Zhizheng Zhao

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EDUCATION

Peking University Expected 07/2026
School of Physics

- Overall GPA: **83.7**/100
- Research interests: ***Reinforcement Learning, Computer Vision, AI4Science***
- Programming languages: Python, MATLAB, CERN ROOT, LaTeX
- Awards and Honors:
  - Outstanding Research Award 09/2025
  - Alishan Scholarship 09/2025
  - National Endeavor Scholarship 09/2025

PUBLICATIONS

- Let's Verify and Reinforce Image Generation Step by Step. **CVPR 2025 (accepted)**.

RESEARCH EXPERIENCE

Development & Data Analysis of a Resistive Plate Counter (RPC) 03/2024 – 07/2024
with Prof. Qite Li (Peking University)

- Detector Development.
- Developed and optimized signal processing algorithms to enhance the accuracy and precision of detector data analysis.

Chain-of-Thought Reasoning for Advanced Image Generation 09/2024 – 01/2025
with Dr. Renrui Zhang (CUHK)

- Applied CoT to autoregressive image generation with test-time compute and DPO.
- Proposed Potential Assessment Reward Model to score intermediate steps by integrating existing reward models.
- Enhanced Show-o, achieving +24% on GenEval and +15% vs. Stable Diffusion 3, **accepted by CVPR 2025.**

GRPO Optimization under Sampling–Reward Distribution Mismatch 03/2025 – 07/2025
with Prof. Minjia Zhang (UIUC)

- Identified that for hard prompts, the sampling distribution of responses can diverge strongly from the task's reward distribution, leaving a dataset subset effectively untrainable.
- Developing two fixes for GRPO: sampling-probability diffusion and "seeding".

Improving Crystal Structure Prediction via Niggli Reduction 07/2025 – 09/2025
with Prof. Shengchao Liu (CUHK)

- Noted that conventional models memorize arbitrary crystal representations rather than physical equivalence.
- Applied Niggli reduction to both predictions and labels, so symmetry-equivalent structures yield zero loss.
- Enabled learning of physically consistent representations instead of dataset-specific memorization.

SELECTED COURSE PROJECT

Neural Network Solver for Complex Electric Field Distributions 01/2025
Course: Physics and Artificial Intelligence, supervised by Prof. Yanqing Ma

- Implemented a neural network with physics-informed loss functions (boundary conditions + PDE residuals) to approximate solutions of electric field distributions.

ACADEMIC VISITS

Visiting Student, Shenzhen International Quantum Academy 01/2025 – 02/2025

- Participated in seminars on quantum optics and quantum information.
- Collaborated with graduate students in lab-based discussions on quantum measurement.
- Gained exposure to frontier topics in quantum physics through workshops and invited talks.

EXTRACURRICULAR ACTIVITIES

- Peking University Cooking Society — Core Member 09/2022 – present
- Dormitory Committee — Member 02/2023 – present
- Peking University Youth Astronomy Society — Member 09/2023 – present