Jie Cao_{Mr.}

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Education

Southeast University (SEU)   **Nanjing, CHN**
Master of Cyberspace Security   *GPA:89.2/100*   *Rank: 29/396*   *Sep. 2021 - Dec. 2023*
Supervisor: Prof. Yuwei Xu

Xi'an University of Posts and Telecommunications (XUPT)   **Xi'an, CHN**
Bachelor of Information Security   GPA:87.9/100   Rank: 3/204   *Sep. 2016 - June. 2020*
Supervisor: Prof. Chengzhe Lai

Publication

- **2023: Jie Cao**, Yuwei Xu*, etc; GateKeeper: An UltraLite Malicious Traffic Identification Method on IoT Gateway With Two-Aspect Optimization Strategies; **IEEE IoT-J, In Preparation**
- **2023:** Yuwei Xu*, Xiaotian Fang, **Jie Cao**, etc; Cerberus: Identifying OSPS Traffic through Multi-Task Learning; **IEEE TrustCom, Under Review**
- **2023:** Enze Yu, Yuwei Xu*, Lin Gao, **Jie Cao**, etc; R-manager: Consortium Blockchain-based Vehicle Reputation Management for High-quality Reports in Traffic-oriented Crowdsourcing; **IEEE TVT, Under Review**
- **2023:** Yuwei Xu*, Zhengxin Xu, **Jie Cao**; Tor-UP: An Efficient Unsupervised Pre-training Method for Obfuscated Tor Traffic Identification; **IEEE GlobeCom'23 CISS, Under Review**
- **2023:** Yuwei Xu*, **Jie Cao**, etc; FastTraffic: A Lightweight Method for Encrypted Traffic Fast Classification; **Computer Networks, Major Revision Resubmission**
- **2023: Jie Cao**, Yuwei Xu*, etc; $\mathcal{L}$-ETC: A Lightweight Model Based on Key Bytes Selection for Encrypted Traffic Classification; **IEEE ICC'23 CQRM**
- **2020: Jie Cao**, Chengzhe Lai*; A Bilingual Multi-type Spam Detection Model Based on M-BERT; **IEEE GlobeCom'20 CISS**
- **2019:** Chengzhe Lai*, Min Zhang, **Jie Cao**, etc; SPIR: A Secure and Privacy-Preserving Incentive Scheme for Reliable Real-Time Map Updates; **IEEE IoT-J**
- **2019:** Jingyu Feng*, Nan Liu, **Jie Cao**, etc; Securing Traffic-related Messages Exchange against Inside-and-outside Collusive Attack in Vehicular Networks; **IEEE IoT-J**

- **2023: Jie Cao**, Yuwei Xu etc; A Lightweight Encrypted Traffic Fast Identification Method for Network Management Devices, CN2023107490513; **Patent, Acceptance**
- **2023:** Yuwei Xu, Huabin Yang, Zhengxin Xu, **Jie Cao** etc; A Multi-domain Hidden Service Website Fingerprinting Attack Method Based on Attention Mechanism, CN2023103946940; **Patent, Acceptance**
- **2022:** Yuwei Xu, **Jie Cao**, etc; A Cross-chain Supervision Method for Blockchain Based on Shared Nodes, CN2022105178965; **Patent, Acceptance**

Conference

- **2023** IEEE International Conference on Communications, May 28, Rome, Italy. In person.
- **2020** IEEE Global Communications Conference, Oral Presentation, Dec. 15, Online.
- **2019** Alibaba Security Response Center Conference, Apr. 28, Hangzhou, China. In person.

Project

Lightweight network traffic identification method research   *May 2022 – present*
Researcher&Programmer

- **FastTraffic**: A lightweight deep learning method based on N-gram feature embedding for traffic feature representation. In this work, the input length of the original packets for the encrypted traffic input model was fully investigated. **(CN)**
- **$\mathcal{L}$-ETC**: A lightweight deep learning model based on key bytes selection algorithm. Implemented key bytes selection algorithm via a self-attention mechanism and streamline the model by reconstructing the input with key bytes. **(ICC'23)**.
- **GateKeeper**: A extension work of $\mathcal{L}$-ETC. We novelly introduce the parameter-free Fast Fourier Transform (FFT) module to replace the self-attention layer. This work propose a UltraLite malicious traffic identification model (0.07 Params and 67 FLOPs) for IoT Gateway. **(IoTJ)**.

Multimodal spam detection framework research   *May 2020 – June 2022*
Researcher&Programmer

- **LFCD**: A extension work of M-BERT. In this work, We focused on multimodal spam detection and proposed a framework based on late fusion, which distinguished existing techniques based on early fusion with high flexibility, detachability, and excellent detection performance.
- **M-BERT**: A bilingual and multi-type spam detection model. We first introduced the M-BERT model in spam detection filed, and obtained state-of-the-art performance. **(GlobeCom'20)**

Cross Chain Security Model (National Key R&D Program)   *May 2021 – May 2022*
Participant

- A cross-chain data access scheme based on shared nodes was designed and implemented on Hyperledger Fabric for chain-to-chain blockchain supervision work.

Honors&Awards

- 08/2018   National Information Security Test Program Certificate Level-1
- 10/2018   Merit Student of XUPT
- 04/2019   Best Ten Undergraduates Honor of School of Cybersecurity
- 04/2019   National 3rd place of Alibaba Undergraduates Network Security Competition
- 10/2019   First Class Scholarship of XUPT
- 10/2019   Information Security Alumni Scholarship of XUPT
- 10/2019   Merit Student of XUPT
- 12/2019   Student International Exchange Fund of XUPT
- 07/2020   2020 Outstanding Undergraduate of XUPT
- 07/2020   2020 Outstanding Undergraduate Thesis of XUPT
- 10/2021   Second Class Freshman Scholarship of SEU
- 11/2022   Second Class Academic Scholarship of SEU
- 06/2023   International Academic Conference Grants of SEU

Campus Work

TA of Computer Network and Security Course, SEU   *Sep. 2021 – Jan. 2022*

TA of Operating System Course, XUPT   *Sep. 2018 – Jan. 2019*

Science & Technology Dept. Head in XUPT Student Union   *Sep. 2017 – Sep. 2018*