

Zunzhe Zhang

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EDUCATION

Tsinghua University, Institute for Interdisciplinary Information Sciences
B.S. Candidate in Computer Science, expected 2027

Beijing, China

GPA: 3.73 / 4.0

Selected Coursework: Deep Learning, Deep Reinforcement Learning, Algorithm Design, Linear Algebra, Calculus, Probability and Statistics, Artificial Intelligence: Principles and Technology.

SKILLS

- **Programming Languages:** Python, C++, C, Verilog
- **Machine Learning:** PyTorch, deep learning, reinforcement learning, flow & diffusion policies
- **VLA & LLM:** Vision-Language-Action models, LLM agents, agent design
- **Tools & Libraries:** NumPy, Genesis, CleanDiffuser, PyTorch3D, OpenGL, RPG Maker, L^AT_EX

PUBLICATIONS

- **Zunzhe Zhang***, Runhan Huang*, Yicheng Liu, Shaoting Zhu, Linzhan Mou, Hang Zhao. *Generative Control as Optimization: Time Unconditional Flow Matching for Adaptive and Robust Robotic Control*. ICLR Workshops (LLA & ReALM-GEN), 2026. *Equal contribution.
- Hongxin Zhang, Zheyuan Zhang, Zeyuan Wang, **Zunzhe Zhang**, Lixing Fang, Qinhong Zhou, Chuang Gan. *Ella: Embodied Social Agents with Lifelong Memory*. ICML MAS Workshop, 2025.
- Qinhong Zhou*, Hongxin Zhang*, Xiangye Lin*, Zheyuan Zhang*, Yutian Chen, Wenjun Liu, **Zunzhe Zhang**, et al. *Virtual Community: An Open World for Humans, Robots, and Society*. ICLR, 2026.

SCHOLASTIC ACHIEVEMENTS

- **Gold Medal**, National Olympiad in Informatics, China 2021
- **International Gold Medal**, Asia-Pacific Informatics Olympiad 2021
- **Gold Medal**, CCPC Guilin Regional Contest 2022
- **School Scholarship**, Tsinghua University 2023
- **Freshman Scholarship**, Tsinghua University 2022

RESEARCH & INTERNSHIP EXPERIENCE

- **VLA Algorithm Intern, Galaxea Inc.** Nov. 2025 – May 2026
 - Worked on algorithmic improvements for Vision-Language-Action foundation models, focusing on robust continuous action generation for embodied control.
 - Developed *GeCO*, a time-unconditional flow-matching framework that reformulates VLA action generation as iterative optimization over a stationary velocity field.
 - Designed adaptive inference mechanisms based on convergence-aware residual norms, enabling the model to exit early for simple states and refine longer for contact-rich or semantically ambiguous states.
 - Integrated *GeCO* as a plug-and-play replacement for flow-matching action heads in π_0 -series VLA models while preserving the vision-language backbone and robot-control interface.
 - Evaluated *GeCO* on LIBERO, RoboTwin 2.0, VLABench, and real-world Galaxea R1 Lite tasks; improved robustness and success-latency trade-offs in both simulation and physical deployment.
- **Embodied AI Intern, UMass Amherst** Feb. 2025 – Aug. 2025
 - Worked with Prof. Chuang Gan on LLM-based embodied agents and interactive multi-agent simulation environments.
 - Contributed to the development and evaluation of *ELLA*, an efficient large language agent architecture for embodied AI tasks.

- Implemented agent behavior modules for the *Virtual Community* project, supporting autonomous decision-making and interaction in large-scale simulated environments.
- Supported experiments on agent planning, instruction following, and social interaction, connecting language-model reasoning with embodied task execution.

PROJECTS

- **QDGS: 3D Scene Reconstruction with High-Dimensional Surface Primitives** *Sep. 2024 – Dec. 2024*
 - Extended the 2D Gaussian Splatting framework by replacing planar primitives with high-dimensional curved surface primitives.
 - Designed geometric routines for ray-surface intersection, differentiation, and bounding box computation to support advanced surface representations.
 - Improved reconstruction error from 0.78 to 0.72 while using fewer primitives, demonstrating better geometric representation efficiency.
- **LLM-Enhanced RPG Game with Context-Aware NPC Agents** *Mar. 2024 – Jun. 2024*
 - Built an LLM-driven RPG prototype using GPT-4o and RPG Maker to enable context-aware NPC dialogue generation.
 - Designed prompt templates and game-state interfaces that allowed NPCs to condition responses on player progress, dialogue history, and task context.
 - Explored LLM-based agent behavior design, including adaptive response generation and interactive narrative control.
- **CyberDog 2 Dribbling with Deep Reinforcement Learning** *Mar. 2024 – Jun. 2024*
 - Trained quadrupedal and bipedal dribbling policies for CyberDog 2 using reinforcement learning.
 - Implemented a vision-based goalkeeper module and integrated a complete 2v2 match environment.
 - Achieved 2nd place out of 16 teams in a university robotics competition.
- **Text-to-3D Object Generation with TetSphere Optimization** *Mar. 2024 – Jun. 2024*
 - Implemented a text-to-3D generation pipeline using TetSphere for geometric representation and PyTorch3D for differentiable rendering.
 - Optimized geometry and texture with Score Distillation Sampling, generating 3D assets from natural-language prompts.
 - Gained experience with generative modeling, differentiable optimization, and multimodal alignment between text prompts and visual geometry.