Yifei Zhang

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Education

PhD Student at Carnegie Mellon University Sep 2025 - Est. May 2031
Machine Learning Department

Visiting Undergraduate Researcher at UC Berkeley Feb 2024 - Sep 2025

University of Chinese Academy of Sciences (UCAS) Sep 2021 - June 2025
Bachelor of Artificial Intelligence Current GPA: 3.99/4.0 Ranking: 1/70

Research Interest

I'm interested in building learning systems that are reliable in the real world—systems that can continuously learn from experience and adapt as the world changes. At a high level, my work is driven by a central question: *can we enable models to learn effectively from ongoing experience in a way that resembles how humans learn?*

Selected Publications

- Qianqian Wang*, **Yifei Zhang***, Aleksander Holynski, Alexei A Efros, and Angjoo Kanazawa, "Continuous 3D Perception Model with Persistent State," in *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2025, Oral.
- Yixiao Wang*, **Yifei Zhang***, Mingxiao Huo*, Ran Tian, Xiang Zhang, Yichen Xie, Chenfeng Xu, Pengliang Ji, Wei Zhan, Mingyu Ding, and Masayoshi Tomizuka, "Sparse Diffusion Policy: A Sparse, Reusable, and Flexible Policy for Robot Learning," in *Conference on Robot Learning (CoRL)*, 2024.
- **Yifei Zhang**, Huan-ang Gao, Zhou Jiang, and Hao Zhao, "Dual-frame Fluid Motion Estimation with Test-time Optimization and Zero-divergence Loss," in *Conference on Neural Information Processing Systems (NeurIPS)*, 2024.
- **Yifei Zhang**, Hao Zhao, Hongyang Li, and Siheng Chen, "FastMAC: Stochastic Spectral Sampling of Correspondence Graph," in *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2024.

Research Experiences

3D Perception Model | *Instructed by Angjoo Kanazawa, Alexei A. Efros,* ***UC Berkeley*** Aug. 2024 – Jan. 2025
- Field: 3D Vision
- Co–first author, **CVPR 2025 Oral**.
- **Co-leading** the development process, including large-scale model training, and extensive experiments.
- Developed a unified model for diverse 3D tasks, including 3D/4D reconstruction and novel geometry synthesis.

Sparse Diffusion Policy | *Instructed by Masayoshi Tomizuka,* ***UC Berkeley*** Feb. 2024 – June. 2024
- Field: Robotic Learning
- **Co-First Authored** and achieved acceptance by **CoRL 2024**.
- Expanding diffusion-policy to robot multi-task learning and continual learning.
- **Co-led** task integration and exploration of continual learning capabilities within the framework.

FastMAC | *Instructed by Hao Zhao, Institute for AI Industry Research,* ***Tsinghua University*** May. 2023 – Nov. 2023
- Field: 3D Point Cloud Understanding
- **First-Authored** and achieved acceptance by **CVPR 2024**.
- Innovated the *FastMAC* algorithm, achieving real-time processing speeds with minimal performance degradation.
- Spearheaded the research from conception to publication, leading a team of 4 in experiment design and managing the writing process, resulting in the paper's high praise and acceptance.

DECROB | *Instructed by Hao Zhao, Institute for AI Industry Research,* ***Tsinghua University*** May. 2023 – Oct. 2023
- Field: AI4Science, Physics, Point Tracking
- Led the project as the **first-author** on a novel self-supervised framework for 3D Particle Tracking Velocimetry, currently **accepted by NeurIPS 2024**.
- As the **first author**, led through the research progress, from initial concept to preprint submission, achieving groundbreaking results and recognition.

Honors and Awards

SenseTime Scholarship **(25 winners nationwide)** July. 2024

China National Scholarship **(Top 0.01%)** Dec. 2023 & Dec. 2024

First-Level Scholarship of UCAS **(Top 1% in UCAS)** Every Year

National First Prize in APMCM **(Top 5% in China)** Dec. 2022

Honorable Mention in Mathematical Contest in Modeling **(Top 10% around the world)** Feb. 2023

3V3 National Second Prize in RoboMaster University League April. 2023

Other Projects

Industrial Showroom Setup| *Member* Fall, 2023
In charge of display systems for Tsinghua University's showroom, enabling remote control of autonomous vehicles, resulting in improvement in system efficiency through advanced **Unity and ROS communications**.

iFLYTEK 10.24 Industrial Big Model Launch Event| *Member* Fall, 2023
Led debugging and optimization of robotic arm **hardware drivers** for the iFLYTEK 10.24 launch, contributing to a successful product demonstration.

Development of Robotic Arm & Intelligent Vehicle System| *Individual Project* Fall, 2023
Designed and constructed a fully functional **robotic arm** mounted on a four-wheel vehicle for a Robotics Seminar course project, demonstrating innovative engineering solutions and automation capabilities.

Cognitive Behavioural Prediction| *Leader* Fall, 2023
Led a Cognitive Neuroscience course project focusing on **cognitive behavioral prediction**, developing multi-modal fusion algorithms that predict IQ patterns, detailed documentation available on Github.

Autonomous Driving| *Member* Summer, 2023
Constructed an autonomous robot capable of complex environment navigation for a summer project at Tsinghua University. Led the development and implementation of sophisticated **mapping and navigation** algorithms.

Volunteer Activities

Volunteer Academic Q&A Counseling| *Member* 2022 – 2023
Served as an Academic Peer Mentor, offering vital academic counseling for more than 1.5 years, significantly improving the younger students' understanding of complex subjects.

Covid-19 Hospital Volunteering| *Member* July, 2022
Volunteered at a local hospital during the COVID-19 epidemic, providing essential guidance and support to over 200 patients, facilitating efficient healthcare delivery and enhancing patient satisfaction during critical times.

Skills and Self-evaluation

Proficient in English, evidenced by a TOEFL score of 106(R28, L30, S23, W25) tested on Sep 21, 2024.

Expert in programming with extensive experience in CUDA, C/C++, and Python.

Abundant Experience in Deep Learning, leveraging Pytorch for innovative projects and familiar with development tools including Git/GitHub, Ubuntu, VS Code, CLion/PyCharm.

Good at Mathematics and Physics.
Good Mathematic Grades: Linear Algebra(95), Advanced Algebra(96), Mathematical Analysis(96).
Good Physic Grades: Mechanics(99), Thermal Physics(97), Electromagnetics(92), Optics(96), Atomic Physics(97). All courses are at the **most advanced** level.