

Shang Liu

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EDUCATION

Ph.D. in Operations and Analytics

Business School, Imperial College London (ICL), London, UK.

Sept. 2022 – Sept. 2026 (Expected)

Advisor: Xiaocheng Li

M.Res. in Operations and Analytics (Distinction)

Business School, Imperial College London (ICL), London, UK.

Sept. 2021 – Sept. 2022

B.S. in Mathematics and Applied Mathematics

School of Mathematical Sciences, Peking University (PKU), Beijing, China.

Sept. 2016 – Jun. 2021

RESEARCH INTERESTS

My research focuses on enhancing the robustness and ethical deployment of language models through interdisciplinary frameworks of game theory, statistical learning, and optimization. I aim to develop both theoretically guaranteed (e.g., convergence analyses, complexity bounds) and empirically valid methodologies. My research interests lie in the development and theoretical analysis with a particular focus on the role of uncertainty, including uncertainty quantification, active learning, and distributionally robust optimization.

PUBLICATIONS

(reverse chronological order; *: equal contribution)

Incentivizing High-Quality Human Annotations with Golden Questions

Shang Liu, Zhongze Cai, Hanzhao Wang, Zhongyao Ma, Xiaocheng Li, [arXiv](#)

How Humans Help LLMs: Assessing and Incentivizing Human Preference Annotators

Shang Liu*, Hanzhao Wang*, Zhongyao Ma, Xiaocheng Li, *under Major Revision at Management Science*, [arXiv](#)

Reward Modeling with Ordinal Feedback: Wisdom of the Crowd

Shang Liu*, Yu Pan*, Guanting Chen, Xiaocheng Li, *ICML 2025*, [arXiv](#)

Towards Better Understanding of In-Context Learning Ability from In-Context Uncertainty Quantification

Shang Liu*, Zhongze Cai*, Guanting Chen, Xiaocheng Li, *Transactions on Machine Learning Research*, [arXiv](#)

Towards Better Statistical Understanding of Watermarking LLMs

Zhongze Cai*, Shang Liu*, Hanzhao Wang*, Huaiyang Zhong, Xiaocheng Li, *under Major Revision at Journal of the American Statistical Association*, [arXiv](#)

When No-Rejection Learning is Consistent for Regression with Rejection

Xiaocheng Li, Shang Liu, Chunlin Sun, Hanzhao Wang, *AISTATS 2024*, [arXiv](#)

Understanding Uncertainty Sampling

Shang Liu, Xiaocheng Li, *Reject and Resubmit at Journal of Machine Learning Research*, [arXiv](#)

Distribution-Free Model-Agnostic Regression Calibration via Nonparametric Methods

Shang Liu*, Zhongze Cai*, Xiaocheng Li, *NeurIPS 2023*, [arXiv](#)

Maximum Optimality Margin: A Unified Approach for Contextual Linear Programming and Inverse Linear Programming

Chunlin Sun*, Shang Liu*, Xiaocheng Li, *ICML 2023*, [arXiv](#)

Non-stationary Bandits with Knapsacks

Shang Liu, Jiashuo Jiang, Xiaocheng Li, *NeurIPS 2022*, [arXiv](#)

Online Bin Packing with Known T

Shang Liu, Xiaocheng Li, *under Major Revision at Mathematics of Operations Research*, [arXiv](#)

PRIZES & AWARDS

Dean's List for Academic Excellence at Imperial College Business School, 2021/2022

Outstanding Graduate of Peking University, 2021

Wusi Scholarships at Peking University, 2016/2017, 2017/2018

PRESENTATIONS

Purdue Supply Chain and Operations Management Conference, 2025

Banff International Research Station Dynamic Matching and Allocation Workshop, 2025

Imperial College London Optimization Seminar, 2024