Zhizheng Zhao

School of Physics,
Peking University, Beijing 100871, P. R. China
Tel: 86-18810773205 | E-mail: zhizhengzhao@outlook.com

EDUCATIONAL BACKGROUND

Peking University Beijing, China 09/2022 – present

- ***Major in Physics*:** Grade: **83.4**/100.0
  (Consistent improvement from 82.1 in the first semester to 89.3 in the most recent semester; semester Grades: 82.1, 83.6, 79.1, 86.5, 89.3)
- **Advanced Courses:**
  - Introduction to Earthquakes (98),
  - Introduction to Atmospheric Sciences (97),
  - Thermodynamics (90),
  - Data Structures and Algorithms (89),
  - Optics (89),
  - Fundamentals of Modern Electronic Circuits and Experiments (88),
  - Fluid Mechanics (85),

REASEARCH INTEREST

- **Chain-of-Thought Reasoning for Enhancing AI Model Performance.**
- **Detector development.**
- **Reinforcement Learning.**

REASEARCH EXPERIENCES

Research on Chain-of-Thought Reasoning for Advanced Image Generation. 09/2024–01/2025
(Collaborator: Dr. Renrui Zhang, The Chinese University of Hong Kong)

- Conducted research on applying Chain-of-Thought (CoT) reasoning to autoregressive image generation, focusing on test-time computation and Direct Preference Optimization (DPO).
- Proposed and implemented the Potential Assessment Reward Model (PARM), which adaptively evaluates each generation step by integrating existing reward models.
- Enhanced the Show-o model, achieving a +24% improvement on GenEval and surpassing Stable Diffusion 3 by +15%.
- **Progress:** Accepted by CVPR 2025.

Data efficiency in reinforcement learning, Reinforcement learning on Hybrid SSM-Transformer model 03/2025–present
(Collaborator: Prof. Minjia Zhang, University of Illinois at Urbana-Champaign)

- Different data have different learning efficiencies, and some data have no gradient contribution in the later stages of a long training cycle. New reinforcement learning methods are being developed based on this..
- **Progress:** Under study.

Development and data analysis of resistive plate counter 05/2024–present
(Supervisor: Prof. Qite Li, Peking University)

- Detector Development.
- Developed and optimized signal processing algorithms to enhance the accuracy and precision of detector data analysis.
- Using reinforcement learning to replace traditional algorithms, reduce the signals required for particle determination, and increase detection efficiency and accuracy.
- **Progress:** Under study.

PROFESSIONAL SKILLS

Programming and Software: Python / MATLAB / Mathematica / CERN ROOT / LATEX
Languages: Currently in preparation

EXPERIENCE

- **Shenzhen International Quantum Academy** Visiting Student

HOBBIES

- **Anime**
- **Computer Games**