

Zefang Huang

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Education

Nanjing University Sep. 2021 – Jun. 2025 (expected)
B.S. in Computer Science and Technology (National Elite Program) Nanjing, China

Research Interests

My research interest is **reinforcement learning** and **robotics**. More about my research directions and goals can be viewed on my personal website.

Publications

(*equal contribution)

[1] **Offline Transition Modeling via Contrastive Energy Learning**

Ruifeng Cheng*, Chengxing Jia*, **Zefang Huang**, Tian-Shuo Liu, Xu-Hui Liu, Yang Yu
ICML 2024

[2] **Jade: A Differentiable Physics Engine for Articulated Rigid Bodies with Intersection-Free Frictional Contact**

Gang Yang, Siyuan Luo, Yunhai Feng, Zhixin Sun, Chenrui Tie, Lin Shao
ICRA 2024

(I participated in part of the experimental work of the paper, mainly responsible for training the reinforcement learning algorithm to solve the LCP, but I did not signature.)

Research experience

LAMDA Group, Nanjing University

SEP. 2022 - FEB. 2024

Advised by Prof. Yang Yu and Prof. Zongzhang Zhang

NANJING UNIVERSITY

Focus on researching **reinforcement learning**, including the optimization of replay buffer, model-based reinforcement learning.

▷ We propose to model the transition probability implicitly through a scalar-value energy function, which enables not only flexible distribution prediction but also capturing complex transition behaviors. We also evaluate the energy-based transition models in several tasks.[1]

• Role in the project: (1) I evaluated the energy-based transition models on several D4RL Gym-Mujoco tasks first, after that our team decide to evaluate it on D4RL more systematically according to my experimental results. (2) I *independently* visualized the simulated trajectories within the learned energy-based transition models and forward transition models, and compared them with the real trajectories in the environment.

National University of Singapore

MAR. 2023 - OCT. 2023

Advised by Prof. Lin Shao

NATIONAL UNIVERSITY OF SINGAPORE

Focus on researching **robotics**. During that period of time, I learned basic knowledges about robotics and some tools of like pybullet, I also participated in some works about robotics.[2]

Projects

Game - Bubble and Bubble

MAR. 2022 - JUNE 2022

Implemented a game named Bubble and Bubble.

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- The game is implemented using C++, based on QT.
- It can be played in the QT editor, it obtained praise from the teaching assistant of Problem Solving and got full score.
- I implemented it by myself, through this project, I deepened my understanding of C++, became more proficient in using C++, and learned how to organize and complete a small project.

App - Todolist

APR. 2022 - MAY 2022

Implemented an application named Todolist.

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- The application is implemented using dart, base on Android Studio.
- It contains multiple functions like reminding the schedule, counting the amount of expenditure and classifying it etc.
- The project is implemented by four people and I joined as a participant. I did the reminding the schedule part. I experienced a new language dart through this project and I learned how to complete a program with others.

Graph Theory Tool Library

SEP. 2022 - NOV. 2022

Implemented a graph theory tool library.

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- The tool library is implemented using C++. It mainly provides data types, operation functions and classic graph theory algorithm interfaces related to graph theory.
- Users can directly call the data types or functions in it to construct graphs and operate on graphs. They can quickly model to achieve the effect of use, and can also deepen their understanding of graph theory and its algorithms. A more detailed usage method is written on the project home page.

Game - overcooked

MAY 2023 - JUNE 2023

Implemented a game named overcooked.

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- The game is implemented using C++. It can be run directly in Windows terminal.
- It can be played by hands, and can also let the agents run automatically to get scores themselves.

Selected Honor and Awards

Second Prize for Nanjing University Programming Contest(2022)

Nanjing University People's Scholarship(2022, 2023)

Nanjing University Excellent Award for Special scholarship for basic disciplines(2022, 2023)

Outstanding Communist Youth League cadre of Nanjing University(2023)

Outstanding Communist Youth League cadre of College of First-Year Students, Nanjing University(2022)

Outstanding class cadre of College of First-Year Students, Nanjing University(2022)

Bronze Prize in Chinese Mathematical Olympiad(CMO)(2020)

First Prize in National High School Mathematics Joint Competition(the third place in the province)(2020)

Skills

Programming: C/C++, Python

Deep Learning: Pytorch

Robotics: Pybullet, Mujoco