

# Jie Cao<sub>Mr.</sub>

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## Education

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**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

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- **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'23, Under Review**
  - **2023: Yuwei Xu\***, Ying Zhang, Haonan Shi, **Jie Cao**; ChainPass: Identity Authentication Scheme for Cross-chain Access between Consortium Blockchains; **IEEE TrustCom'23, 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**
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- **2023: Jie Cao**, Yuwei Xu etc; A Lightweight Encrypted Traffic Fast Identification Method for Network Management Devices; **Patent, CN2023107490513**
  - **2023: Yuwei Xu**, Huabin Yang, Zhengxin Xu, **Jie Cao** etc; A Multi-domain Hidden Service Website Fingerprinting Attack Method Based on Attention Mechanism; **Patent, CN2023103946940**
  - **2022: Yuwei Xu**, **Jie Cao**, etc; A Cross-chain Supervision Method for Blockchain Based on Shared Nodes; **Patent, CN2022105178965**

## Conference

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- **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

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### 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**)
- **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 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

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- 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 3<sup>rd</sup> 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
- 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

## Campus Work

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**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*