DU WEIHUA

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103B, Building 2, Zijing Apartment, Tsinghua University

EDUCATION

Bachelors of Engineering in Computer Science (Yao Class)

IIIS, Tsinghua University

Sep. 2020 – Now Beijing, China

- GPA 3.93 / 4.00, rank 13/76;
- IIIS is short for Institute for Interdisciplinary Information Sciences (a.k.a. "Yao Class");
- Achieve A+ in eight courses, including Algorithm Design, Abstract Algebra, Theory of Computation, Computer Vision, Natural Language Processing, etc.;
- All courses (12 courses / 43 credits) in the core discipline group are full marks (4.0).

Senior High Student

Changzhou Senior High School of Jiangsu Province, Jiangsu

Sep. 2017 – Jul. 2020 Jiangsu, China

- Gold medal of the 2018 National Olympiad in Informatics (NOI).

EXPERIENCE

Research Intern

Shanghai Artificial Intelligence Laboratory

Aug. 2023 – Now Shanghai, China

- Advisored by Wenwei Zhang and Kai Chen;
- Involved in the iterating of InternLM, focusing on improving tool calling capabilities.

Visiting Student

MIT-IBM Watson AI Lab, Massachusetts Institute of Technology

Feb. 2023 – Jul. 2023 Boston, US

- Advisored by Chuang Gan and Prof. Joshua B. Tenenbaum;
- Developing cooperative embodied agents by leveraging Large Language Models (LLMs), focusing on communication and reasoning in multi-agent environments.

Research Intern

Shanghai Qi Zhi Institute

Jun. 2022 – Jan. 2023 Beijing / Shanghai, China

- Advisored by Prof. Yi Wu;
- First work develops AutoTruss, a two-stage framework addressing the complex combinatorial optimization challenge of truss layout design in the building industry;
- Another work aims to optimize rewards and discover diverse strategies, developing a diversity-driven RL algorithm, State-based Intrinsic-reward Policy Optimization (SIPO).

RESEARCH INTERESTS

Embodied AI
Reinforcement Learning
Nature Language Processing

STRENGTHS

- Main Development Languages

Python C / C++ Pascal LaTex Pytorch

LANGUAGES

- Chinese: Native Speaker.
- English: TOEFL 103; GRE 321.

OTHERS

- Member of Tsinghua University Volleyball Team.
- Volunteer at the Student Development Center of Tsinghua University. 187.0 hours of officially recorded volunteering work.

PUBLICATIONS

Building Cooperative Embodied Agents Modularly with Large Language Models NeurIPS 2023 FMDM Workshop

Authors: Hongxin Zhang*, **Weihua Du***, Jiaming Shan, Qinhong Zhou, Yilun Du, Joshua B. Tenenbaum, Tianmin Shu, Chuang Gan.

- ICLR 2024 average review score 6.5 (8, 6, 6, 6);
- Developing cooperative embodied agents, named *CoELA*, by leveraging Large Language Models (LLMs), focusing on communication and reasoning in multi-agent environments. *CoELA* agents can communicate and cooperate effectively with both AI agents and humans, surpassing traditional planning-based methods.

Automatic Truss Design with Reinforcement Learning IJCAI 2023

Authors: **Weihua Du***, Jinglun Zhao*, Chao Yu, Xingcheng Yao, Zimeng Song, Siyang Wu, Ruifeng Luo, Zhiyuan Liu, Xianzhong Zhao, Yi Wu.

- We develop *AutoTruss*, a two-stage framework addressing the complex combinatorial optimization challenge of truss layout design in the building industry, which outperforms the previous baselines on both 2D and 3D truss design tasks.

Iteratively Learn Diverse Strategies with State Distance Information NeurIPS 2023

Authors: Wei Fu, **Weihua Du**, Jingwei Li, Sunli Chen, Jingzhao Zhang, Yi Wu.

- We developed a diversity-driven RL algorithm, State-based Intrinsic-reward Policy Optimization (SIPO). SIPO was tested across domains from robot locomotion to multi-agent games, consistently producing strategically diverse and human-interpretable policies that surpassed existing baselines.

MANUSCRIPTS

Constrained Human-AI: An Inclusive Embodied AI Assistance Challenge Submit to CVPR 2024

Authors: Andi Peng*, **Weihua Du***, Jiaming Shan*, Tianmin Shu, Chuang Gan.

- We create a new benchmark, *TDW-Constrained*, which encompasses a variety of household tasks that test the AI's ability to infer and execute based on the human partner's physical limitations.

HAZARD Challenge: Embodied Decision Making in Dynamically Changing Environments Submit to ICLR 2024

Authors: Qinhong Zhou*, Sunli Chen*, Yisong Wang, Haozhe Xu, **Weihua Du**, Hongxin Zhang, Yilun Du, Joshua B. Tenenbaum, Chuang Gan.

- ICLR 2024 average review score 6.25 (8, 6, 6, 5);
- We create *HAZARD*, a novel benchmark for evaluating the decision-making abilities of intelligent embodied agents within high-fidelity virtual environments that undergo dynamic changes, like fire, flood, and wind.

SELECTED PRIZES

Zheng Geru Scholarship | Scholarship in Tsinghua University Oct. 2023

Mr. and Mrs. Qu Yuzhi Scholarship | Scholarship in Tsinghua University Oct. 2022

Mr. and Mrs. Huang Yicong Scholarship | Scholarship in Tsinghua University Oct. 2021

Andrew C. Yao Award (Nomination Prize) | Scholarship in IIIS, top 20% students Sep. 2023

China Collegiate Programming Weihai Region Contest | Rank 5, **Gold Medal** Nov. 2021

National Olympiad in Informatics 2018 | Rank 32, **Gold Medal** Aug. 2018