

Yanxiao Liu



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Education

The Chinese University of Hong Kong

2021.8–2025.7 (estimated)

Ph.D. candidate, Department of Information Engineering

Advisors: Prof. Cheuk Ting Li and Prof. Raymond W. Yeung

GPA: 3.763/4.000

Stanford University

2024.1–2024.6

Visiting Student Researcher, Department of Electrical Engineering

Advisor: Prof. Ayfer Özgür

The Chinese University of Hong Kong, Shenzhen

2017.9–2021.6

B.Eng. in Electronic Information Engineering and minor in Philosophy

Advisor: Prof. Shenghao Yang

Research

- **One-shot/Nonasymptotic Network Information Theory:** I mathematically prove one-shot achievability results, second-order results and asymptotic inner/outer bounds on classical network information theory problems. Currently, my primary focus is on lossy compression, channel simulation and interference channels.
- **Wireless Communications:** I develop mathematical analysis for large-scale networks in challenging environments. I also provide information-theoretic bounds on various multi-hop network settings, including noisy network coding, oblivious relaying and massive random access.

Publications

Journal Articles

- [1] Chih Wei Ling*, **Yanxiao Liu***, and Cheuk Ting Li. “Weighted Parity-Check Codes for Channels with State and Asymmetric Channels”. In: *IEEE Transactions on Information Theory* 70.8 (2024), pp. 5573–5588.
- [2] Shenghao Yang, Jun Ma, and **Yanxiao Liu**. “Wireless Network Scheduling with Discrete Propagation Delays: Theorems and Algorithms”. In: *IEEE Transactions on Information Theory* 70.3 (2024), pp. 1852–1875.

Conference Proceedings

- [3] **Yanxiao Liu**, Sepehr Heidari Advary, and Cheuk Ting Li. “Nonasymptotic Oblivious Relaying and Variable-Length Noisy Lossy Source Coding”. In: *2025 IEEE International Symposium on Information Theory*. 2025.

- [4] **Yanxiao Liu**, Wei-Ning Chen, Ayfer Özgür, and Cheuk Ting Li. “Universal Exact Compression of Differentially Private Mechanisms”. In: *NeurIPS*. 2024.
- [5] **Yanxiao Liu** and Cheuk Ting Li. “One-Shot Coding over General Noisy Networks”. In: *2024 IEEE International Symposium on Information Theory*. 2024.
- [6] **Yanxiao Liu** and Cheuk Ting Li. “One-Shot Information Hiding”. In: *2024 IEEE Information Theory Workshop*. 2024.
- [7] Yijun Fan, **Yanxiao Liu**, Yi Chen, Shenghao Yang, and Raymond W. Yeung. “Reliable Throughput of Generalized Collision Channel Without Synchronization”. In: *2023 IEEE International Symposium on Information Theory*. 2023.
- [8] Yijun Fan, **Yanxiao Liu**, and Shenghao Yang. “Continuity of Link Scheduling Rate Region for Wireless Networks with Propagation Delays”. In: *2022 IEEE International Symposium on Information Theory*. 2022.
- [9] Chih Wei Ling, **Yanxiao Liu**, and Cheuk Ting Li. “Weighted Parity-Check Codes for Channels with State and Asymmetric Channels”. In: *2022 IEEE International Symposium on Information Theory*. 2022.
- [10] Jun Ma, **Yanxiao Liu**, and Shenghao Yang. “Rate Region of Scheduling a Wireless Network with Discrete Propagation Delays”. In: *IEEE INFOCOM 2021-IEEE Conference on Computer Communications*. 2021.