

Yunzhan LI

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Education

- Department of Physics, Tsinghua University** Beijing, China
 - Undergraduate (Tsinghua Xuetaang Physics Program); GPA: 4.0/4.0* *August 2023 - present*
Courses: Advanced Calculus (A), Deep reinforcement learning (A), Quantum Mechanics(1) (A+), Seminar on Quantum Mechanics(A+), Selected Topics in Computational Quantum Physics (Graduate Course, A+), Selected Topics in Experimental Condensed Matter Physics (Graduate Course, A+)
- The High School Affiliated to Renmin University of China** Beijing, China
August 2017 - July 2023

Honors and Awards

- Gold Medal**, The 39th Chinese Physics Olympiad Finals - November, 2022
- Gold Medal**, Romanian Master of Physics 2023 - April, 2023
- First Prize**, 15th National College Students Mathematical Competition - December, 2023
- Second Prize Scholarship for New Admits, Tsinghua University - December, 2023
- Honorable Mention**, 2025 Mathematical Contest in Modeling - May, 2025
- Scholarship for Outstanding Students (twice)** - November, 2024; November, 2025
- Outstanding Student Cadre**, Tsinghua University - October, 2025

Research Experience

- Deep reinforcement learning and generative models** Beijing, China
 - Institute for Interdisciplinary Information Sciences; Tutor: Longbo Huang* *November 2025 - present*
 - Systematically studied basics of deep reinforcement learning algorithms and diffusion models.
 - Proposed One MARL framework via **one-step F**low models (**OMAF**) that combines expressive generative policies with efficient one-step action generation.
 - Work published as a preprint on arXiv (2610.01882), currently under review at ICLR 2027.
- Optical Properties of Condensed Matter Systems** Beijing, China
 - Research Assistant, Department of Physics; Tutor: Luyi Yang* *September 2025 - January 2026*
 - Gained hands-on experience with optical techniques (MOKE, SHG) and aligned SHG setup.
 - Learned material preparation and transfer methods; fabricated 2D materials including NbSe₂.
- The Curse of Rarity (CoR) in artificial intelligence** Beijing, China
 - Research Assistant, Department of Automation; Tutor: Shuo Feng* *October 2025 - November 2025*
 - Reviewed the group's existing results on the Curse of Rarity (CoR) in artificial intelligence, including its rigorous definitions and related optimization algorithms, and examined the proof steps in detail, identifying certain derivations that lacked full rigor.
- Tensor Networks and its applications in quantum computing** Beijing, China
 - Research Assistant, Department of Physics; Tutor: Shuo Yang* *September 2024 - September 2025*
 - Studied and reproduced fundamental tensor network algorithms (vMPS, iTEBD).
 - Investigated entanglement entropy properties of tensor networks.
 - Used LPDO as trial solutions to obtain stable solutions of open-system evolution equations.

Skills Summary

- Programming tools:** Python, C++, Mathematica, R
- Languages:** Mandarin (native), English (fluent)
- Sports:** Tennis, Football, Curling

Student Works

- Vice President of Student Union, Department of Physics** March 2025 - March 2026