

JIE CAO

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Queen's University, Kingston, Ontario, Canada

EDUCATION

- **Queen's University** Sep. 2024 - Jun. 2028 (expected)
PhD of Electrical and Computer Engineering Kingston, Canada
◦ GPA: 4.23/4.30
- **Southeast University** Sep. 2021 - Jun. 2024
Academic Master of Cyberspace Security Nanjing, China
◦ GPA: 3.96/4
- **Xi'an University of Posts and Telecommunications** Sep. 2016 - Jun. 2020
Bachelor of Information Security Xi'an, China
◦ GPA: 87.9/100

PROJECTS

- **Research on Generalized Security Theory for Dark Web Suppression** Nov. 2023 - Dec. 2024
Researcher, National Key R&D Program of China (Key Special Program), Grant No. 2023YFB3106700
- **Blockchain-for-Blockchain Governance: Regulatory Framework and Key Technologies** Sep. 2021 - Dec. 2023
Researcher, National Key R&D Program of China, Grant No. 2020YFB1005500

PUBLICATIONS AND PATENTS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [S.1] J. Cao, Z. Zhang, Q. Li, and J. Ni*. MarkSweep: A No-box Removal Attack on AI-Generated Image Watermarking via Noise Intensification and Frequency-aware Denoising, *IEEE ICASSP 2026 (Under Review)*.
- [S.2] J. Cao, Q. Li, Z. Zhang, and J. Ni*. Secure and Robust Watermarking for AI-generated Images: A Comprehensive Survey, <https://arxiv.org/abs/2510.02384>.
- [S.3] Z. Xu, X. Fan, Y. Xu*, J. Cao, Q. Xiang, and G. Cheng. Few-shot Website Fingerprinting in the Cross-website Property Domain on Tor Network, *Computer & Security*.
- [S.4] Y. Xu*, Y. Bai, Y. Xu, K. Song, J. Cao, Q. Xiang, and G. Cheng. Few-shot Website Fingerprinting in the Cross-website Property Domain on Tor Network, *Computer & Security*.
- [S.5] Y. Xu*, Z. Wu, H. Shi, T. Li, J. Cao, L. He, and G. Cheng. PacketPatch: Generating Practical Adversarial Packets Against Byte-Feature-Based Traffic Identification, *Computer & Security*.
- [J.1] G. Li, T. H. Luan*, J. Zheng, D. Hu, J. Cao, and Y. Wu. A secure and lightweight data sharing scheme in vehicular digital twin network, *Peer-to-Peer Networking and Applications*, vol. 18, no. 1, pp. 37, 2025.
- [J.2] J. Cao, Y. Xu*, E. Yu, Q. Xiang, K. Song, L. He, and G. Cheng. GateKeeper: An UltraLite malicious traffic identification method with dual-aspect optimization strategies on IoT gateways, *Computer Networks*, vol. 250, pp. 110556, 2024.
- [J.3] Y. Xu*, J. Cao, K. Song, Q. Xiang, and G. Cheng. FastTraffic: A lightweight method for encrypted traffic fast classification, *Computer Networks*, vol. 235, pp. 109965, 2023.
- [J.4] E. Yu, Y. Xu*, L. Gao, J. Cao, Q. Xiang, and L. He. R-Manager: Consortium Blockchain-Based Vehicle Reputation Management for High-Quality Reports in Traffic-Oriented Crowdsourcing, *IEEE Transactions on Vehicular Technology*, vol. 74, no. 1, pp. 984-999, 2025.
- [J.5] C. Lai*, M. Zhang, J. Cao, and D. Zheng. SPIR: A Secure and Privacy-preserving Incentive Scheme for Reliable Real-time Map Updates, *IEEE Internet of Things Journal*, vol. 7, no. 1, pp. 416-428, 2019.
- [J.6] J. Feng, N. Liu, J. Cao, Y. Zhang, and G. Lu*. Securing traffic-related messages exchange against inside-and-outside collusive attack in vehicular networks, *IEEE Internet of Things Journal*, vol. 6, no. 6, pp. 9979-9992, 2019.
- [C.1] J. Cao, Z. Zhang, J. Ni, and M. Zulkernine. HyFIDS: Hybrid Frequency-Aware Lightweight Intrusion Detection for Internet of Vehicles, *Proc. of IEEE GlobeCom 2025*, Taipei, Taiwan, Dec. 8-12, 2025.
- [C.2] Y. Xu*, Y. Xu, Y. Bai, J. Cao, K. Song, and G. Cheng. PacketMorph: Generation of Recoverable Adversarial Packets Against Encrypted Traffic Classification via Class-Wise Universal Perturbation, *Proc. of ICA3PP 2025*, Zhengzhou, China, Oct. 30 - Nov. 02, 2025.

