

Wenhao Li

Curriculum Vitae

The Chinese University of Hong Kong, Shenzhen
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“What magical trick makes us intelligent? The trick is that there is no trick. The power of intelligence stems from our vast diversity, not from any single, perfect principle.” – Marvin Minsky, The Society of Mind.

Current Appointment

- 06/2022–present **Post Doc Fellow**, *The Chinese University of Hong Kong*, Shenzhen, China.
Advisors: Hongyuan Zha, and Jun Du (University of Science and Technology of China).
- 06/2022–present **Assistant Researcher**, *Machine Learning Center, Institute of Artificial Intelligence and Robotics for Society*, Shenzhen, China.

Education

- 2019–2022 **PhD of Computer Science**, *East China Normal University*, Shanghai, China.
Advisors: Aimin Zhou and Hongyuan Zha.
- 2016–2019 **Masters of Software Engineering**, *East China Normal University*, Shanghai, China.
Advisor: Hongyuan Zha.
- 2007–2010 **Bachelor of Computer Science**, *Lanzhou University*, Lanzhou, China.

Research Experience

- 2019&2022 **Research Assistant (9 months)**, *The Chinese University of Hong Kong*, Shenzhen, China.
Advisor: Hongyuan Zha and Baoxiang Wang.
- 06/2020 **Research Intern**, *Tencent AI Lab (3 months)*, Shenzhen, China.
Mentor: Dijun Luo. Application of multi-agent RL (MARL) in precision agriculture.
- 12/2019 **Research Intern**, *GeekPlus Inc. (6 months, remote)*, Beijing, China.
Mentor: Wenzhe Tan. Application of MARL in multi-agent pathfinding.
- 06/2018 **Research Intern**, *DeepGlint (6 months)*, Hefei, China.
Mentor: Ming Zhang, Advisor: Debing Zhang. Application of MARL in huamn-face tagging.

Honors and Awards

- 2023 **Nomination Award for Excellent Doctoral Dissertation Award**.
Shanghai Computer Society.
- 2022 **Excellent Graduate Award of Shanghai**.
Shanghai Municipal Education Commission.
- 2019 **Excellent Graduate Award of School of Software Engineering**.
East China Normal University.
- 2021 **AAMAS 2021 Student Scholarship**.
International Conference on Autonomous Agents and Multiagent Systems.
- 2016 **Excellent Graduate Award of Lanzhou University**.
Lanzhou Univeristy.

Publications

Journals

- [J4] **Flexible Fully-Decentralized Approximate Actor-Critic for Cooperative Multi-Agent Reinforcement Learning.**
Wenhao Li, Bo Jin, Xiangfeng Wang, Junchi Yan, Hongyuan Zha.
Journal of Machine Learning Research, (JMLR, CCF-A), 24.178: 1-75, 2023, long paper (75 pages).
- [J3] **Structured Cooperative Reinforcement Learning with Time-varying Composite Action Space.**
Wenhao Li, Xiangfeng Wang, Bo Jin, Dijun Luo, Hongyuan Zha.
IEEE Transactions on Pattern Analysis and Machine Intelligence, (TPMAI, CCF-A), 44.11: 8618-8634, 2022. **IF: 24.314**
- [J2] **Distributed and Parallel ADMM for Structured Nonconvex Optimization Problem.**
Xiangfeng Wang, Junchi Yan, Bo Jin, Wenhao Li.
IEEE Transactions on Cybernetics, (TCYB, SCI-Q1), 51.9: 4540-4552, 2019. **IF: 19.118**
- [J1] **Learning Structured Communication for Multi-Agent Reinforcement Learning.**
Junjie Sheng, Xiangfeng Wang, Bo Jin, Junchi Yan, Wenhao Li, Tsung-Hui Chang, Jun Wang, Hongyuan Zha.
Journal of Autonomous Agents and Multiagent Systems, (JAAMAS, CCF-B), 36.2: 50, 2022.

