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", *in submission*.
- Q. He, J. Zeng, W. Huang, L. Chen, J. Xiao, Q. He, **Xunzhe Zhou**, L. Chen, X. Wang, Y. Huang, H. Ye, Z. Li, S. Chen, Y. Zhang, Z. Gu, 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

- Investigate embodied task planning through visual prompting, in order to enhance robot spatial perception.
- Collaborate on research of multi-agent task planning, contributing to dataset generation and skill learning for our collaborative heterogeneous robot system.

School of Data Science, Fudan University Shanghai, China

Advisors: Prof. Yanwei Fu and Prof. Xiangyang Xue 2024.01 – 2024.05

- Collaborate on constructing a Franka Panda robot with a Hermes mobile base, participating in the research of mobile robot spatial navigation and manipulation in physical world.
- Contribute to hierarchical task planning, focusing on using LLMs' commonsense and utilizing scene memorization to enhance the robot's long-horizon planning capabilities.
- Investigate VLMs' hallucination in visual-semantic conflicts, constructing datasets to validate and address the hallucination, in order to improve robot ego-centric perception.
- Learn 6D pose estimation and 3D scene reconstruction technique, collaborating on the design of neural networks and pipeline for instance-level 6D pose estimation.

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 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

- Study advanced courses including CS182/282A Deep Learning, EECS127/227A Optimization Models, and CS188 Intro to Artificial Intelligence, while auditing graduate course CS285 Deep Reinforcement Learning, gaining comprehensive knowledge in these areas.
- Conduct 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 & Intro-to-AI@Fudan), Machine Learning, Data Mining.
- 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).