

# Heng Dong

✉ [drdhxi@gmail.com](mailto:drdhxi@gmail.com) |  [drdh](#) |  [Heng Dong](#) |  [drdh.cc](#)

## EDUCATION

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- **Tsinghua University** Beijing, China  
*Ph.D. student majoring in Artificial Intelligence* *Sep. 2020 - Jun. 2025*
- **University of Science and Technology of China (USTC)** Hefei, China  
*B.S. majoring in Computer Science and Technology* *Sep. 2016 - Jun. 2020*

## RESEARCH AREA

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The goal of my research is to endow agents with superhuman intelligence, which I believe can be achieved through *learning from interactions* using *modern models*. Toward this goal, my previous research mainly focused on

- **Learning from Interactions** RL, Robot Control & Design, Multi-Agent
- **Modern Models** Large Language Models, Diffusion Models, Flow Models

## PUBLICATIONS AND PREPRINTS

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### Modern Models (Large Language Models, Diffusion Models, Flow Models)

- [1] Zixuan Wang, Huang Fang, Shaoan Wang, Yuanfei Luo, **Heng Dong**, Wei Li, Yiming Gan. “Hydra-Nav: Object Navigation via Adaptive Dual-Process Reasoning”. *arXiv preprint* (2026).
- [2] Xueyun Tian, Wei Li, Bingbing Xu, **Heng Dong**, Yuanzhuo Wang, Huawei Shen. “ROMA: Real-time Omni-Multimodal Assistant with Interactive Streaming Understanding”. *arXiv preprint* (2026).
- [3] Xueyun Tian\*, Minghua Ma\*, Bingbing Xu, Nuoyan Lyu, Wei Li, **Heng Dong**, Zheng Chu, Yuanzhuo Wang, Huawei Shen. “Learning from Mistakes: Negative Reasoning Samples Enhance Out-of-Domain Generalization”. *arXiv preprint* (2026).
- [4] Huang Fang\*, Mengxi Zhang\*, **Heng Dong\***, Wei Li\*, Zixuan Wang, Qifeng Zhang, Xueyun Tian, Yucheng Hu, Hang Li. “Robix: A Unified Model for Robot Interaction, Reasoning and Planning”. *Technical Report* (2025).
- [5] **Heng Dong\***, Kefei Duan\*, Chongjie Zhang. “Enhancing Decision-Making of Large Language Models via Actor-Critic”. *Forty-Second International Conference on Machine Learning* (ICML 2025).
- [6] Tonghan Wang\*, **Heng Dong\***, Yanchen Jiang, David C. Parkes, Milind Tambe. “On Diffusion Models for Multi-Agent Partial Observability: Shared Attractors, Error Bounds, and Composite Flow”. *Proc. of the 24th International Conference on Autonomous Agents and Multiagent Systems* (AAMAS 2025).
- [7] Xinyi Yang, Liang Zeng, **Heng Dong**, Chao Yu, Xiaoran Wu, Huazhong Yang, Yu Wang, Milind Tambe, Tonghan Wang. “Policy-to-Language: Train LLMs to Explain Decisions with Flow-Matching Generated Rewards”. *arXiv preprint* (2025).

### Learning from Interactions (Robot Design, Robot Control, Multi-Agent RL)

- [8] **Heng Dong\***, Junyu Zhang\*, Chongjie Zhang. “Leveraging Hyperbolic Embeddings for Coarse-to-Fine Robot Design”. In *The Twelfth International Conference on Learning Representations* (ICLR 2024).
- [9] **Heng Dong**, Junyu Zhang, Tonghan Wang, Chongjie Zhang. “Symmetry-Aware Robot Design with Structured Subgroups”. In *Fortieth International Conference on Machine Learning* (ICML 2023).
- [10] **Heng Dong**, Tonghan Wang, Jiayuan Liu, Chongjie Zhang. “Low-Rank Modular Reinforcement Learning via Muscle Synergy”. In *Thirty-sixth Conference on Neural Information Processing Systems* (NeurIPS 2022).
- [11] **Heng Dong\***, Tonghan Wang\*, Jiayuan Liu, Chi Han, Chongjie Zhang. “Birds of a Feather Flock Together: A Close Look at Cooperation Emergence via Multi-Agent RL.” *arXiv preprint* (2021).
- [12] Yihan Wang\*, Beining Han\*, Tonghan Wang\*, **Heng Dong**, Chongjie Zhang. “DOP: Off-Policy Multi-Agent Decomposed Policy Gradients”. In *Ninth International Conference on Learning Representations* (ICLR 2021).
- [13] Tonghan Wang, **Heng Dong**, Victor Lesser, Chongjie Zhang. “ROMA: Multi-Agent Reinforcement Learning with Emergent Roles”. In *Thirty-seventh International Conference on Machine Learning* (ICML 2020).

## HONORS AND AWARDS

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- ByteDance Seed - SpotBonus Award Jan. 2026
- Tsinghua Friends - Ubiquant Excellence Scholarship Sep. 2024
- Interdisciplinary Information Institute Scholarship Sep. 2023, Sep. 2022
- Huiyan Scholarship of Excellence Sep. 2021
- Outstanding Undergraduate Thesis Award Jun. 2020
- Scholarship for HUA Xia Talent Program (top 30) Aug. 2017
- Scholarship for Excellent student Oct. 2016, Oct. 2017, Oct. 2018

## RESEARCH EXPERIENCE

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**Large Foundation Models for Robotics** ByteDance Seed-Robotics, Beijing, China  
*Researcher* Jun. 2025 - Present

- Leader: Wei Li and Hang Li
- Build Embodied Intelligence and Robotic Foundation Models
- Large-Scale Reinforcement Learning for Embodied Reasoning and Interaction in IsaacSim

**Modern Models: Diffusion Models and Flow Models** Harvard University (remote)  
*Cooperation* Aug. 2024 - May 2025

- Supervisor: Prof. Milind Tambe and Prof. David C. Parke
- Diffusion Models, Rectified Flow for Explainable LLMs

**Learning from Interactions & Modern Models** Tsinghua University, Beijing, China  
*Ph.D. Student* Sep. 2020 - Jun. 2025

- Supervisor: Prof. Chongjie Zhang and Prof. Yi Wu
- Reinforcement Learning, Large Language Model, Robot Design, Multi-Agent

**Multi-Agent: Role-Based, Self-Interested** Tsinghua University, Beijing, China  
*Intern* Sep. 2019 - Jul. 2020

- Supervisor: Prof. Chongjie Zhang

- Role-Oriented Multi-Agent Systems, Self-Interested Agents

## **Knowledge Graph of Intelligent Healthcare**

*Lab Research Work*

USTC, Hefei, China

*Sep. 2018 - Jun. 2019*

- Supervisor: Prof. Tong Xu
- Intelligent Healthcare based on Knowledge Graph from electronic medical records

## **PROFESSIONAL SERVICES**

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### **Reviewer**

- Association for Computational Linguistics (ACL) *2026 - Present*
- Annual Conference on Neural Information Processing Systems (NeurIPS) *2022 - Present*
- International Conference on Machine Learning (ICML) *2022 - Present*
- International Conference on Learning Representations (ICLR) *2022 - Present*
- Association for the Advancement of Artificial Intelligence (AAAI) *2025 - Present*

### **Teaching Assistant**

- Artificial Intelligence: Principles and Techniques (Tsinghua, IIIS) *Fall, 2021*
- Reinforcement Learning (Tsinghua, IIIS) *Spring, 2022*

## **ENGINEERING SKILLS**

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- **Programming Languages** Python, C, Wolfram
- **OS** Linux (Ubuntu, Deepin, OpenSUSE), MacOS, Windows
- **Frameworks** PyTorch, Verl, Transformers, Numpy, Matplotlib, Plotly, Git