltd.** **Jul. 2022 – Jan. 2023**

- Contributed to the optimization of C/C++ code hardening technology based on Linux kernel, addressing ASLR challenges during code compilation.
- Employed GCC Gimple to process source codes from shared libraries and applied code segment randomization techniques to reinforce ASLR, thereby further enhancing Linux systems.
- Implemented fine-grained ASLR, resulting in a performance impact of less than 5% and memory expansion rate of less than 3%.

Security Engineer, Intern **Venustech Group Inc.** **May. 2022 – Jul. 2022**

- Simulated the work of a penetration tester. Utilized Kali-based commands to do information gathering, operated tools like BurpSuite and Metasploit to practice web attacks, privilege escalation, etc.
- Developed a Web CTF challenge using Python Flask, designing an online toy shop with login, sign-up, and shopping pages. Integrated two vulnerabilities: one exploiting SQL injection to log in as an existing user, and another leveraging a CSRF attack to hijack admin cookies, allowing the attacker to purchase the flag.

ACADEMIC PROJECT

Distributed Bitcoin Miner (June. 2024 - Sep. 2024)

- Developed a distributed Bitcoin mining system using Go, leveraging its concurrency model with goroutines and channels. Designed and implemented a custom Live Sequence Protocol on top of UDP to reduce latency.
- Created a scalable client-server architecture that dynamically allocated tasks to miners, achieving a 4x improvement in efficiency compared to sequential mining and processing up to 100,000 hashes per second.

Mobile-APP Fingerprints on Encrypted Network (Jan. 2024 - May. 2024)

- Led enhancements to the FLOWPRINT model, boosting mobile-app fingerprinting in encrypted traffic.
- Achieved app recognition accuracy of 85.77% and precision of 98.86% for detecting unseen apps, surpassing previous model performances.
- Expanded model's utility to browser traffic, effectively distinguishing web activities.

White-Box Cryptography Algorithm Based on Neural Networks (Mar. 2022 – Oct. 2022)

- Developed a neural network-based system to obfuscate encryption steps in block ciphers, creating a resilient black-box environment resistant to BGE attacks.
- Integrated overfitting techniques to ensure secure encryption through neural network substitution in AES.

EXTRACURRICULAR EXPERIENCE

- **Member of Information Security Society in Xidian University**
  Conducted research into web security technologies, led teams in CTF and Digital Forensics Competitions.
- **Member of PPP(Plaid Parliament of Pwning) in Carnegie Mellon University**
  Engage in CTF competitions(Web, PWN, Crypto), join threat hunting and discuss security topics like CVEs.

LANGUAGES and SKILLS

- C; Python; Go; C++; PHP; SQL; JavaScript; HTML
- Cybersecurity; Machine Learning; Node.js; Docker; Kali; AWS; Cryptography; Forensics; Incident Response