

## EDUCATION

**Ph.D. in Computer Science, Tsinghua University, Beijing, China** Sep. 2021 – Jun. 2026  
Thesis: *Detection of Internet Inter-Domain Routing Anomalies*  
Co-advisors: Prof. Jianping Wu and Prof. Qi Li

**B.Eng. in Computer Science, Tsinghua University, Beijing, China** Sep. 2017 – Jun. 2021  
Thesis: *BGP Anomaly Detection Based on Network Representation Learning*  
Advisor: Prof. Qi Li

## PUBLICATIONS

### PEER-REVIEWED PAPERS

**Understanding the Stealthy BGP Hijacking Risk in the ROV Era** 2026  
Yihao Chen, Qi Li, Ke Xu, Zhuotao Liu, Jianping Wu  
In proceedings of the *Network and Distributed System Security Symposium 2026 (NDSS'26)*

**Lightweight Consensus Mechanism Based on Source Address Validation** 2025  
Yi Xu, Yihao Chen, Xiaoliang Wang, Ke Xu, Qi Li  
*Journal of Software (ISSN 1000-9825; in Chinese)*

**Learning with Semantics: Towards a Semantics-Aware Routing Anomaly Detection System** 2024  
Yihao Chen, Qilei Yin, Qi Li, Zhuotao Liu, Ke Xu, Yi Xu, Mingwei Xu, Ziqian Liu, Jianping Wu  
In proceedings of the *33rd USENIX Security Symposium (Security'24)*  
**DISTINGUISHED PAPER AWARD** 🏆 and **INTERNET DEFENSE PRIZE WINNER** 🏆

**Low-Quality Training Data Only? A Robust Framework for Detecting Encrypted Malicious Network Traffic** 2024  
Yuqi Qing, Qilei Yin, Xinhao Deng, Yihao Chen, Zhuotao Liu, Kun Sun, Ke Xu, Jia Zhang, Qi Li  
In proceedings of the *Network and Distributed System Security Symposium 2024 (NDSS'24)*

**Generic and Robust Root Cause Localization for Multi-Dimensional Data in Online Service Systems** 2023  
Zeyan Li, Junjie Chen, Yihao Chen, Chengyang Luo, Yiwei Zhao, Yongqian Sun, Kaixin Sui, ..., Dan Pei  
*Journal of Systems and Software* 203 (2023): 111748

**LogParse: Making Log Parsing Adaptive through Word Classification** 2020  
Weibin Meng, Ying Liu, Federico Zaiter, Shenglin Zhang, Yihao Chen, Yuzhe Zhang, Yichen Zhu, ..., Dan Pei  
In proceedings of the *29th International Conference on Computer Communications and Networks (ICCCN'20)*

**LogAnomaly: Unsupervised Detection of Sequential and Quantitative Anomalies in Unstructured Logs** 2019  
Weibin Meng, Ying Liu, Yichen Zhu, Shenglin Zhang, Dan Pei, Yuqing Liu, Yihao Chen, ..., Rong Zhou  
In proceedings of the *28th International Joint Conference on Artificial Intelligence (IJCAI'19)*

### PREPRINTS & UNDER REVIEW

**ASRogue: Manipulating ASRank-Inferred AS Relationships** 2026  
Yi Xu, Yihao Chen, Ke Xu, Qi Li, Jianping Wu  
*Under review*

**Exposing LLM User Privacy via Traffic Fingerprint Analysis: A Study of Privacy Risks in LLM Agent Interactions** 2025  
Yixiang Zhang, Xinhao Deng, Zhongyi Gu, Yihao Chen, Ke Xu, Qi Li, Jianping Wu  
*arXiv preprint (arXiv:2510.07176)*

### PATENTS

**Method for Efficient Inter-Domain Routing Simulation Using Matrix Operations** 2025  
Qi Li, Yihao Chen, Ke Xu, Zhuotao Liu, Jianping Wu  
*Chinese patent application (CN121262137A)*

**Method for Detecting Stealthy Inter-Domain Routing Hijacks Using Cross-Vantage-Point Analysis** 2025  
Qi Li, Yihao Chen, Ke Xu, Zhuotao Liu, Jianping Wu  
*Chinese patent application (submitted)*

**Inter-Domain Routing Anomaly Detection Method Based on Network Representation Learning** 2024  
Qi Li, Yihao Chen, Qilei Yin, Ke Xu, Zhuotao Liu, Yi Xu, Mingwei Xu, Ziqian Liu, Jianping Wu  
*Chinese patent application (CN118413373A), US patent application (US20250350631A1)*

### STANDARD PROPOSALS

**Risk of Stealthy BGP Hijacking under Incomplete Adoption of Route Origin Validation (ROV)** 2025  
Qi Li, Yihao Chen, Ke Xu, Zhuotao Liu, Jianping Wu

## RESEARCH EXPERIENCE

---

**Network & Information Security Lab, Tsinghua University** Sep. 2020 – present

Student Researcher, co-advised by Prof. Jianping Wu and Prof. Qi Li.