- [C.3] J. Cao, Z. Xu, Y. Bai, Y. Xu*, Q. Xiang, and G. Cheng. Perturbing Vulnerable Bytes in Packets to Generate Adversarial Samples Resisting DNN-Based Traffic Monitoring, *Proc. of TrustCom 2024*, Sanya, China, Dec. 17–21, 2024.
- [C.4] Z. Xu, J. Cao, Y. Hou, Y. Xu*, and G. Cheng. OnionPeeler: A Novel Input-Enriched Website Fingerprinting Attack on Tor Onion Services, *Proc. SecureComm 2024*, Dubai, United Arab Emirates, Oct. 28–30, 2024.
- [C.5] Y. Xu*, Y. Bai, J. Cao, Y. Xu, L. He, and G. Cheng. Tarnhelm: Using Adversarial Samples to Protect User Privacy Against Traffic Identification, *Proc. SecureComm 2024*, Dubai, United Arab Emirates, Oct. 28–30, 2024.
- [C.6] Y. Xu*, S. Dai, J. Zeng, J. Cao, R. He, and G. Cheng. DataJudge: Cross-chain Data Consistency Verification Based on Extended Merkle Hash Tree, *Proc. of ICA3PP 2024*, Macau SAR, China, Oct. 29–31, 2024.
- [C.7] Y. Xu*, J. Zeng, J. Cao, S. Dai, Q. Xiang, and G. Cheng. ChainSafari: A General and Efficient Blockchain Verifiable Query Scheme with Real-Time Synchronization, *Proc. of ICA3PP 2024*, Macau SAR, China, Oct. 29–31, 2024.
- [C.8] Y. Xu*, Z. Xu, J. Cao, R. Wang, Y. Yuan, and G. Cheng. TorHunter: A Lightweight Method for Efficient Identification of Obfuscated Tor Traffic through Unsupervised Pre-training, *Proc. of ICICS 2024*, Mytilene, Aug. 26–28, Greece, 2024.
- [C.9] J. Cao, Y. Xu*, and Q. Xiang. \mathcal{L} -ETC: A Lightweight Model Based on Key Bytes Selection for Encrypted Traffic Classification, *Proc. of IEEE ICC 2023*, Rome, Italy, May 28 - June 01, 2023.
- [C.10] Y. Xu*, Z. Wu, J. Cao, J. Xu, and G. Cheng. DarkTrans: A Blockchain-Based Covert Communication Scheme With High Channel Capacity and Strong Concealment, *Proc. IEEE ICPADS 2023*, Ocean Flower Island, China, Dec. 17–21, 2023.
- [C.11] Y. Xu*, X. Fang, J. Cao, R. Yu, K. Song, and G. Cheng. Cerberus: Identifying OSPS Traffic through Multi-Task Learning, *Proc. of TrustCom 2023*, Exeter, United Kingdom, Nov. 1–3, 2023.
- [C.12] Y. Xu*, Y. Zhang, H. Shi, J. Cao. ChainPass: A Privacy-preserving Complete Cross-chain Authentication for Consortium Blockchains, *Proc. of TrustCom 2023*, Exeter, United Kingdom, Nov. 1–3, 2023.
- [C.13] J. Cao, C. Lai*. A Bilingual Multi-type Spam Detection Model Based on M-BERT, *Proc. of IEEE GlobeCom 2020*, Taipei, Taiwan, Dec. 07–11, 2020.
- [P.1] Y. Xu, Z. Xu, J. Cao, et al. A Cross-Domain Adaptive Few-Shot Website Fingerprinting Recognition Method for the Tor Network, CN2024109025281.
- [P.2] Y. Xu, H. Yang, Z. Xu, J. Cao, et al. A Multi-domain Hidden Service Website Fingerprinting Attack Method Based on Attention Mechanism, ZL 2023 1 0394694.0.
- [P.3] Y. Xu, J. Cao, et al. A Cross-chain Supervision Method for Blockchain Based on Shared Nodes, ZL 2022 1 0517896.5.
- [T.1] J. Cao, Supervisor: Y. Xu. Research on Lightweight Encrypted Traffic Identification Method for Low-Performance Network Devices, *Master's Thesis, Southeast University*.
- [T.2] J. Cao, Supervisor: C. Lai. Research on Bilingual and Multi-Type Spam Detection Based on Natural Language Processing, *Bachelor's Thesis, Xi'an University of Posts and Telecommunications*.

