Xunzhe Zhou

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EDUCATION

Fudan University Shanghai, China

- B.S. in Computer Science and Technology, GPA 3.55/4.00 (Average grade 89/100) 2021.09 - now
- Natural Science Experimental Class, GPA 3.58/4.00 2020.09 - 2021.06

***Note**: Initially enrolled in Natural Science Experimental Class and later transferred to Computer Science and Technology*.

University of California, Berkeley Berkeley, CA, USA

- Exchange student**,** Department of EECS, GPA 4.00/4.00 2023.08 - 2023.12

PUBLICATIONS (* denotes equal contribution)

- R. Cao*, **Xunzhe Zhou***, J. Hou, C. Guan, S. Leng, "Reservoir computing as digital twins for controlling nonlinear dynamical systems", under review by *Advanced Science*.
- Q. He, J. Zeng, W. Huang, L. Chen, J. Xiao, Q. He, **Xunzhe Zhou**, J. Liang, Y. Xiao "Can Large Language Models Understand Real-World Complex Instructions?" accepted by *AAAI 2024*.

RESEARCH EXPERIENCE

School of Computing, National University of Singapore Singapore, Singapore

Advisor: Prof. Lin Shao 2024.05 - now

- Collaborate on research of multi-robot task planning in daily indoor scenarios, contributing to dataset generation and skill learning for our heterogeneous robot collaborative system. (on-going)
- Investigate single-robot task and motion planning through visual prompting in complex scenarios, enhancing robot spatial perception, aiming to help robot understand complex visual input with less hallucination. (on-going)

School of Data Science, Fudan University Shanghai, China

Advisors: Prof. Yanwei Fu and Prof. Xiangyang Xue 2024.03 - now

- Collaborate on resembling a Franka Panda robot with a Hermes mobile base, which can navigate to and grasp objects given natural language in our indoor scenario by extracting semantic feature, participating in the pipeline construction of mobile robot for indoor navigation and manipulation in the physical world.
- Explore long-horizon task planning in AI2THOR, focusing on using foundation models' commonsense and scene memory techniques to assist robot with planning, with the goal of transferring pipeline to the physical world.
- Investigate LMMs' hallucination in robot perception, collecting datasets for validation and fine-tuning models, aiming to resolve robot multimodal hallucination in real-world complex scenarios.

Shanghai Key Laboratory of Data Science, Fudan University Shanghai, China

Advisor: Prof. Yanghua Xiao 2023.06 - 2023.08

- Investigate LLMs' real-world complex instructions following capabilities. Collaborate on proposing CELLO Benchmark, contributing to both dataset construction and evaluation criteria design.
- Draft the proposal of project *A Practical Benchmark for Evaluating Large Language Models' Understanding of Complex Instructions under Hard Constraints* for applying National Natural Science Foundation Youth Project of China.
- Co-author paper *Can Large Language Models Understand Real-World Complex Instructions?*, accepted by *AAAI 2024*.

Institute of AI and Robotics, Fudan University Shanghai, China

Advisor: Prof. Siyang Leng 2022.11 - 2023.05

- Research nonlinear dynamical systems control by constructing and controlling reservoir computing as digital twins of unknown systems using only observable data, providing new tools for designing control strategies.
- Implement various chaotic systems and their RC digital twins, and conduct experiments to validate the prediction accuracy, control efficiency, and noise robustness of RC digital twins.
- Co-first author paper *Reservoir computing as digital twins for controlling nonlinear dynamical systems*.

GLOBAL EXPERIENCE

Department of Electrical Engineering and Computer Sciences, UC Berkeley 2023.08 - 2023.12

- Successfully complete advanced courses including CS182/282A Deep Learning, EECS127/227A Optimization Models, and CS188 Intro to Artificial Intelligence, with GPA 4.0/4.0.
- Audit graduate course CS285 Deep Reinforcement Learning, gaining comprehensive knowledge in these areas.
- Conduct CS182/282A course project *Neural Style Transfer Based on Fine Tuning Vision Transformers*, contributing to the construction and fine-tuning of *ViT* encoders in the NST model. Co-author our project essay.

HONOR & AWARDS

- Second prize of scholarship in Outstanding Students 2021
- Third prize of scholarship in Outstanding Students 2023
- Second award in National High School Mathematics League 2019
- Honor roll of distinction certificate in The Mathematics League (Top 8%) 2016
- Champion of Soccer League, Fudan University 2023 & 2024

COMMUNITY SERVICE

- Fudan University Recruit Voluntary Group 2022
- Covid-19 Voluntary Service 2022
- Guizhou Province Voluntary Service 2019

SKILLS

- Relevant coursework: Deep Learning (CS182/282A@Berkeley), Optimization Models (CS127/227A@Berkeley), Reinforcement Learning (CS285@Berkeley), Artificial Intelligence (CS188@Berkeley & AI@Fudan), Machine Learning (ML@Fudan), Data Mining (DM@Fudan).
- Programming Languages: Python, AI Framework, C/C++, Matlab, Verilog.
- Software: Pytorch, COLMAP, ROS, Git, $L^{A}T_{E}X$.
- Robots: Franka Emika Panda, Kinova Gen2, HERMES.
- Simulator: Habitat, AI2-THOR, ThreeDWrold, Gazebo, PyBullet, MuJoCo, IssacSim.

STANDARDIZED TESTS

- IELTS: Overall 7.0 (Listening 6.5+Reading 7.5+Writing 6.5+Speaking 6.5).
- Duolingo: Overall 120 (Literacy 120+ Comprehension 125+ Conversation 105+ Production 90).