

# Hao Chen

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## RESEARCH INTERESTS

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Multi-Agent Learning, Deep Reinforcement Learning

## EDUCATION

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**University College London**

2023.9 - Present

- Visiting Scholar at SpaceTimeLab
- Advisor: Prof. Tao Cheng
- Research Topic: Multi-agent deep reinforcement learning

**University of Chinese Academy of Sciences**

2022.9 - Present

- Ph.D. in Computer Science
- Advisor: Prof. Jianbin Jiao
- Research Topic: Multi-agent deep reinforcement learning

**University of Chinese Academy of Sciences**

2019.9 - 2022.6

- M.Sc. in Pattern Recognition and Intelligent System
- Advisor: Prof. Kaiqi Huang
- Dissertation: Research on policy generalization in adversarial environments

**University of Chinese Academy of Sciences**

2015.9 - 2019.6

- B.Eng. in Computer Science
- Advisor: Prof. Yidong Gu
- Dissertation: Research on cooperative multi-agent deep reinforcement learning

## PUBLICATIONS

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### Conference Papers

- Xinke Jiang, Wentao Zhang, Yuchen Fang, Xiaowei Gao, **Hao Chen**, Haoyu Zhang, Dingyi Zhuang, Jiayuan Luo. Timeseries Suppliers Allocation Risk Optimization via Deep Black Litterman Model. AAAI2025(Oral)
- Hangyu Mao, Rui Zhao, Ziyue Li, Zhiwei Xu, **Hao Chen**, Yiqun Chen, Bin Zhang, Zhen Xiao, Junge Zhang and Jiangjin Yin. PDiT: Interleaving Perception and Decision-making Transformers for Deep Reinforcement Learning. AAMAS2024(Oral)
- Xinke Jiang, Dingyi Zhuang, Xianghui Zhang, **Hao Chen**, Jiayuan Luo, Xiaowei Gao. Uncertainty Quantification via Spatial-Temporal Tweedie Model for Sparse and Long-tail Travel Demand Prediction. CIKM 2023 (Poster)
- Chen Yang, Guangkai Yang, **Hao Chen**, Junge Zhang. Explicitly Learning Policy Under Partial Observability in Multiagent Reinforcement Learning. IJCNN 2023 (Oral)
- Yang Yu, Qiyue Yin, Junge Zhang, **Hao Chen**, Kaiqi Huang. Underexplored Subspace Mining for Sparse-Reward Cooperative Multi-Agent Reinforcement Learning. IJCNN 2023 (Oral)
- Zhiwei Xu, Bin Zhang, Dapeng Li, Zeren Zhang, Guangchong Zhou, **Hao Chen**, Guoliang Fan. Consensus Learning for Cooperative Multi-Agent Reinforcement Learning. AAAI 2023 (Oral)

- **Hao Chen**, Guangkai Yang, Junge Zhang, Qiyue Yin, Kaiqi Huang. RACA: Relation-Aware Credit Assignment for Ad-Hoc Cooperation in Multi-Agent Deep Reinforcement Learning. IJCNN 2022 (Oral)
- Guangkai Yang, **Hao Chen**, Junge Zhang, Qiyue Yin, Kaiqi Huang. Multi-Agent Uncertainty Sharing for Cooperative Multi-Agent Reinforcement Learning. IJCNN 2022 (Oral)
- Yifei Chen, Junge Zhang, Qiaozhe Li, **Hao Chen**, Kaiqi Huang. FGA-NAS: Fast Resource-Constrained Architecture Search by Greedy-ADMM Algorithm. IJCNN 2022 (Oral)
- Yifei Chen, Zhourui Guo, Qiyue Yin, **Hao Chen**, Kaiqi Huang. Layer-Wisely Supervised Learning for One-Shot Neural Architecture Search. IJCNN 2022 (Poster)

### Journal Papers

- **Hao Chen**, Likun Yang, Qiyue Yin, Kaiqi Huang. Local Observation Reconstruction for Ad-Hoc Cooperation. Journal of University of Chinese Academy of Sciences. 2022
- Guangkai Yang, **Hao Chen**, Mingyi Zhang, Qiyue Yin, Kaiqi Huang. Uncertainty-based Credit Assignment for Cooperative Multi-Agent Reinforcement Learning. Journal of University of Chinese Academy of Sciences. 2022

### Pre-prints

- Tao Cheng\*, **Hao Chen**\*, Xianghui Zhang, Xiaowei Gao, Lu Yin, Jianbin Jiao. Multi-Channel Spatio-Temporal Data Fusion of Network-Wide "Big" and "Small" Flow Data.
- Xinke Jiang, Yue Fang, Rihong Qiu, Haoyu Zhang, Yongxin Xu, **Hao Chen**, Wentao Zhang, Ruizhe Zhang, Yuchen Fang, Xu Chu, Junfeng Zhao, Yasha Wang. TC-RAG:Turing-Complete RAG's Case study on Medical LLM Systems.
- Hangyu Mao, Rui Zhao, **Hao Chen**, Jianye Hao, Yiqun Chen, Dong Li, Junge Zhang, Zhen Xiao. Transformer in Transformer as Backbone for Deep Reinforcement Learning.

