

Liu Dai

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Research Interest

My research focuses on Computer Vision & Robotics. My goal is to develop embodied, active and intelligent agents in the real and open world through interactive learning. I am actively looking for a PhD position starting from 2024 Fall.

Education

Tongji University

B.ENG. IN COMPUTER SCIENCE, COLLEGE OF ELECTRONIC & INFORMATION ENGINEERING

Shanghai, China

Sep. 2019 - Jun. 2024 (expected)

University of California San Diego

VISITING STUDENT SCHOLAR AT SU LAB, JACOBS SCHOOL OF ENGINEERING

California, USA

Mar. 2023 - Present

- Advisor: [Prof. Hao Su](#)

Peking University

VISITING STUDENT SCHOLAR AT CENTER ON FRONTIERS OF COMPUTING STUDIES

Beijing, China

Mar. 2022 - Present

- Advisor: [Prof. He Wang](#)

Publication

*: equivalent contribution, †: corresponding author(s)

[C2] 3D-Aware Object Goal Navigation via Simultaneous Exploration and Identification [\[Paper Link\]](#)

Jiazhao Zhang*, Liu Dai*, Fanpeng Meng, Qingnan Fan, Xuelin Chen, Kai Xu, He Wang†

Accepted to *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR) 2023*

[C1] Discovering Novel Categories in SAR Images in Open Set Conditions [\[Paper Link\]](#)

Liu Dai, Weiwei Guo†, Zenghui Zhang, Wenxian Yu

Accepted to *IEEE/GRSS International Geoscience and Remote Sensing Symposium (IGARSS) 2022, Oral*

Research Experience

University of California San Diego

RESEARCH INTERN AT SU LAB, ADVISED BY [PROF. HAO SU](#)

California, USA

Mar. 2023 - Present

Project: Environment Generation and Construction for Full-Physical Simulation of Embodied AI Tasks [On-Going]

- Aim to develop interactive simulation environment which is rich in scene layouts and object diversity for full-physical embodied AI tasks.

Peking University

RESEARCH INTERN AT EPIC LAB, ADVISED BY [PROF. HE WANG](#)

Beijing, China

Mar. 2022 - Present

Project: Active 3D Scene Understanding & Object Goal Navigation [C2]

- Proposed the first 3D-aware framework for the challenging Object Goal Navigation task, empowered by two simultaneously running sub-policies: corner-guided exploration policy and category-aware identification policy. By this dedicated design, we overcame the challenge of low sample efficiency in RL and high computational cost when leveraging 3D data for training navigation skills.
- I conducted part of method design, coding, writing and the most of plotting. This project piqued my interest in Embodied-AI and comprehensively improved my ability in coding, writing and plotting.

Project: Mobile Manipulation in Real World [On-Going]

- Aim to build active agents with strong navigation and manipulation skills in the real world.

Tongji-MIT City Science Lab

RESEARCH INTERN, ADVISED BY [PROF. WEIWEI GUO](#)

Shanghai, China

Sep. 2021 - Mar. 2022

Project: Remote Sensing Image Interpretation in the Open & Challenging World [C1]

- Proposed a multi-stage framework for Novel Category Discovery of remote sensing images: first self-supervisedly train a representation extractor, taking the best of both worlds of the labelled and unlabelled data, and then estimate the number of novel classes and cluster the unknown data based on open-set detection.
- This is the first research project I had and it piqued my research interest in the setting of Open-World. I undertook the most of coding, writing and plotting independently.

Teaching

Course 55010501: Opensource Hardware and Programming

Tongji University

TEACHING ASSISTANT FOR PROF. XIAOHUA SUN IN COLLEGE OF DESIGN AND INNOVATION

2021 Fall

- Delivered courses on Python & Arduino, guided undergraduate students to design and implement their Art projects through coding.

Honors & Awards

PERSONAL HONORS

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|------|---|--------------------|
| 2023 | Pursuit of Excellence Scholarship with 50000¥ (≈7000\$)
– Highest Honor for All Members of Tongji University (10/43106, among faculty, students & admin staff). | Tongji University |
| 2022 | SenseTime Scholarship with 20000¥ (≈3000\$)
– Nationwide Selected 30 Undergraduates in the Field of AI. | SenseTime Co.,Ltd. |
| 2022 | Tongji Academic Star
– Highest Honor for All Undergrads at Tongji University (15/18536). | Tongji University |

COMPETITION ACHIEVEMENTS

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|------|--|
| 2021 | National First Prize of <i>Challenge Cup</i> Competition: Research Track
Project: We built a pest detection system based on deep learning to help the agricultural workers in the less-developed rural area in China, where there is a great lack of experts on pest detection and the farmhand could only diagnose based on some folk prescription before.
– Most Influential Research Competition among University Students in China.
– Best Record in College History.
– Team Leader. |
| 2023 | National Silver Award of <i>Challenge Cup</i> Competition: Entrepreneurship Track
– Best Record in College History.
– Team Leader. |
| 2022 | Gold Award in Shanghai of <i>Internet+</i> Competition
– Team Leader. |
| 2020 | University Champion of <i>FLTRP Cup</i> National English Public Speaking Contest |

Skills

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|--------------------|--|
| Programming | C/C++, Python, LaTeX, HTML & CSS, SQL, Arduino, Bash |
| Frameworks | Pytorch, NumPy, OpenCV, Open3D, trimesh, Habitat Simulator |
| Others | Public Speaking and Presentation |

Languages

- | | |
|----------------|-------------|
| Chinese | Native |
| English | Fluent |
| French | Preliminary |