

# Jingmiao Zhang

📍 Hefei, China    ✉ Email@USTC    ✉ Gmail    🔗 Webpage

## Education

### University of Science and Technology of China (USTC)

Hefei, China

*B.E. in Information Security*

Sep 2019 – Jun 2023

- GPA: 3.16/4.3, 82.25/100
- Core Courses: Elements of Information Theory, Foundation of Algorithms, Operating System, Compiler Theory, Introduction to Cryptography, Computer Security, Network Security Protocols

### University of Science and Technology of China (USTC)

Hefei, China

*M.E. in Computer Science and Technology*

Sep 2023 – Jun 2026

- GPA: 3.74/4.3, 87.93/100
- Core Courses: Design and Analysis of Algorithms, Advanced Computer Networking, Advanced Database Systems, Edge and Cloud Computing, Introduction to Combinations, Computational Number Theory

## Research Interests

Developing efficient and trustworthy machine learning systems and algorithms for real-world intelligent applications.

## Publications

1. **SpeechGuard: Recoverable and Customizable Speech Privacy Protection.** [Paper]  
*Jingmiao Zhang*, Suyuan Liu, Jiahui Hou, Zhiqiang Wang, Haikuo Yu, Xiang-Yang Li.  
In *The 34th USENIX Security Symposium*, 2025.
2. **Task-Oriented Training Data Privacy Protection for Cloud-based Model Training.** [Paper]  
Zhiqiang Wang, Jiahui Hou, Haifeng Sun, *Jingmiao Zhang*, Yunhao Yao, Haikuo Yu, Xiang-Yang Li.  
In *The 34th USENIX Security Symposium*, 2025.
3. **AMoS: Autonomous Multimodal POI Standardization without Extra Annotation.** [Paper]  
Suyuan Liu, *Jingmiao Zhang*, Haikuo Yu, Yan Zhang, Yuetian Wang, Guobin Shen, Xiang-Yang Li.  
In *IEEE International Conference on Computer Communications (INFOCOM)*, 2025.
4. **InvisiCode: Boosting Intra-Frame Screen-Camera Communication by Breaking Through Noise Limitations.** [Code]  
Haikuo Yu<sup>†</sup>, *Jingmiao Zhang*<sup>†</sup>, Haohua Du, Kaiwen Guo, Xiang-Yang Li.  
<sup>†</sup> Co-first authors.  
In *IEEE/ACM International Symposium on Quality of Service (IWQoS)*, 2025.

## Research Experiences

### Summer Workshop Participant

Online

*National University of Singapore (NUS)*

May 2022 – Jul 2022

- Attended lectures on simulation, security, big data, and cloud computing.
- Contributed as part of a four-member team to complete a practical project and course paper.

### Task-Oriented Speech Data Protection

USTC

Supervised by *Prof. Xiang-Yang Li*

Feb 2023 – Mar 2024

- Focus: Developed SpeechGuard, a system for recoverable and customizable speech privacy protection, enabling fine-grained access control over both acoustic and content privacy.
- Designed a multi-parameter warping function with an inverse transform for reversible acoustic privacy protection.
- Developed an adaptive encryption mechanism for automated/manual sensitive text protection and permission-based content recovery.
- Introduced a hierarchical access control model, allowing listeners to recover varying levels of information based on assigned keys and warping parameters.
- Outcome: First-author paper SpeechGuard accepted at USENIX Security 2025, demonstrating superior

anonymity, sensitive content confidentiality, and attack resistance over three baseline systems.

### User Context Awareness

USTC

Supervised by *Prof. Xiang-Yang Li* and *Prof. Haohua Du*

Jan 2024 – Jan 2025

- Focus: Developed InvisiCode, a noise-aware, imperceptible, and high-capacity screen-camera communication system that seamlessly integrates digital information into the physical world without compromising visual aesthetics.
- Conducted a quantitative analysis of screen-camera noise and designed an adaptive encoding algorithm that dynamically distributes data across multiple DCT coefficients, enabling mathematically bounded, noise-aware encoding while optimizing imperceptibility and robustness.
- Enhanced U<sup>2</sup>-Net with Edge-Constraint Loss to improve boundary detection and localization of encoded regions in captured images.
- Outcome: Co-first author paper InvisiCode accepted at IWQoS 2025, demonstrating 784 bits per frame throughput at BER<0.05, significantly surpassing previous intra-frame methods while maintaining imperceptibility across various screen-camera setups.

### Backdoor Attacks on Speech Large Models

Online

Supervised by *Prof. Yuan Hong*, University of Connecticut (UConn)

Feb 2025 – Ongoing

- Researching backdoor attacks and defenses in speech models, with a focus on real-time continuous attack strategies and countermeasures.

## Industry Experiences

---

### Algorithm Engineer Intern

Hefei, China

NIO Inc.

Sep 2023 – Mar 2025

- Designed a privacy protection solution for speech data generated in in-cabin and after-sales services.
- Enabled decryption of protected data for specific information based on user or task permissions.

### Algorithm Engineer Intern

Hefei, China

Huawei Technologies Co., Ltd.

Jul 2024 – Oct 2024

- Simulated full and incremental EC (Erasure Coding) workflows for distributed SSU modeling.
- Designed algorithms for IO aggregation and cost comparison between EC modes, improving storage efficiency.
- Implemented hot stripe simulation and load-balanced EC disk scheduling strategies.

## Honors

---

|  |                    |
|--|--------------------|
| Outstanding Student Scholarship, USTC (¥1000)  | Sep 2021           |
| Gold Medal, International Genetically Engineered Machine Competition (iGEM)                | Nov 2021           |
| Meritorious Winner, Mathematical Contest in Modeling (MCM), USA                            | Feb 2022           |
| Longfor Scholarship, USTC & Longfor Properties Co., Ltd. (¥5000)                           | Sep 2022           |
| Graduate Academic Scholarship, USTC (¥12000)   | Sep 2023, Sep 2024 |
| National Scholarship (top 0.2% in China), Ministry of Education, China (¥20000)            | Oct 2024           |
| Second Prize, Ubiquitous Intelligent Sensing Technology Innovation Application Competition | Nov 2024           |

## Services

---

|  |                      |
|--|----------------------|
| Volunteer Team Leader, Youth Volunteer Association, USTC | Sep 2019 – Jul 2022  |
| Teaching Assistant, Computer Security, USTC              | Mar 2023 – Jun 2023  |
| Teaching Assistant, Fundamentals of Algorithms, USTC     | Sep 2024 – Jan 2025  |
| Teaching Assistant, Freshman Seminar, USTC               | Sep 2024 - July 2025 |

## Skills

---

**Programming languages:** Python, C/C++, MATLAB, Java, Swift

**Web Technologies:** HTML, CSS, JavaScript

**Deep Learning Tools:** PyTorch, Tensorflow

**Miscellaneous:** MySQL, Linux, Git, LaTeX, Markdown

**Language:** TOEFL 92