Jiatong Zhao

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Education

Shanghai Jiao Tong University , Zhiyuan Honer College
Physics (Zhiyuan Honors Program) Sep 2023 – Jun 2027

- **GPA**: 3.91/4.3, **Average Core:** 90.2/100, **Ranked 1st out of 30 in major comprehensive evaluation**
- **Major Courses:** Linear Algebra **(Honor)**, Mathematical Analysis **(Honor)**, Probability and Mathematical Statistics **(Honor),** Machine Learning **(Honor),** Data Structure, Programming and Computational Physics Basics**(Honor)**
- **Honors:** Outstanding Communist Youth League Member, Category A Undergraduate Scholarship, Zhiyuan Honor Scholarship, Class of 2009 School of Electronic Information Alumni Scholarship

Research Experience

Reinforcement Learning Framework for diffusion model with generalized reasoning ability
July 2025 – Now

- Advisor: Jie fu, Shanghai AILab
- Proposed a RL framework for block-diffusion architecture
- Try to achieve a Turing-complete AR-diffusion architecture's latent Chain-of-Thought (CoT) purely through RL

Formal Language-Enhanced Mathematical Reasoning in Large Language Models
Mar 2025 – May 2025

- Advisor: Prof. Junchi Yan, Shanghai Jiao Tong University
- Propose a hierarchical benchmark about the **reasoning performance of large language models in mathematical contexts,** focusing on geometry and the evaluation of false positives

Optimization Analysis of Particle Injectors Based on Deep Learning
Aug 2024 – Sep 2024

- Summer Research Project, **Zhangjiang National Laboratory**
- Advisor: Prof. Houjun Qian, Shanghai Institute of Applied Physics, Chinese Academy of Sciences
- The goal is to optimize the various experimental parameters and operational sequence of the particle injector, achieving a breakthrough that reduces the time cost from the hourly scale to the minute scale.

Academic papers

- Yuan Feng, Yue Yang, Xiaohan He, **Jiatong Zhao**, &, Renqiu Xia, Bo Zhang, Junchi Yan, "GeoBench: Rethinking Multimodal Geometric Problem-Solving via Hierarchical Evaluation", The Fourteenth International Conference on Learning Representations (under review)

Research Intersts

I mainly focus on how to enable models to emergently develop **generalized reasoning abilities at a sustainale scale with RL**. My research interests are listed below, and you can see my homepage for a detailed version.

1. Emergent Reasoning Ability:
   a) Investigating **whether a model's exploration and reasoning capabilities can be maximized purely through RL**, without relying on pre-defined structures or supervised fine-tuning.
   b) Explore whether the current CoT framework represents true emergent reasoning, and if pure RL can drive the emergence of **latent Chain-of-Thought (CoT) reasoning**
   c) A more efficient and computationally cheaper **RL algorithm for Implicit Process Reward**, which can address the issue of sparse rewards.
2. AI + formal verifier system:

I am also interested in building scalable solutions where AI systems can autonomously verify their own reasoning and results through interaction with a verifier system(**PLVR**), which might be **a potential pathway to achieving scalability**.