Yingru Li

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

Education

- **The Chinese University of Hong Kong, Shenzhen**, China 2018–
  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 & DeepMind)
- **Huazhong University of Science and Technology**, China 2017
  B.Eng. *in Computer Science (Honors Program).* ***Outstanding Graduate***.
  Supervisor: *Kun He* **Thesis**: Learning multi-channel influence in networks

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).
- **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.)

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.
- **First Prize**, China National Mathematics Olympiad.

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.
  Invited talk in Informs Optimization Society (**IOS**) Conference, Rice University, Mar., 2024.
  Contributed talk, in the third doctoral and postdoctoral Daoyuan academic forum, Jan. 13, 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

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, Lei Han, and Zhi-Quan Luo. "HyperAgent: A Simple, Scalable, Efficient and Provable Reinforcement Learning Framework for Complex Environments". under review. 2024. arXiv: 2402.10228 [cs.LG].
5. **Yingru Li**, Jiawei Xu, and Zhi-Quan Luo. "Approximate Thompson sampling via Hypermodel and Index sampling". To appear on arXiv. 2024.

Journal Articles

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

Conference Proceedings

7. **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.

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.

Workshop Papers

10. **Yingru Li**, Liangqi Liu, Wenqiang Pu, and Zhi-Quan Luo. *Optimistic Thompson Sampling for No-Regret Learning in Unknown Games*. ICML 2023 Workshop The Many Facets of Preference-Based Learning. 2023.

11. **Yingru Li**, Jiawei Xu, and Zhiquan Luo. *Efficient and scalable reinforcement learning via hypermodel*. NeurIPS 2023 Workshop on Adaptive Experimental Design and Active Learning in the Real World. 2023.

12. Ziniu Li, **Yingru Li**, Yushun Zhang, Tong Zhang, and Zhi-Quan Luo. *HyperDQN: A Randomized Exploration Method for Deep Reinforcement Learning*. NeurIPS 2021 Workshop Ecological Theory of Reinforcement Learning, 2021.