

Interests: Sequential decision-making, Optimization, Probability with applications in AI & OR.

Education

- The Chinese University of Hong Kong, Shenzhen, China**
Ph.D. candidate in Computer and Information Engineering.
Supervisor: [Zhi-Quan \(Tom\) Luo](#) **Thesis direction:** Efficient Reinforcement Learning
Committee: [Jim Dai](#), [Xinyun Chen](#), [Baoxiang Wang](#), [Benjamin Van Roy](#) (Stanford & Google DeepMind)
- Huazhong University of Science and Technology, China**
B.Eng. in Computer Science (Honors Program). Outstanding Graduate.

Professional Experience

Research Positions

- The Chinese University of Hong Kong, Shenzhen, China** 2018–
Graduate Research Assistant with Presidential Fellowship [Zhi-Quan \(Tom\) Luo](#)
- Tencent AI & Robotics X, Shenzhen, China** 2020
Research Intern in Agent Center [Lei Han](#)
- SenseTime Research, Peking, China** 2018
Computer Vision Trainee Researcher [Jing Shao](#)
- Department of Computer Science, Cornell University, Ithaca, NY** 2017
Undergraduate Research Assistant [John E. Hopcroft](#)
- Microsoft Research Lab, Asia** 2016
Research Intern in Theory Center [Wei Chen](#)
- Hopcroft Center on Computing Science, China** 2015–2017
Undergraduate Research Assistant [Kun He](#)

Academic Service

- Reviewer** for Conference on Neural Information Processing Systems (**NeurIPS**), International Conference on Learning Representations (**ICLR**), ICLR 2024 Workshop on Bridging the Gap Between Practice and Theory in Deep Learning (BGPT), ICML 2024 Workshop on Aligning Reinforcement Learning Experimentalists and Theorists (ARLET)
- Organizer** for [RL Seminar](#) in The Chinese University of Hong Kong, Shenzhen, China (Spring 2019, Summer 2020, Fall 2020, Spring 2021, Summer 2021, Fall 2021, Spring 2022, Fall 2022.); for two sessions in **Inform's Annual Meeting** 2024 on "Integrating Generative AI with Sequential Decision-making".

Teaching

- Stochastic Processes** (STA/DDA4001) by [Jim Dai](#), Fall 2018
- Optimization II** (MAT3220) by [Shuzhong Zhang](#), Spr. 2019
- Distributed and Parallel Computing** (CSC4005) by [Yeh-Ching Chung](#), Fall 2019
- Reinforcement Learning** (DDA6105/CIE6023) by [Xinyun Chen](#) and [Jim Dai](#), Fall 2020
- Matrix Analysis** (CIE6002) by [Tsung-Hui Chang](#), Spr. 2021
- Deep Learning and Their Applications** (MDS6224) by [Chen Chen](#), Spr. 2022

Awards

- Best Paper Award**, in the third doctoral and postdoctoral Daoyuan academic forum, 2024.
- SRIBD Ph.D. Fellowship** (Gold Class), by Shenzhen Research Institute of Big Data (SRIBD), 2023.

Awards (continued)

- **Presidential Ph.D. Fellowship**, by The Chinese University of Hong Kong, Shenzhen, 2019–2023.
- **Tencent AI Ph.D. Fellowship**, by Tencent AI& The Chinese University of Hong Kong, Shenzhen, 2018.
- **Award of Excellence** in Internship, by Microsoft Research Lab, 2016.
- **Qiming Star Award** (top 5 overall undergraduates), by Huazhong University of Science and Technology, 2016. **Reports:** [1] [Newspaper](#). [2] [HUST Online](#).
- **National Scholarship** (Academic Excellence), by Huazhong University of Science and Technology.
- **First Prize**, in Parallel computation and Application Contest (PAC) held by Intel and CCF, 2015.

