

Zhi WANG

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RESEARCH INTERESTS

My research interests include reinforcement learning (RL) algorithms and their applications in robotics, operations research, and financial technology.

Specifically, I work on how learning algorithms can scale RL agents to dynamic environments (or “open” environments), allowing them to autonomously adapt to the non-stationary task distributions in real-world domains. This includes a wide range of topics such as incremental learning, lifelong learning, transfer learning, and meta-learning.

EXPERIENCE

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| 2022.11–Now | Associate Research Fellow, <i>Nanjing University</i>
Department of Control Science and Intelligence Engineering |
| 2019.11–2022.10 | Assistant Research Fellow, <i>Nanjing University</i>
Department of Control Science and Intelligence Engineering |
| 2022 | Visiting Scholar, <i>Institute of Automation, Chinese Academy of Sciences</i>
Visiting tutors: Professor Yuanheng Zhu, Dongbin Zhao |
| 2019 | Visiting Scholar, <i>University of New South Wales</i>
Visiting tutor: Professor Daoyi Dong |

EDUCATION

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| 2015.09–2019.10 | Ph.D. <i>City University of Hong Kong</i>
Machine Learning, Department of Systems Engineering and Engineering Management
Supervisor: Professor Han-Xiong Li |
| 2011.09–2015.08 | B.E. <i>Nanjing University</i>
Automation, Department of Control and Systems Engineering |

SELECTED PUBLICATIONS

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| 2023 | Hongyu Ding, Yuanze Tang, Qing Wu, Bo Wang, Chunlin Chen, Zhi Wang* , “Magnetic field-base reward shaping for goal-conditioned reinforcement learning,” <i>IEEE-CAA Journal of Automatica Sinica</i> |
| 2023 | Junyi Wang, Zhi Wang* , Huaxiong Li, and Chunlin Chen, “Adaptive noise-based evolutionary reinforcement learning with maximum entropy,” <i>Acta Automatica Sinica</i> |
| 2022 | Donghan Xie, Zhi Wang* , Chunlin Chen, Daoyi Dong, “Depthwise convolution for multi-agent communication with enhanced mean-field approximation,” <i>IEEE Transactions on Neural Networks and Learning Systems</i> |

- 2022 **Zhi Wang**, Chunlin Chen, and Daoyi Dong, "Lifelong incremental reinforcement learning with online Bayesian inference," *IEEE Transactions on Neural Networks and Learning Systems*
- 2022 **Zhi Wang**, Chunlin Chen, and Daoyi Dong, "Instance weighted incremental evolution strategies for reinforcement learning in dynamic environments," *IEEE Transactions on Neural Networks and Learning Systems*
- 2022 **Zhi Wang**, Chunlin Chen, and Daoyi Dong, "A Dirichlet process mixture of robust task models for scalable lifelong reinforcement learning," *IEEE Transactions on Cybernetics*
- 2022 Yuanyang Zhu, **Zhi Wang***, Chunlin Chen, and Daoyi Dong, "Rule-based reinforcement learning for efficient robot navigation with space reduction," *IEEE-ASME Transactions on Mechatronics*
- 2021 **Zhi Wang** and Han-Xiong Li, "Dissimilarity analysis-based multimode modeling for complex distributed parameter systems," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*
- 2020 **Zhi Wang**, Han-Xiong Li, and Chunlin Chen, "Incremental reinforcement learning in continuous spaces with policy relaxation and importance weighting," *IEEE Transactions on Neural Networks and Learning Systems*
- 2020 **Zhi Wang**, Han-Xiong Li, and Chunlin Chen, "Reinforcement learning-based optimal sensor placement for spatiotemporal modeling," *IEEE Transactions on Cybernetics*
- 2019 **Zhi Wang**, Chunlin Chen, Han-Xiong Li, Daoyi Dong, and Tzyh-Jong Tarn, "Incremental reinforcement learning with prioritized sweeping for dynamic environments," *IEEE-ASME Transactions on Mechatronics*
- 2019 **Zhi Wang** and Han-Xiong Li, "Incremental spatiotemporal learning for online modeling of distributed parameter systems," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*
- 2019 **Zhi Wang**, Wei Bi, Yan Wang, and Xiaojiang Liu, "Better fine-tuning via instance weighting for text classification," *AAAI Conference on Artificial Intelligence*

Note: *indicates the corresponding author

TEACHING

- <Deep Reinforcement Learning>, mainly for postgraduates, 2019–Now
- <Introduction to Automation>, for undergraduates, 2019–2022
- <Digital Circuits>, for undergraduates, 2022–Now

SOCIAL SERVICES

- *Reviewer* for leading journals and top conferences
 - IEEE Transactions on Neural Networks and Learning Systems
 - IEEE Transactions on Cybernetics
 - IEEE/ASME Transactions on Mechatronics
 - IEEE Transactions on Systems, Man, and Cybernetics: Systems
 - IEEE-CAA Journal of Automatica Sinica
 - AAAI Conference on Artificial Intelligence
- *Program Chair* and *Associate Editor* for special sessions of international conferences
 - IEEE Conference on Systems, Man, and Cybernetics, 2022

- IEEE Conference on Systems, Man, and Cybernetics, 2021
- IEEE International Conference on Networking, Sensing, and Control, 2020

INVITED TALKS

- Lifelong reinforcement learning for dynamic environments
 - 2022.12, The 4th Distributed Artificial Intelligence (DAI) Conference Inviter: Professor Yan Zheng
 - 2022.12, Institute of Automation, Chinese Academy of Sciences Inviter: Professor Yuanheng Zhu
 - 2022.12, Tongji University Inviter: Professor Peng Yi
- Incremental reinforcement learning for dynamic environments
 - 2020.12, University of Electronic Science and Technology of China Inviter: Professor Xiaoting Wang
 - 2020.12, University of Science and Technology of China Inviter: Professor Lindong Liu
 - 2019.04, University of New South Wales Inviter: Professor Daoyi Dong
- *Instructor* of summer course “Deep Reinforcement Learning”
 - 2022.07, University of Science and Technology of China Inviter: Professor Lindong Liu

HONORS AND AWARDS

- Doctor of Innovation and Entrepreneurship in Jiangsu Province, 2020–2022
- Outstanding Academic Performance Award, City University of Hong Kong, 2018
- Research Tuition Scholarship, City University of Hong Kong, 2018