XIANG ZHENG

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SUMMARY

Passionate about leveraging artificial intelligence for scientific simulation, control, and discovery. Currently, a research intern at BAIR (Berkeley Artificial Intelligence Research Lab), collaborating with UC Berkeley and Lawrence Berkeley National Laboratory to address challenges in physics-informed neural networks. Possess a year of experience as a research intern on a multi-resolution diffusion project, enhancing high-resolution simulation and control of PDE functions. Co-led a neural presentation project aimed at identifying orthogonal patterns in fluid dynamics. Demonstrates strong problem-solving skills, collaborative teamwork, and expertise in AI-driven scientific research.

EDUCATION

University of California, Berkeley 2024.8-Present
EECS exchange student
South China University of Technology 2021.9-2025.7
(Top 20 University in China)
Major: AI (Artificial Intelligence) **GPA:** 3.87/4.00 **Rank: 3/80 (3.75%)**
Major Courses: Calculus I/II(93,4.0/4.0) | Linear Algebra(92, 4.0/4.0) | Probability(90,4.0/4.0) | Machine Learning(93,4.0/4.0) | Artificial Intelligence and 3D Vision(97,4.0/4.0) | Signal and System(98,4.0/4.0) | digital image processing(98,4.0/4.0) | C++ Programming (94,4.0/4.0) | Big data and data mining programming(95,4.0/4.0)

PUBLICATIONS

1. Second Author. Wavelet Diffusion Neural Operator. Under reviewd at *Conference on Neural Information Processing Systems 2024*; rebuttal score: 2477.
2. Third Author. Raise2Auth: A Dual-Factor, Adaptive Gesture Authentication System for Enhanced Mobile Security. Under reviewd at *IEEE Internet of Things Journal*.
3. Fifth Author. Closed-loop Diffusion Control of Complex Physical Systems. Available at *arxiv*.

RESEARCH EXPERIENCE

Research Intern Sept, 2024 - Present
Berkeley Artificial Intelligence Research Lab, University of California, Berkeley Berkeley, CA
Supervised by Professor Michael Mahoney and Dr. Amir Gholami with Physic-Informed Neural Network project:

- Developed the PDE dataset with py-pde.

Research Intern July, 2023 - June, 2024
AI for Scientific Simulation and Discovery Lab, Westlake University Hangzhou, China
Supervised by Professor Tailin Wu with the Multi-resolution diffusion project: 2024.2 - 2024.6

- Developed the first 2D incompressible fluid dataset, establishing a key benchmark for studying indirect control in physical systems.
- Innovatively developed a method for calculating the smoke volume in each bucket.
- Simulated density and velocity fields using diffused control sequences and initial density fields.
- Reproduced SAC and Oformer baselines using PyTorch.
- Enhanced skills: Python, Phiflow, Pytorch
- Outcome: NeurIPS 2024, Second Author (under review)

Supervised by Professor Tailin Wu with the Neural Presentation Project: 2023.7 - 2024.2

- Designed and experimented with models including Dynamic-SVD, Basis-Boost, PINN-LEPDE, and Latent-Koopman.

- Enhanced skills: Python, Pytorch, Network Building and Design
- Outcome: Improved algorithm accuracy by 20%.

SRP Project Leader Sept, 2022 - July, 2023
Cyber-Med Laboratory, South China University of Technology Guangzhou, China
Supervised by Professor Zhanpeng Jin and Yang Gao with the Biometric recognition in Human-Computper Interaction project:

- Reproduced the non-open-source DTW baseline using PyTorch.
- Collected 3D skeletal keypoint data using C++ and conducted robotic arm imitation attack experiments with MATLAB and Kortex API.
- Enhanced skills: Python, Pytorch, C++, Matlab, Dataset Building
- Outcome: IEEE Internet of Things Journal 2024 (IF=10.6), Third author (under review); A Chinese Patent

PROJECTS

The Tencent Rhino Open Source Talent Development Program Sep, 2024 - Present

- Funded by Tencent
- Developing a low-code platform using OMI framwork
- Enhanced skills: Front-End Building, JavaScript

National-Level innovation and entrepreneurship project July, 2023 - May, 2024

- Funded by Chinese Central Government Finances
- Developed a poster auto-generation website using the Collage-Diffusion model.
- Enhanced skills: Python, Pytorch
- Outcome: One Software Copyright.

Provincial-Key-Level innovation and entrepreneurship project July, 2023 - May, 2024

- Funded by Chinese Central Government Finances
- Developed a intelligent elevator system based on gesture recognition
- Enhanced skills: Python, Pytorch
- Outcome: One Software Copyright.

COMPETITION

2023 **Meritorious Winner** , Mathematical Contest in Modeling (MCM/ICM) SIAM, USA
2023 **Silver Award** , International Genetically Engineered Machine Competition (IGEM) MIT, USA
2023 **First Prize** , Asia and Pacific Mathematical Contest in Modeling (APMCM) CSIG, Asia

HONORS AND FELLOWSHIPS

2024 **UC Berkeley BGA Scholarship (< 2.5%)** , UC Berkeley Berkeley, United States
2023 **First Prize Hongping Changqing Scholarship** , SCUT Guangzhou, China
2022 **First Prize Academic Scholarship (5 %)** , SCUT Guangzhou, China
2023 **Second Prize School Scholarship** , SCUT Guangzhou, China
2022/2023 **Outstanding Students of the University** , SCUT Guangzhou, China

SKILLS

Programming Python (Pytorch), C++, Java, Matlab, JavaScript
Paper Writing LaTeX, PPT