**Research keywords:** Internet routing security, AI for security, network measurement, anomaly detection, traffic analysis

- Led the development and deployment of a BGP routing anomaly detection system at China Telecom, based on a novel network representation learning model that captures intrinsic AS routing policies in a semantics-rich vector space.
- Led the first systematic study of the emerging stealthy BGP hijacking threat under partial ROV deployment, establishing an online monitoring service, the first real-world incident dataset, and a comprehensive risk assessment framework.
- Leading an ongoing study to build an AI agent framework that reasons over open-source intelligence to uncover hidden relationships when domain-specific data falls short, and to distinguish malicious attacks of interest from benign events.
- Leading an ongoing study to uncover adversarial manipulation risks in common AS relationship inference pipelines, demonstrating a practical attack that can manipulate ASRank results by injecting carefully crafted BGP routes.
- Developed a lightweight consensus framework tailored for decentralized network-layer security, and developed an encrypted malicious traffic detection framework dedicated to handle low-quality, insufficient training data.

**NetMan Lab, Tsinghua University** Sep. 2018 – Aug. 2020

Student Research Intern, advised by Prof. Dan Pei.

**Research keywords:** AI for operations, root cause localization, anomaly detection, log analysis

- Designed and evaluated a generalized root cause localization approach for multi-dimensional data from online services, achieving over 30% F1-score improvements and identification of external faults.
- Developed and evaluated a semantics-aware unsupervised log anomaly detection framework that enables joint detection of sequential and quantitative anomalies, and developed an adaptive log parsing system tailored for log compression.

## INVITED TALKS

---

**Adversarial Manipulation Risks in Internet Measurement: A Case Study of ASRank**

CAIDA AIMS-19 Workshop in San Diego, USA

2026

**Understanding the Stealthy BGP Hijacking Risk in the ROV Era**

The 60th Asia Pacific Network Information Center Conference (APNIC'60) in Da Nang, Vietnam

2025

**Learning with Semantics: Towards a Semantics-Aware Routing Anomaly Detection System**

2025 Asia Pacific Regional Internet Conference on Operational Technologies (APRICOT'25) in Petaling Jaya, Malaysia

2025

2025 International Forum for Security Research (InForSec'25) in Beijing, China

2025

The 8th Westlake International Forum on Cyber Security Research in Hangzhou, China

2025

2024 Annual Conference of Chinese Association for Cryptologic Research (ChinaCrypt'24) in Hangzhou, China

2024

The 33rd USENIX Security Symposium (Security'24) in Philadelphia, USA

2024

## HONORS & AWARDS

---

**National Scholarship (Doctorate)**, 30000 CNY, Ministry of Education of the P. R. China 2025

**Internet Defense Prize (1/2276, top 0.04%)**, 50000 USD, the 33rd USENIX Security Symposium 2024

**Distinguished Paper Award (15/2276, top 0.7%)**, the 33rd USENIX Security Symposium 2024

**Best Poster Award (1/52, top 1.9%)**, the 8th Westlake International Forum on Cyber Security Research 2024

**Deng Feng Fund for International Conference Travel**, 15000 CNY, Tsinghua University 2024, 2025

**Comprehensive Excellence Scholarship (First-Tier)**, 10000 CNY, Tsinghua University 2023, 2024

**Outstanding Social Service Scholarship**, 1000 CNY, Tsinghua University 2023

**Outstanding Graduate**, Department of Computer Science and Technology, Tsinghua University 2021

**Tsinghua-Sohu R&D Scholarship**, 10000 CNY, Tsinghua University and Sohu, Inc. 2020

## ACADEMIC SERVICES

---

### TEACHING ASSISTANT.....

**Foundations and Frontiers of Cyberspace Security (74120023-0, Tsinghua)** Fall 2022, Fall 2023, Fall 2024, Fall 2025

Core graduate-level CS course (~80 students)

I redesigned grading guidelines beyond regular TA work

**Internet Architecture and Security Foundation (74120013-0, Tsinghua)** Fall 2023, Fall 2024, Fall 2025

Graduate-level CS course (~20 students)

I prepared and led one session on BGP routing security beyond regular TA work

Next Generation Internet (00240112-90, Tsinghua)

Spring 2023, Spring 2024

Undergraduate-level CS course (~15 students)

I designed and led one lab session on network measurement beyond regular TA work

**PEER REVIEWER**.....

**Journal Reviewer:** IEEE TDSC

**External Reviewer:** USENIX Security 2022/2023, ISOC NDSS 2022/2023/2024/2025/2026, ACM CCS 2022/2023/2024/2025, ACM WWW 2025, IEEE ICNP 2025, ACM ASIACCS 2022/2024