Conferences

- [C11] **Hierarchical Diffusion for Offline Decision Making.**
Wenhao Li, Xiangfeng Wang, Bo Jin, Hongyuan Zha.
International Conference on Machine Learning (ICML, CCF-A), (in print), 2023.
- [C10] **Dealing with Non-Stationarity in Multi-Agent Reinforcement Learning via Trust Region Decomposition.**
Wenhao Li, Xiangfeng Wang, Bo Jin, Junjie Sheng, Hongyuan Zha.
International Conference on Learning Representations (ICLR, TH-CPL-A), 2022.
- [C9] **Information Design in Multi-Agent Reinforcement Learning.**
Yue Lin, Wenhao Li, Hongyuan Zha, Baoxiang Wang.
Conference on Neural Information Processing Systems (NeurIPS, CCF-A), 2023.
- [C8] **Iteratively-Refined Interactive 3D Medical Image Segmentation with Multi-Agent Reinforcement Learning.**
Xuan Liao, Wenhao Li, Qisen Xu, Xiangfeng Wang, Bo Jin, Xiaoyun Zhang, Yanfeng Wang, Ya Zhang.
The IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR, CCF-A), 2020.
- [C7] **VMAgent: Scheduling Simulator for Reinforcement Learning.**
Sheng, Junjie, Shengliang Cai, Haochuan Cui, Wenhao Li, Yun Hua, Bo Jin, Wenli Zhou et al.
International Joint Conference on Artificial Intelligence (IJCAI, CCF-A), 2022.
- [C6] **HMRL: Hyper-Meta Learning for Sparse Reward Reinforcement Learning Problem.**
Yun Hua, Xiangfeng Wang, Bo Jin, Wenhao Li, Junchi Yan, Xiaofeng He, Hongyuan Zha.
International Conference on Knowledge Discovery and Data Mining (KDD, CCF-A), 2021.
- [C5] **Diverse Policy Optimization for Structured Action Space.**
Wenhao Li, Baoxiang Wang, Shanchao Yang and Hongyuan Zha.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS, CCF-B), Oral, 2023.
- [C4] **Model-Based Reinforcement Learning for Auto-Bidding in Display Advertising.**
Shuang Chen, Qisen Xu, Liang Zhang, Yongbo Jin, Wenhao Li and Linjian Mo.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS, CCF-B), **Corresponding author**, Oral, 2023.
- [C3] **Structured Diversification Emergence via Reinforced Organization Control and Hierarchical Consensus Learning.**
Wenhao Li, Xiangfeng Wang, Bo Jin, Junjie Sheng, Yun Hua, Hongyuan Zha.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS, CCF-B), Oral, 2021.
- [C2] **Multi-Agent Path Finding with Prioritized Communication Learning.**
Wenhao Li*, Hongjun Chen*, Bo Jin, Wenzhe Tan, Hongyuan Zha and Xiangfeng Wang.
International Conference on Robotics and Automation (ICRA, CCF-B), 2022.
- [C1] **Learning Optimal "Pigovian Tax" in Sequential Social Dilemmas.**
Yun Hua, Shang Gao, Wenhao Li, Bo Jin, Xiangfeng Wang and Hongyuan Zha.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS, CCF-B), Extended abstract, 2023.

Project Fundings

Hosting

- 2022 **The 72th Fellowship of China Postdoctoral Science Foundation (2022-2024)**, 2022M723039, Policy Optimization for High-Dimensional Graph-Structured Action Space.
Postdoctoral Science Foundation of China.

Participating

- 2021 **The National Key Research and Development Program of China (2021-2023)**, SQ2020AAA010017, Advanced Machine Learning for Structured Adaptive Self-evolution.
Ministry of Science and Technology of the People's Republic of China
- 2020 **Science and Technology Innovation Program of Shanghai (2020-2022)**, 20511101100, Data Governance for Open Sharing of Multimodal Medical Data.
Science and Technology Commission of Shanghai Municipality

Academic Activities

Conference and Workshop Reviewer (of Individual Papers)

- 2023 IEEE Transactions on Intelligent Vehicles (T-IV)
- 2023 IEEE Transactions on Emerging Topics in Computational Intelligence (T-ETCI)
- 2023 International Conference on Neural Information Processing Systems (NeurIPS), **Outstanding Reviewer**
- 2021-2023 International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
- 2022-2023 International Conference on Learning Representations (ICLR)

Talks and Presentations

Invited Talks

- 08/2023 **Cooperative Multi-Agent Reinforcement Learning: Theories, Algorithms and Applications**,
School of Information Management & Engineering, Shanghai University of Finance and Economics, Shanghai, China..
- 08/2023 **Cooperative Multi-Agent Reinforcement Learning: Theories, Algorithms and Applications**,
School of Software Engineering, Tongji University, Shanghai, China..
- 06/2023 **Generative Models in Reinforcement Learning**.
Institute of Science and Technology for Brain-Inspired Intelligence, Fudan University, Shanghai, China.
- 01/2022 **Structured Diversification Emergence via Reinforced Organization Control and Hierarchical Consensus Learning**.
Distributed Artificial Intelligence, 2021, Shanghai, China.

Presentations at Conferences and Symposiums

- 07/2023 **Hierarchical Diffusion for Offline Decision Making**.
International Conference on Machine Learning (ICML).
- 06/2023 **Diverse Policy Optimization for Structured Action Space**.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS).
- 06/2023 **Model-Based Reinforcement Learning for Auto-Bidding in Display Advertising**.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS).
- 05/2022 **Multi-Agent Path Finding with Prioritized Communication Learning**.
International Conference on Robotics and Automation (ICRA).
- 05/2021 **Structured Diversification Emergence via Reinforced Organization Control and Hierarchical Consensus Learning (virtual)**.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS).