

# HONGBO LI

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## RESEARCH INTERESTS

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

## EXPERIENCE

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<b>AI-EDGE Institute, The Ohio State University</b> , Columbus, US <i>Postdoc Scholar</i> , advised by Prof. Ness B. Shroff and Prof. Yingbin Liang	03/2025 - current
<b>Singapore University of Technology and Design</b> , Singapore <i>Research Fellow</i> , advised by Prof. Lingjie Duan	08/2024 - 02/2025
<b>AI-EDGE Institute, The Ohio State University</b> , Columbus, US <i>Visiting Scholar</i> , advised by Prof. Ness B. Shroff and Prof. Yingbin Liang	12/2023 - 06/2024
<b>Shanghai Jiao Tong University</b> , Shanghai, China <i>Research Assistant</i> , advised by Prof. Jianping He	03/2018 - 08/2020

## EDUCATION BACKGROUND

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<b>Singapore University of Technology and Design, Ph.D.</b> , Singapore Engineering Systems and Design Pillar Thesis: Mechanism Design for Distributed Learning Networks, Advised by Prof. Lingjie Duan	09/2020 - 07/2024
<b>Shanghai Jiao Tong University, B.Sc.</b> , Shanghai, China School of Electronic Information and Electrical Engineering, IEEE Honor Class	09/2015 - 06/2019

## PUBLICATIONS

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### Conference Papers

- S. Hao\*, **H. Li\***, and L. Duan, “To Theoretically Understand Transformer-Based In-Context Learning for Optimizing CSMA”, in *ACM MobiHoc 2025*. (Co-first author)
- **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.

- **H. Li**, and L. Duan, “Theoretical Analysis of Mixture-of-Experts in Mobile Edge Computing”, under review of *IEEE Transactions on Networking* (Major Revision).
- **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

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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

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

## TEACHING EXPERIENCES

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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

## PROGRAM COMMITTEE

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- AAAI 2026.

## TECHNICAL REVIEWER

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- 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, AAAI 2026.
- IEEE INFOCOM 2025, ACM MobiHoc 2022, 2024.

## TALKS

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- “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.