

## Chao Yu (于超)

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### ➤ Education

- 2019-2023                      Department of Electronic Engineering, Tsinghua University  
Ph.D. in Electronic Science and Technology  
*Outstanding Doctoral Graduate (Top 5%), Outstanding Doctoral Thesis (Top 10%)*  
Advisor: Prof. Yu Wang Co-advisor: Assistant Prof. Yi Wu
- 2016-2019                      Department of Mechanical Engineering, Tsinghua University  
M.S. in Mechanical Engineering and Automation  
*Outstanding Master's Thesis (Top 10%)*  
Advisor: Prof. Xin-Jun Liu
- 2012-2016                      School of Automation, Beijing Institute of Technology  
*Outstanding Graduate (Top 15%)*  
B.S. in Automation

### ➤ Work Experience

- 2023.07- Present              Postdoctoral Researcher  
Department of Electronic Engineering, Tsinghua University

### ➤ Research

Chao Yu is dedicated to research in group decision-making intelligence, with a strong foundation in reinforcement learning algorithms, self-play, large language model alignment, and UAV swarm decision-making. To date, she has published over 30 papers in top international conferences and journals, including 9 papers in leading machine learning conferences such as ICML, NeurIPS, ICLR, AAAI, IJCAI, and ECCV (3 ICML, 2 ICLR, 1 NeurIPS, 1 AAAI, 1 IJCAI, 1 ECCV), and 7 papers in robotics conferences like ICRA, IROS, RAL, and AAMAS (2 RAL, 1 ICRA, 1 IROS, 4 AAMAS). Her work has garnered over 2,400 citations on Google Scholar. As the first author, her first-author paper on the multi-agent reinforcement learning algorithm MAPPO, published in NeurIPS 2022, has received over 1.2k citations and the open-source code has over 1.1k stars and 260 forks on GitHub. This work was featured on the well-known Bair Blog, attracting significant attention. Her first-author paper in IROS 2018 on robotics has garnered over 840 citations, with its open-source code accumulating 630 stars and 130 forks on GitHub. As a co-corresponding author, her large model alignment paper published at ICML 2024 was selected for an Oral Presentation (top 1.5%).

Chao Yu has received several honors, including Tsinghua University's Outstanding Doctoral Graduate Award (top 5%, 100 students university-wide, 4 from the department), Outstanding

Doctoral Thesis Award (top 10%, 200 students university-wide, 9 from the department), Outstanding Master's Thesis Award (top 10%, 200 students university-wide, 8 from the department), and the 2024 Runner-up of Outstanding Doctoral Thesis Award (top 5) in Chinese Intelligent Agent and Multi-Agent Systems. She has also been awarded a National Scholarship. During her postdoctoral period, she was selected for Tsinghua University's "Shuimu Scholar" program and the Department of Electronic Engineering's "Chuanxin Future Scholar" program (faculty reserve program). She has also received the Zhang Keqian Postdoctoral Fellowship, China Postdoctoral Excellent Special Foundation (top 1,000 nationwide), and Postdoctoral Fellowship Program (category C, top 3,000 nationwide). She is the principal investigator of a National Natural Science Foundation Youth Project. Chao Yu leads a multi-agent algorithm team and has conducted numerous research projects. She assists her advisors in mentoring 5 Ph.D students and 4 master's students. She also serves as a reviewer for top-tier machine learning conferences such as NeurIPS, ICLR, ICML, AAAI, and several journals.

### ➤ Awards and Honors

2024	China Postdoctoral Excellent Special Foundation (Top 1,000 nationwide) Chinese Postdoctoral Science Foundation (CPSF)
2024	Postdoctoral Fellowship Program (Top 3000 nationwide) Chinese Postdoctoral Science Foundation (CPSF)
2024	Runner-up for Outstanding Doctoral Thesis (Top 5) Chinese Intelligent Agent and Multi-Agent Systems
2023	Shuimu Scholar Program Tsinghua University
2023	Chuanxin Future Scholar Program Department of Electronic Engineering, Tsinghua University
2023	Zhang Keqian Postdoctoral Fellowship Department of Electronic Engineering, Tsinghua University
2023	Outstanding Doctoral Thesis (Top 10%) Tsinghua University
2023	Outstanding Doctoral Graduate (Top 5%) Tsinghua University
2019	Outstanding Master's Thesis (Top 10%) Tsinghua University
2019-2023	First-Class Scholarship (3 times) Tsinghua University
2015	National Scholarship China Ministry of Education

### ➤ Selected Publications (\* indicates co-first author, + indicates co-corresponding author)

[1] **Chao Yu\***, Akash Velu\*, Eugene Vinitzky, Jiaxuan Gao, Yu Wang, Alexandre Bayen, Yi Wu. The Surprising Effectiveness of PPO in Cooperative Multi-agent Games. in *Advances in Neural Information Processing Systems*

- (*NeurIPS*) *Datasets and Benchmarks Track*, 2022. (CCF-A, Google Scholar Citations: 1.2k+, GitHub Stars: 1.1k+)
- [2] **Chao Yu\***, Xinyi Yang\*, Jiaxuan Gao\*, Huazhong Yang, Yu Wang, Yi Wu. Learning Efficient Multi-agent Cooperative Visual Exploration. in *European Conference on Computer Vision (ECCV)*, 2022. (CCF-B, Google Scholar Citations: 14)
- [3] **Chao Yu\***, Jiaxuan Gao\*, Weilin Liu, Botian Xu, Hao Tang, Jiaqi Yang, Yu Wang, Yi Wu. Learning Zero-Shot Cooperation with Humans, Assuming Humans Are Biased. in *International Conference on Learning Representations (ICLR)*, 2023. (Google Scholar Citations: 25)
- [4] **Chao Yu**, Xinyi Yang, Jiaxuan Gao, Jiayu Chen, Yunfei Li, Jijia Liu, Yunfei Xiang, Ruixin Huang, Huazhong Yang, Yi Wu, Yu Wang. Asynchronous Multi-Agent Reinforcement Learning for Efficient Real-time Multi-robot Cooperative Exploration. In *International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, 2023. (CCF-B, Google Scholar Citations: 26)
- [5] Zhenggang Tang\*, **Chao Yu\***, Boyuan Chen, Huazhe Xu, Xiaolong Wang, Fei Fang, Simon Du, Yu Wang, Yi Wu. Discovering Diverse Multi-agent Strategic Behavior Via Reward Randomization. In *International Conference on Learning Representations (ICLR)*, 2021. (Google Scholar Citations: 55)
- [6] **Chao Yu**, Zuxin Liu, Xin-Jun Liu, Fugui Xie, Yi Yang, Qi Wei, Fei Qiao. DS-SLAM: A semantic visual SLAM towards dynamic environments. In *International Conference on Intelligent Robots and Systems (IROS)*, 2018. (CCF-B, Google Scholar Citations: 840)
- [7] Shusheng Xu, Wei Fu, Jiaxuan Gao, Wenjie Ye, Weilin Liu, Zhiyu Mei, Guangju Wang, **Chao Yu+**, Yi Wu+. Is DPO Superior to PPO for LLM Alignment? A Comprehensive Study. In *International Conference on Machine Learning (ICML)*, 2024. (CCF-A, Oral (1.5% ), Google Scholar Citations: 25)
- [8] Jijia Liu\*, **Chao Yu\***, Jiaxuan Gao\*, Yuqing Xie, Qingmin Liao, Yi Wu, Yu Wang, LLM-Powered Hierarchical Language Agent for Real-time Human-AI Coordination. in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2024. (CCF-B, Google Scholar Citations: 12)
- [9] Botian Xu, Feng Gao, **Chao Yu+**, Ruize Zhang, Yi Wu, Yu Wang+. OmniDrones: An Efficient and Flexible Platform for Reinforcement Learning. in Drone Control. in *IEEE Robotics and Automation Letters (RAL)*, 2024. (SCI, JCR-Q2)
- [10] Xinyi Yang\*, Yuxiang Yang\*, **Chao Yu+**, Jiayu Chen, Jincheng Yu, Haibing Ren, Huazhong Yang, Yu Wang+. Active Neural Topological Mapping for Multi-Agent Exploration. in *IEEE Robotics and Automation Letters (RAL)*, 2023. (SCI, JCR-Q2)
- [11] Wei Fu, **Chao Yu**, Zelai Xu, Jiaqi Yang, Yi Wu. Revisiting Some Common Practices in Cooperative Multi-agent Reinforcement Learning. in *International Conference on Machine Learning (ICML)*, 2022. (CCF-A, Spotlight, Google

**Scholar Citations: 37)**

[12] Zelai Xu, Chao Yu, Fei Fang, Yu Wang, Yi Wu. Language Agents with Reinforcement Learning for Strategic Play in the Werewolf Game. in *International Conference on Machine Learning (ICML)*, 2024. (CCF-A, Google Scholar

**Citations: 35)**

[13] Weihua Du\*, Jinglun Zhao\*, Chao Yu, Xingcheng Yao, Zimeng Song, Siyang Wu, Ruifeng Luo, Zhiyuan Liu, Xianzhong Zhao, Yi Wu. Automatic Truss Design with Reinforcement Learning. in *International Joint Conference on Artificial Intelligence (IJCAI)*, 2023. (CCF-A)

[14] Jiayu Chen, Zelai Xu, Yunfei Li, Chao Yu, Jiaming Song, Huazhong Yang, Fei Fang, Yu Wang, Yi Wu. Accelerate Multi-Agent Reinforcement Learning in Zero-Sum Games with Subgame Curriculum Learning. in *AAAI Conference on Artificial Intelligence (AAAI)*, 2024. (CCF-A)

[15] Zelai Xu, Yancheng Liang, Chao Yu, Yu Wang, and Yi Wu. Fictitious Cross-Play: Learning Global Nash Equilibrium in Mixed Cooperative-Competitive Games. in *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2023. (CCF-B)

[16] Shusheng Xu\*, Huaijie Wang\*, Jiaxuan Gao, Yutao Ouyang, Zhiyu Mei, Chao Yu, Yi Wu. Language-Guided Generation of Physically Realistic Robot Motion and Control. in *IEEE International Conference on Robotics and Automation (ICRA)*, 2024. (CCF-B)