Selected Oral Presentations

- **HyperAgent: A Simple, Efficient and Scalable RL Framework for Complex Environments**
Invited talk in International Symposium on Mathematical Programming (ISMP), Montréal, Jul., 2024.
Virtual talk at Princeton University, May, 2024.
Invited talk in Informatics Optimization Society (IOS) Conference, Rice University, Mar., 2024.
Contributed talk, in the third doctoral and postdoctoral Daoyuan academic forum, Jan. 13, 2024.
- **Q* meets Thompson Sampling: Scaling up Exploration via HyperAgent towards Agent AI**
Invited talk at RLChina.org, Jun., 2024.
- **Towards AGI for Humanity through Efficient Reinforcement Learning**
Contributed Talk in Graduate Research Forum, CUHK, Shenzhen Oct. 21, 2023.
- **No-Regret Learning in Unknown Game with Applications**
Invited Talk in RL Theory Student Workshop at Nanjing University, Aug. 23, 2022.
Contributed Talk in the second doctoral and postdoctoral Daoyuan academic forum, Aug. 20, 2022.
- **HyperDQN: A Randomized Exploration Method for Deep Reinforcement Learning**
Contributed Talk in NeurIPS Workshop Ecological Theory of Reinforcement Learning, Dec. 14, 2021

Selected Research Publications

Preprints

- 1 **Yingru Li**. *Probability Tools for Sequential Random Projection*. 2024. arXiv: [2402.14026 \[math.ST\]](#).
- 2 **Yingru Li**. *Simple, unified analysis of Johnson-Lindenstrauss with applications*. under review. 2024. arXiv: [2402.10232 \[stat.ML\]](#).
- 3 **Yingru Li**, Liangqi Liu, Wenqiang Pu, and Zhi-Quan Luo. *Optimistic Thompson Sampling for No-Regret Learning in Unknown Games*. under review. 2024. arXiv: [2402.09456 \[cs.LG\]](#).
- 4 **Yingru Li**, Jiawei Xu, and Zhi-Quan Luo. *Scaling up Exploration with GPT-HyperAgent: Continual Content Moderation from Human Feedback*. under review. 2024.

Conference Proceedings

- 5 **Yingru Li** and Zhi-Quan Luo. “Prior-dependent analysis of posterior sampling reinforcement learning with function approximation”. In: *The 27th International Conference on Artificial Intelligence and Statistics (AISTATS)*. 2024. arXiv: [2403.11175 \[stat.ML\]](#).
- 6 **Yingru Li**, Jiawei Xu, Lei Han, and Zhi-Quan Luo. “Q-Star Meets Scalable Posterior Sampling: Bridging Theory and Practice via HyperAgent”. In: *Forty-first International Conference on Machine Learning*. Proceedings of Machine Learning Research. 2024. arXiv: [2402.10228 \[cs.LG\]](#).
- 7 Liangqi Liu, Wenqiang Pu, **Yingru Li**, Bo Jiu, and Zhi-Quan Luo. “Radar Anti-jamming Strategy Learning via Domain-knowledge Enhanced Online Convex Optimization”. In: *2024 IEEE 13th Sensor Array and Multichannel Signal Processing Workshop (SAM)*. IEEE. 2024.

- 8 Ziniu Li, **Yingru Li**, Yushun Zhang, Tong Zhang, and Zhi-Quan Luo. “HyperDQN: A Randomized Exploration Method for Deep Reinforcement Learning”. In: *International Conference on Learning Representations (ICLR)*. 2022.
- 9 Qing Wang, **Yingru Li**, Jiechao Xiong, and Tong Zhang. “Divergence-augmented Policy Optimization”. In: *Advances in Neural Information Processing Systems (NeurIPS)*. Vol. 32. 2019.

Under Preparation

- 10 **Yingru Li**, Yanchuan Tang, Xiang Wan, Benyou Wang, and Zhi-Quan Luo. “Uncertainty-aware Vision-Language Agents for Multi-turn Medical Decision-making”. under preparation. 2024.
- 11 **Yingru Li**, Jiawei Xu, Ningzhe Gaoan, Baoxiang Wang, Benyou Wang, and Zhi-Quan Luo. “Controlled Decoding via Q-Star on Outcome Feedback for Language Models”. under preparation. 2024.

Journal Articles

- 12 Kun He, **Yingru Li**, Sucheta Soundarajan, and John E Hopcroft. “Hidden community detection in social networks”. In: *Information Sciences* 425 (2018), pp. 92–106.