

# ZINIU LI

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## EDUCATION

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**The Chinese University of Hong Kong, Shenzhen**, Shenzhen, China      August 2020 - Present  
Ph.D., School of Data Science.  
Advisor: Zhi-Quan (Tom) Luo.

**Xi'an Jiaotong University**, Xi'an, China      August 2015 - June 2019  
B.E., School of Electrical Engineering.  
Advisor: Zhiyuan Liu.

## RESEARCH INTERESTS

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Algorithms and theory of machine learning, reinforcement learning, and large language models.

## WORK EXPERIENCE

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**Tencent**, Shenzhen, China      October 2021 - August 2022  
Algorithm Engineer (Intern), Advisor: Peilin Zhao

**Cardinal Operations**, Shanghai, China      June 2020 - August 2020  
Software Engineer (Intern)

**Nanjing University**, Nanjing, China      July 2019 - June 2020  
Research Assistant, Advisor: Yang Yu

**Tianrang Technology Inc.**, Hangzhou, China      December 2018 - February 2019  
Algorithm Engineer (Intern), Advisor: Zhenhui (Jessie) Li

## PUBLICATION

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\* indicates equal contribution.

- Youlin Fan, Bo Jiu, Wenqiang Pu, **Ziniu Li**, Kang Li, Hongwei Liu. *Sensing Jamming Strategy from Limited Observations: An Imitation Learning Perspective*. IEEE Transactions on Signal Processing (TSP), 2024.
- **Ziniu Li**, Tian Xu, Yushun Zhang, Zhihang Lin, Yang Yu, Ruoyu Sun, Zhi-Quan Luo. *ReMax: A Simple, Effective, and Efficient Reinforcement Learning Method for Aligning Large Language Models*. In Proceedings of the 41st Conference on International Conference on Machine Learning (ICML), 2024.
- **Ziniu Li\***, Tian Xu\*, Yang Yu. *When is RL better than DPO in RLHF? A Representation and Optimization Perspective*. In Proceedings of the 12th International Conference on Learning Representations (ICLR) (Tiny Paper Track), 2024.
  - This paper is selected as an **oral** presentation at ICLR, 2024.
- **Ziniu Li\***, Tian Xu\*, Zeyu Qin, Yang Yu, Zhi-Quan Luo. *Imitation Learning from Imperfection: Theoretical Justifications and Algorithms*. In Advances in Neural Information Process System 37 (NeurIPS), 2023.
  - This paper is selected as an **spotlight** presentation (acceptance rate < 5%) at NeurIPS, 2023.

- Tian Xu\*, **Ziniu Li\***, Yang Yu, Zhi-Quan Luo. *Provably Efficient Adversarial Imitation Learning with Unknown Transitions*. In Proceedings of the 39th Conference on Uncertainty in Artificial Intelligence (UAI), 2023.
  - This paper is selected as an **oral** presentation (acceptance rate < 3%) at UAI, 2023.
- **Ziniu Li\***, Tian Xu\*, Yang Yu, Zhi-Quan Luo. Rethinking ValueDice: Does It Really Improve Performance? *In Proceedings of the 10th International Conference on Learning Representations (ICLR) (Blog Track)*, 2022.
- **Ziniu Li**, Yingru Li, Yushun Zhang, Tong Zhang, Zhi-Quan Luo. *HyperDQN: A Randomized Exploration Method for Deep Reinforcement Learning*. In Proceedings of the 10th International Conference on Learning Representations (ICLR), 2022.
  - This paper is selected as an **oral** presentation in Workshop on Ecological Theory of Reinforcement Learning at NeurIPS, 2021.
- Tian Xu, **Ziniu Li**, Yang Yu. *Error Bounds of Imitating Policies and Environments for Reinforcement Learning*. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2021.
- Tian Xu, **Ziniu Li**, Yang Yu. *Error Bounds of Imitating Policies and Environments*. In Advances in Neural Information Process System 34 (NeurIPS), 2020.
- **Ziniu Li\***, Xiong-Hui Chen\*. *Efficient Exploration By Novelty-Pursuit*. In Proceedings of the 2nd International Conference on Distributed Artificial Intelligence (DAI), 2020.
- Fei-Yu Liu, **Ziniu Li**, Chao Qian. *Self-Guided Evolution Strategies with Historical Estimated Gradients*. In Proceedings of the 29th International Conference on Joint Artificial Intelligence (IJCAI), 2020.

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## MANUSCRIPTS

\* indicates equal contribution.

- Yushun Zhang, Congliang Chen, **Ziniu Li**, Tian Ding, Chenwei Wu, Yinyu Ye, Ruoyu Sun, Zhi-Quan Luo. *Adam-mini: Using Fewer Learning Rates to Gain More*. arXiv: 2406.16793.
- Chengxing Jia, Pengyuan Wang, **Ziniu Li**, Yi-Chen Li, Zhilong Zhang, Nan Tang, Yang Yu. *BWArea Model: Learning World Model, Inverse Dynamics, and Policy for Controllable Language Generation*. arXiv: 2405.17039.
- Jiancong Xiao, **Ziniu Li**, Xingyu Xie, Emily Getzen, Cong Fang, Qi Long, Weijie J. Su. *On the Algorithmic Bias of Aligning Large Language Models with RLHF: Preference Collapse and Matching Regularization*. arXiv:2405.16455, 2024.
- Yushun Zhang, Congliang Chen, Tian Ding, **Ziniu Li**, Ruoyu Sun, Zhi-Quan Luo. *Why Transformers Need Adam: A Hessian Perspective*. arXiv:2402.16788, 2024.
- **Ziniu Li**, Ke Xu, Liu Liu, Lanqing Li, Deheng Ye, Peilin Zhao. *Deploying Offline Reinforcement Learning with Human Feedback*. arXiv:2303.07046, 2023.
- Tian Xu\*, **Ziniu Li\***, Yang Yu, Zhi-Quan Luo. *Understanding Adversarial Imitation Learning in Small Sample Regime: A Stage-coupled Analysis*. arXiv: 2208.01899, 2022.
- **Ziniu Li\***, Tian Xu\*, Yang Yu. *A Note on Target Q-learning For Finite MDPs with a Generative Oracle*. arXiv: 2203.11489, 2022.

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## SERVICE

- Organizers: Reinforcement Learning Weekly Seminar, Deep Learning Seminar at CUHKSZ.
- Reviewer: T-PAMI, NeurIPS'2024, ICML'2024, ICLR'2024, NeurIPS'2023, ICML'2023, NeurIPS'2022 (Top Reviewer), ICML'2022 (Outstanding Reviewer), ICLR'2022 (Highlighted Reviewer), DAI'2020.
- Technical Program Committee Members: RL4RealLife@NeurIPS2022, DAI'2022.

## AWARDS

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- Best paper presentation award at the Doctoral and Postdoctoral Forum of Shenzhen Research Institute of Big Data (SRIBD), 2021.
- Honor student of Xi'an Jiaotong University, 2017.
- Second prize of National Electrical Math Modeling Competition, 2017.
- Second prize of Chinese Mathematics Competition, Shaanxi Province, 2016.