Xiaohui Hu

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I am actively exploring a PhD opportunity to contribute to impactful research.
My research interests center on *blockchain security* and *program analysis*. My broader interests include analyzing software bugs to assess exploitability and developing effective mitigations to protect vulnerabilities.

Education

Huazhong University of Science and Technology	2023 – Present

- M.E. in Cyber Science and Engineering, *GPA: 89.76*
- Supervisor: Prof. Haoyu Wang | Co-supervisor: Dr. Ningyu He

Beijing University of Posts and Telecommunications	2019 – 2023

- B.E. of Data Science and Big Data Technology, *GPA: 89.47, RANK: 3/54 (5%)*

Research Experience

Research on Cryptocurrency Wallet Automatic Testing and Vulnerability Detection [2]	2024.05 – 2025.04

Tag: Program analysis, vul detection

- *Research Background:* Developed an automated testing framework to identify the vulnerabilities of cryptocurrency wallets, revealing 13 attack vectors and 21 attack strategies, eight of which received China National Vulnerability Database IDs. Received 16 confirmations from wallet development teams and provided help for patching issues for these wallets.
- *My Contribution:* **First author of the paper.** Main contributor to conducting the research and implementing automated testing.

Research on Price Manipulation Attacks and Smart Contracts Analysis [3]	2024.04 – 2025.02

Tag: Program analysis, vul detection

- *Research Background:* Investigated the price manipulation attack in DeFi. Constructed a tool for analyzing smart contract bytecode and identifying such attacks in the pre-attack stage proactively.
- *My Contribution:* Contributor to implement the automatic testing pipeline.

Research on Phishing Website and Phishing Contract Detection [4-5]	2022.11 – 2025.02

Tag: Cyber security

- *Research Background:* Investigated the evolution of blockchain phishing tactics. Developed an automated tool to scan websites, simulate transactions, thus identifying phishing websites [5]; Developed an automated tool to identify phishing contracts and measured characteristics of them [4].
- *My Contribution:* Contributed to implementing detection tools and conducting experiments for measurement.

Research on MEV Activity Detection and Analysis [6]	2023.10 – 2024.11

Tag: Cyber security

- *Research Background:* Innovatively proposed a profitability identification algorithm. Based on this, we designed two robust algorithms to identify MEV activities.
- *My Contribution:* Contributed to optimizing the algorithms and identifying sandwich attacks.

Research on Cross-Chain Ecosystem Analysis and Vulnerability Detection [1]	2023.02 – 2024.02

Tag: Cyber security, vul detection

- *Research Background:* Conducted research on cross-chain transaction collection, match, and misbehavior detection. Covered 13 decentralized bridges on 7 blockchains, with over 80 million transactions. Performed fund tracking to obtain insights of this ecosystem.
- *My Contribution:* **First author in one top-tier paper**. Designed and implemented an automated system for cross-chain transaction analysis and a tool for cross-chain fund tracking.
- *Key Outcomes:* Built a novel, large-scale cross-chain dataset. Identified six attack types and provided insights into stolen funds, attacker characteristics and user distributions.

- *Collaborations:* Advised by Prof. Yajin Zhou, a professor at Zhejiang University who is expertise in the blockchain security, software security, and operating systems security.

Research on Backdoors in Machine Learning Models [7]   2022.03 – 2022.09
Tag: AI model security

- *Research Background:* Investigated backdoor poisoning attacks in machine learning-based malware classification systems and proposed a defense methodology to counteract these threats.
- *My Contribution:* Contributed to empirical studies on machine learning model backdoors and data poisoning attacks. Conducted experiments to enhance the performance of our defense tool.

Projects and Internship

Intern, BlockSec (Hangzhou, China)   2022.10 – 2023.08
- *Key research on cross-chain analysis and vulnerability detection*
- *Contribute to constructing an anti-money laundering (AML) platform*

Intern, Institute of Information Engineering, Chinese Academy of Sciences   2022.03 – 2022.09
- *Research on blockchain and botnet attacks*
- *Research on defenses against backdoors in machine learning models*

Honors and Awards

China National Scholarship (Top 1%), Ministry of Education of PRC   2022
Outstanding Graduates of Beijing, Beijing Municipal Education Commission   2023
First Prize of University Scholarship ×3 (Top 5%)   2020, 2021, 2024

Service

Sub-Reviewer – S&P'25, Usenix Security'25, FSE'25, ISSTA'25, WWW'25, CCS'24, TDSC'24
Teaching Assistant – Decentralized Finance, Operating Systems

Skills and Interests

Programming Languages: Go, Python, C/C++, Java Script

Interests: I enjoy playing the piano and drum set as relaxation outlets, while also being passionate about staying active through badminton and swimming.

Publications

[1] **Piecing Together the Jigsaw Puzzle of Transactions on Heterogeneous Blockchain Networks**
Xiaohui Hu, Feng Hang, Pengcheng Xia, Gareth Tyson, Lei Wu, Yajin Zhou, Haoyu Wang
ACM SIGMETRICS / IFIP PERFORMANCE (SIGMETRICS), 2025. [PDF]

[2] **WalletProbe: A Testing Framework for Browser-based Cryptocurrency Wallet Extensions.**
Xiaohui Hu, Ningyu He, Haoyu Wang
Under Review, 2025 [PDF]

[3] **Following Devils' Footprint: Towards Real-time Detection of Price Manipulation Attacks**
Bosi Zhang, Ningyu He, *Xiaohui Hu*, Kai Ma, Haoyu Wang
Proceedings of the 34th USENIX Security Symposium (USENIX Security), 2025 [PDF]

[4] **Phishing Tactics Are Evolving: An Empirical Study of Phishing**
Bowen He, *Xiaohui Hu*, Yufeng Hu, Ting Yu, Rui Chang, Lei Wu, Yajin Zhou
ACM SIGMETRICS / IFIP PERFORMANCE (SIGMETRICS), 2025.

[5] **TxPhishScope: Towards Detecting and Understanding Transaction-based Phishing on Ethereum**
Bowen He, Yuan Chen, Zhuo Chen, *Xiaohui Hu*, Yufeng Hu, Lei Wu, Rui Chang, Haoyu Wang, Yajin Zhou
ACM Conference on Computer and Communications Security (CCS), 2023. [PDF]

[6] **Remeasuring the arbitrage and sandwich attacks of maximal extractable value in Ethereum**
Tianyang Chi, Ningyu He, *Xiaohui Hu*, Haoyu Wang
Under Review, 2025 [PDF]

[7] **Make data reliable: An explanation-powered cleaning on malware dataset against backdoor poisoning attacks**
Xutong Wang, Chaoge Liu, *Xiaohui Hu*, Zhi Wang, Jie Yin, Xiang Cui
Proceedings of the 38th Annual Computer Security Applications Conference (ACSAC), 2022 [PDF]