YUHAN WU

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PROFESSIONAL SUMMARY

Energetic M.S. student focusing on side channel analysis with solid foundation skills in computer science and cyber technology. Driven by cause to work diligently to accomplish measurable impact.

SKILLS

- Programming: familiar with C/C++/Java/Python, beginning at SQL/Assembly Language/Golang/Rust
- Fast Learner
- Team Collaboration
- Data Evaluation
- Network Tools: beginning at OpenSSL/GunPG/OpenVPN /Nmap/Wireshark/netwox/hping3 /HashCat/Snort
- Resource Coordination
- Public Speaking

LANGUAGES

Chinese (Mandarin): Native language
English: C1
Advanced

CERTIFICATIONS

- IELTS (Academic) 7.5

EDUCATION

Beihang University - Beijing, CHINA *Expected in 12/2025*
Master of Science: Side Channel Analysis

Beihang University - Beijing, CHINA *06/2023*
Bachelor of Engineering: Information Security

- Overall GPA: 3.85/4
- Ranked 2/50 in Major and 3/98 in school
- The Grand Prize Scholarship for Learning Excellence, 2020 and 2021, from Beihang University(Top 3%)
- Recipient of the Outstanding Undergraduate of Beihang University, 2020 and 2021(Top 5%)
- Recipient of the Merit Student of Beihang University, 2020 , 2021 and 2022(Top 10%)
- The Grand Prize Scholarship for Social Work, 2022, from Beihang University(Top 10%)
- Recipient of Graduation with Honors of Beihang University, 2023

- Internship at Institute for Network Sciences and Cyberspace of Tsinghua University, 06/2022-08/2022
- Graduation Design(Thesis): Research on Implementation of High-Order Correlation Power Analysis of AES Implementation with Combined Countermeasures
- Completed Coursework: Mathematical Analysis, Advanced Algebra, Data Structures and Programming, Digital Circuit and Systems, Fundamental of Cryptography, Computer Network, Operating System, Database Systems and Experiments, Network Attack and Defense Experiments, Machine Learning
- Member of Tianxiao Quyi Troupe of Beihang University, 2020 to Now

PROFESSIONAL EXPERIENCE

Graduation Design Beihang University *02/2023 - 06/2023*

- Research on Implementation of High-Order Correlation Power Analysis of AES Implementation with Combined Countermeasures
- Tutor: Prof. Lu Jiqiang
- Abstract: In this paper, we studied an AES implementation that combines countermeasures such as affine masking and shuffling. We reproduce the power consumption model and perform computational optimization to implement higher-order correlation power analysis in 12 different scenarios, and evaluate the results at a finer granularity. We also propose a method to calculate the effectiveness of the attack results.
- Code: github.com/JamiePW/ASCADv2-Extracted-Analysis

Intern | Institute For Network Sciences And Cyberspace Of Tsinghua University
06/2022 - 08/2022

- Tutor: Assistant Prof. Zhang Han
- Participation in 3 projects. Read and studied more than 20 papers in top journals or conferences related to my major and gave presentations about typical cases.
- The total code amount of the project is about 2000 lines, and the effective code amount of a single file can reach up to 600 lines.
- Code: github.com/JamiePW/tpds-socket

(1) Serpens: A High Performance FaaS Platform for Network Functions (TPDS 2023)

Abstract: We attempted to migrate NFs(Network Functions) to the FaaS(Function-as-a-Service) platform and address performance inefficiencies due to platform overhead during the migration process.
Responsibility: Based on socket programming, I reproduced the classic state migration approaches on NF platforms, such as OpenNF (SIGCOMM) and S6 (NSDI), and compared their performance with the method proposed in this paper.

(2) Delay Based Congestion Control for Cross-Datacenter Networks (IWQos 2023)

Abstract: We addressed the problem of rising latency and decreasing bandwidth utilization rate due to the interaction of mixed DC(Data Center) and WAN traffic through intra-DC traffic scheduling.
Responsibility: I built fat-tree, VL2, and Spine-leaf data center topology in NS3 simulation platform and tested the performance of FCT and throughput of DC traffic and WAN traffic under different algorithms (BBR, Annulus).

(3) Octans: Optimal Placement of Service Function Chains in Many-Core

Systems (INFOCOM 2019)

Abstract: We studied the optimal placement of SFCs(Service Function Chains) in multicore systems.
Responsibility: I rewrote the program based on the original code to improve the running efficiency by optimizing the data structure, and tested the performance of the 3 algorithms, heuristic, exhaustive, and greedy, in different scenarios.

- Analyzed problems and worked with teams to develop solutions.
- Sorted and organized files, spreadsheets, and reports.
- Participated in workshops and presentations related to projects to gain knowledge.
- Explored new technologies and approaches to streamline processes.

Term Project | Network Security Innovative Experiment *04/2022 - 05/2022*

- Security Vulnerability Exploitation and Defense for Small Networks
- Tutor: Prof. Mao Jian
- Abstract: We use Linux VMs to build a small network, containing both internal and external parts, as a way to simulate the basic structure of an enterprise-level network. We design several vulnerabilities in different locations of the network and use the knowledge learned in the course to simulate an attacker launching several attacks with correlation to the enterprise intranet to steal information assets, including buffer overflow, weak password cracking, network scanning, SQL injection, etc. After completing the attacks, we propose a series of specific defensive measures to strengthen the security of the system.
- Responsibility: I built virtual machines and network environments, implemented specific attacks and defenses in them.

Term Project | Digital Circuit And Systems *11/2020 - 12/2020*

- FPGA-based SM4 algorithm implementation and optimization
- Tutor: Prof. Guan Zhenyu
- Abstract: We write a program to implement the SM4 cryptographic algorithm using Verilog, simulate and test it using Modelsim, and burn it to the FPGA board with a UART human-machine interface to solve the problem of insufficient board resources. We use a fully serial design with only one computing module to achieve better resource optimization.
- Responsibility: Implementation and simulation of SM4 algorithm.

Volunteer | Beihang University

- Total volunteer time up to 195 hours
- Assisted with special events and programs, especially in our Quyi Troupe.
- Responsible for reviewing papers in the 31th Fengru Cup Science and Technology Competition.
- Maintained clean, neat, and operational facilities to serve program needs.
- Used strong interpersonal communication skills to convey information to others.

POSTGRADUATE TUTOR

Dr. Prof. Lu Jiqiang

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- Tel: (+86)17812137032
- Base: Room 505, Bldg Diyiguan, Beihang University, 37 Xueyuan Rd, Haidian Dist, Beijing, CHINA

HOBBIES

Xiangsheng(traditional Chinese crosstalk), pop music, sci-fi movies and novels