HONORS AND AWARDS

• Jiangsu Cyberspace Security Association Outstanding Master's Thesis Award <i>Jiangsu Cyberspace Security Association</i>	Nov. 2024
• Outstanding Master's Degree Graduates <i>Southeast University</i>	Jun. 2024
• National Scholarship <i>Ministry of Education, China</i>	Oct. 2023
• Tri-merit Student Pioneer Honor Award <i>Southeast University</i>	Oct. 2023
• International Academic Conference Grants <i>Southeast University</i>	May. 2023
• Second Class Academic Scholarship <i>Southeast University</i>	Sep. 2022
• Second Class Academic Scholarship <i>Southeast University</i>	Sep. 2021
• Outstanding Undergraduate Thesis <i>Xi'an University of Posts and Telecommunications</i>	Sep. 2020
• Outstanding Undergraduate <i>Xi'an University of Posts and Telecommunications</i>	Sep. 2020

• Alumni Scholarship <i>Xi'an University of Posts and Telecommunications</i>	Sep. 2019
• First Class Scholarship <i>Xi'an University of Posts and Telecommunications</i>	Sep. 2019
• Best Ten Undergraduates Honor of School of Cybersecurity <i>Xi'an University of Posts and Telecommunications</i>	May. 2019
• National 3rd place of Alibaba Undergraduates Network Security Competition <i>Alibaba Security Response Center, Alibaba Group</i>	Apr. 2019

TEACHING EXPERIENCE

• Teaching Assistant <i>ELEC 373: Computer Networks, Queen's University</i>	Jan. 2025 - Apr. 2025
• Teaching Assistant <i>Computer Network and Security Course, Southeast University</i>	Sep. 2021 - Jan. 2022
• Teaching Assistant <i>Operating System Course, Xi'an University of Posts and Telecommunications</i>	Sep. 2017 - Jan. 2018

PROFESSIONAL ACTIVITIES

• Program Committee , IEEE Annual Congress on Artificial Intelligence of Things (IEEE AIoT), 3	2025
• Reviewer , IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)	2025
• Reviewer , Security and Safety, 1	2025
• Reviewer , IEEE Transactions on Dependable and Secure Computing, 1	2025
• Reviewer , IEEE Systems Journal, 1	2025
• Reviewer , Annual International Conference on Privacy, Security, and Trust (PST), 6	2025
• Reviewer , Computer Networks, 1	2025
• Reviewer , Peer-to-Peer Networking and Applications, 6	2024, 2025
• Program Committee , 18th International Conference on Network and System Security (NSS), 2	2024
• Reviewer , Cybersecurity, 1	2024
• Reviewer , SecureComm, 3	2024