HONGBO LI

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RESEARCH INTERESTS

- Theoretical Machine Learning
- Human-in-the-loop Learning
- Distributed and Edge Intelligence

EXPERIENCE

AI-EDGE Institute, The Ohio State University, Columbus, US — 03/2025 - current
Postdoc Scholar, advised by Prof. Ness B. Shroff and Prof. Yingbin Liang

Singapore University of Technology and Design, Singapore — 08/2024 - 02/2025
Research Fellow, advised by Prof. Lingjie Duan

AI-EDGE Institute, The Ohio State University, Columbus, US — 12/2023 - 06/2024
Visiting Scholar, advised by Prof. Ness B. Shroff and Prof. Yingbin Liang

Shanghai Jiao Tong University, Shanghai, China — 03/2018 - 08/2020
Research Assistant, advised by Prof. Jianping He

EDUCATION BACKGROUND

Singapore University of Technology and Design, **Ph.D.**, Singapore — 09/2020 - 07/2024
Engineering Systems and Design Pillar
Thesis: Mechanism Design for Distributed Learning Networks, Advised by Prof. Lingjie Duan

Shanghai Jiao Tong University, **B.Sc.**, Shanghai, China — 09/2015 - 06/2019
School of Electronic Information and Electrical Engineering, IEEE Honor Class

PUBLICATIONS

Conference Papers

- **H. Li**, S. Lin, L. Duan, Y. Liang, and N. B. Shroff, "Theory on Mixture-of-Experts in Continual Learning", in International Conference on Learning Representations (ICLR), 2025. (Spotlight)
- **H. Li**, and L. Duan, "Theory of Mixture-of-Experts for Mobile Edge Computing", In *IEEE Conference on Computer Communications (INFOCOM)*, 2025.
- **H. Li** and L. Duan, "Distributed Learning for Dynamic Congestion Games," In *IEEE International Symposium on Information Theory (ISIT)*, 3654-3659, 2024.
- S. Ngoh*, **H. Li***, and L. Duan, "Model Sharing Mechanisms For Distributed Learning," In *IEEE Annual Congress on Artificial Intelligence of Things (AIoT)*, 2024.
- **H. Li** and L. Duan, "When Congestion Games Meet Mobile Crowdsourcing: Selective Information Disclosure," In *Proceedings of AAAI Conference on Artificial Intelligence*, 37(5), 5739-5746. 2023. (Oral)

Journal Papers

- **H. Li**, and L. Duan, "Competitive Multi-armed Bandit Games for Resource Sharing", accepted by *IEEE Transactions on Mobile Computing*, 2025.
- **H. Li**, and L. Duan, "To Analyze and Regulate Human-in-the-loop Learning for Congestion Games", accepted by *IEEE Transactions on Networking*, 2025.
- **H. Li** and L. Duan, "To Optimize Human-in-the-loop Learning in Repeated Routing Games," in *IEEE Transactions on Mobile Computing*, 24 (4), 2889 - 2899. 2025.
- **H. Li** and L. Duan, "Human-in-the-loop Learning for Dynamic Congestion Games," in *IEEE Transactions on Mobile Computing*, 23 (12), 11159 - 11171, 2024.
- **H. Li** and L. Duan, "Online Pricing Incentive to Sample Fresh Information," in *IEEE Transactions on Network Science and Engineering*, 10 (1), 514-526. 2023.

Preprints

- **H. Li**, Q. Wu, S. Lin, Y. Liang, and N. B. Shroff, "Mixture-of-Transformers Learn Faster: A Theoretical Study on Classification Problems", submitted for publication.
- **H. Li**, L. Duan, and Y. Liang, "Provable In-Context Learning of General Tasks with Transformers", submitted for publication.
- S. Hao*, **H. Li***, and L. Duan, "To Theoretically Understand Transformer-Based In-Context Learning for Optimizing CSMA" under review of *ACM MobiHoc 2025*. (Co-first author)

- **H. Li**, and L. Duan, "Theoretical Analysis of Mixture-of-Experts in Mobile Edge Computing", under review of *IEEE Transactions on Networking*.
- **H. Li**, L. Duan, and N. B. Shroff, "Distributed Conflict-Graph Learning for Competitive Multi-armed Bandits", submitted for publication.
- **H. Li**, L. Duan, and N. B. Shroff, "When Mobile Crowdsourcing Meets Queueing Systems: Side-payment Mechanism Design", under review of *IEEE Transactions on Networking* (Major Revision).

PATENT

1. **H. Li**, X. Ding, Y. Li, and J. He, "Multi-robot Formation Positioning Method Based on Particle Filter and Robot Equipment", patent number: [Online Available] CN202010128966.9.

AWARDS & HONORS

➢ IEEE ISIT Student Travel Grant 07/2024
➢ SUTD PhD Fellowship 09/2020
➢ Outstanding Graduates of Shanghai (Top 2% in SJTU) 05/2019

TEACHING EXPERIENCES

1. **Game Theory**, teaching assistant, undergraduate course 05/2022 - 08/2022
   Singapore University of Technology and Design, Engineering Systems and Design Pillar
2. **Data and Business Analytics**, teaching assistant, undergraduate course 01/2022 - 04/2022
   Singapore University of Technology and Design, Engineering Systems and Design Pillar

TECHNICAL REVIEWER

➢ IEEE Transactions on Networking (IEEE TON).
➢ IEEE Transactions on Mobile Computing (IEEE TMC).
➢ IEEE Transactions on Services Computing (IEEE TSC).
➢ IEEE Transactions on Network Science and Engineering (IEEE TNSE).
➢ IEEE Transactions on Vehicular Technology (IEEE TVT).
➢ ACM Transactions on Recommender Systems (ACM TROS).
➢ NeurIPS 2025, ICLR 2025.
➢ IEEE INFOCOM 2025, ACM MobiHoc 2022, 2024.

TALKS

➢ "Theory of Mixture-of-Experts in Continual Learning" 12/2024
Sun Yat-Sen University, China.
➢ "When Mobile Crowdsourcing Meets Congestion Games: Selective Information Disclosure" 04/2023
Shanghai Jiao Tong University, Shanghai, China.