Hao Chen

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◇ Homepage: https://timebreaker.github.io

RESEARCH INTERESTS

Multi-Agent Learning, Deep Reinforcement Learning

EDUCATION

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

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

Institute of Automation, Chinese Academy of Sciences 2022.7 - Present
Research Intern *Advisor: Prof. Junge Zhang*

Institute of Automation, Chinese Academy of Sciences 2019.2 - 2019.7
Research Intern *Advisor: Prof. Junge Zhang and Prof. Qiyue Yin*

Institute of Software, Chinese Academy of Sciences 2018.3 - 2018.7
Research Intern *Advisor: Prof. Wensheng Dou*

Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences 2016.7 - 2016.9
Research Intern *Advisor: Prof. Yidong Gu*

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

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

Outstanding Merit Student of University of Chinese Academy of Sciences 2024

Zhu Li Yuehua Excellent Doctoral Student Award of Chinese Academy of Sciences 2023

CSC Scholarship 2023

Merit Student of University of Chinese Academy of Sciences 2017, 2018, 2022, 2023

Second Prize in China Undergraduate Mathematical Contest in Modeling 2018

Third Prize of the "UCAS Cup" Innovation and Entrepreneurship Competition 2018

Merit Student of Chinese Academy of Sciences 2017

Third Prize of the National Scholarship 2017

ACTIVITIES

The IEEE CIS Student and Early Career mentoring program 2022.7

Talk on the Preparation of the College Entrance Examination 2017

· Participated in the recording of the program "Guide to Registration" of Liaoning TV Station

MENTORSHIP

Jiani Che 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

Denian Li 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

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

Programming language: Python, Matlab, C

Tools: Pytorch, Latex

English level: IELTS 7.5