### Chinese Patents

- Junge Zhang, Dan Qiao, **Hao Chen**. Privacy-preserved Fully Decentralized Multi-agent Reinforcement Learning for Networked Social Systems. CN117579358A
- Junge Zhang, Kaiqi Huang, **Hao Chen**, Guangkai Yang. Learning Ensemble Credit Assignment for Multi-Agent Reinforcement Learning. CN115660110B
- Junge Zhang, Mingyi Zhang, Guangkai Yang, **Hao Chen**, Kaiqi Huang, Dandan Chen, Lu Wang. Learning Stochastic Credit Assignment for Cooperative Multi-Agent Reinforcement Learning. CN115018017A

## RESEARCH EXPERIENCES

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<b>Institute of Automation, Chinese Academy of Sciences</b> <i>Research Intern</i>	2022.7 - Present <i>Advisor: Prof. Junge Zhang</i>
<b>Institute of Automation, Chinese Academy of Sciences</b> <i>Research Intern</i>	2019.2 - 2019.7 <i>Advisor: Prof. Junge Zhang and Prof. Qiyue Yin</i>
<b>Institute of Software, Chinese Academy of Sciences</b> <i>Research Intern</i>	2018.3 - 2018.7 <i>Advisor: Prof. Wensheng Dou</i>
<b>Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences</b> 2016.7 - 2016.9 <i>Research Intern</i>	<i>Advisor: Prof. Yidong Gu</i>

## PROFESSIONAL SERVICES

### Program Committee Member

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS) 2025
- International Conference on Multimedia and Expo (ICME) 2025

- International Joint Conference on Artificial Intelligence (IJCAI) 2023, 2024, 2025
- European Conference on Artificial Intelligence (ECAI) 2023
- International Symposium on Multi-Robot and Multi-Agent Systems (MRS) 2023
- International Conference on Machine Learning (ICML) 2022
- Chinese Automation Congress (CAC) 2022, 2023
- International Conference on Image, Video Processing and Artificial Intelligence (IVPAI) 2023

### Journal Reviewer

- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

### Invited Talks

- 2024.3.19 *Spatio-Temporal Data Fusion* at Spatial-Temporal Data Analysis and Data Mining (CEGE0042), a core course for MSc Geospatial Science and MSc Spatio-temporal Analytics and Big Data Mining, led by Dr James Haworth
- 2023.9.29 *Multi-Agent Deep Reinforcement Learning: Background and Recent Works* at SpaceTimeLab, University College London.
- 2023.9.8 *Research Experience Sharing* at School of Emergency Management Science and Engineering, University of Chinese Academy of Sciences.
- 2022.8.25 *Deep Reinforcement Learning: Background and Recent Works* at Institute of Mechanics, Chinese Academy of Sciences.
- 2022.7.24 *Relation-Aware Credit Assignment for Ad-Hoc Cooperation in Multi-Agent Deep Reinforcement Learning* at 2022 IJCAI workshop on Ad Hoc Teamwork.

### AWARDS

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<b>Outstanding Merit Student of University of Chinese Academy of Sciences</b>	2024
<b>Zhu Li Yuehua Excellent Doctoral Student Award of Chinese Academy of Sciences</b>	2023
<b>CSC Scholarship</b>	2023
<b>Merit Student of University of Chinese Academy of Sciences</b>	2017, 2018, 2022, 2023
<b>Second Prize in China Undergraduate Mathematical Contest in Modeling</b>	2018
<b>Third Prize of the "UCAS Cup" Innovation and Entrepreneurship Competition</b>	2018
<b>Merit Student of Chinese Academy of Sciences</b>	2017
<b>Third Prize of the National Scholarship</b>	2017

### ACTIVITIES

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<b>The IEEE CIS Student and Early Career mentoring program</b>	2022.7
<b>Talk on the Preparation of the College Entrance Examination</b>	2017
· Participated in the recording of the program "Guide to Registration" of Liaoning TV Station	

### MENTORSHIP

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<b>Jiani Che</b>	2023.7 - 2023.8
· Master student at University College London	
· Research interest: Validation and calibration of driving flow data generated from big and small data	
<b>Denian Li</b>	2023.8 - 2023.9

- Master student at Imperial College London
- Research interest: Graphical game theory

**Yixin Pan**

2023.5 - Present

- Master student at Southwest University
- Research interest: Using modal logic to describe open-ended games

**Fuxi Yang**

2023.4 - 2023.7

- Undergraduate student at Huazhong University of Science and Technology
- Research interest: Graphical game theory

**Zekeng Zeng**

2023.2 - Present

- Master student at Institute of Automation, Chinese Academy of Sciences
- Research interest: Team game theory

## GITHUB REPOSITORIES

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**Multi-Agent Reinforcement Learning Papers with Code**

256 stars, 34 forks

- <https://github.com/TimeBreaker/MARL-papers-with-code>

**Multi-Agent Reinforcement Learning Papers**

181 stars, 30 forks

- <https://github.com/TimeBreaker/Multi-Agent-Reinforcement-Learning-papers>

**A Collection of Multi-Agent Reinforcement Learning Resources**

175 stars, 10 forks

- <https://github.com/TimeBreaker/MARL-resources-collection>

**Adversarial Reinforcement Learning Papers**

46 stars, 2 forks

- <https://github.com/TimeBreaker/Adversarial-Reinforcement-Learning-Papers>

## SKILLS

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Programming language: Python, Matlab, C

Tools: Pytorch, Latex

English level: IELTS 7.5