Zhe-Han Mo

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Education

Zhili College, Tsinghua University Aug 2023 – Present
Bachelor of Science in Mathematics and Physics *Beijing, China*

- GPA: **3.9/4.0**, Rank: **1/27**
- Incoming Ph.D. in Computer Science and Technology, advised by Prof. Shi-Min Hu (expected Sep 2027)

Research Interests

Embodied Intelligence

Physics-Based Simulation

Research Experience

Undergraduate Research in Embodied Intelligence Apr 2025 – Present
Supervised by Prof. Shi-Min Hu

- First-authored **FreeAct**, a framework that grounds discrete latent actions in camera-frame end-effector kinematics to adapt VLAs from off-the-shelf generated videos. Improved target-domain success from 2% to 57% using generated videos, and to 74% via MLLM-guided self-evolution, with no target-domain expert demonstrations; accepted to *NeurIPS 2026*.
- First-authored a data-centric survey on scaling generalist policies for embodied intelligence; to appear in *CVMJ*.

Undergraduate Research in Physics-Based Simulation Oct 2024 – May 2025
Supervised by Prof. Shi-Min Hu

- Independently developed a GPU-parallel Implicit Incompressible SPH (IISPH) fluid simulator from scratch in NVIDIA Warp, implementing both the solver and parallel kernels; open-sourced at github.com/Mo-ZheHan/WarpSPH.
- Contributed to a fast Galerkin multigrid method for unstructured meshes, published in *ACM TOG* (3rd author).

Research Papers

1. **Zhe-Han Mo**, Jia-Ning Li, Jiaxi Song, Meng-Hao Guo, and Shi-Min Hu. FreeAct: Demonstration-Free Robot Adaptation via Action-Grounded Generated Videos. *Advances in Neural Information Processing Systems (NeurIPS)*, 2026. [Paper] [Project Page]

2. **Zhe-Han Mo**, Xuanyu Chu, Jiaxi Song, Yiqing Shen, Jia-Ning Li, Zexiang Xu, Xuanlin Li, Meng-Hao Guo, Li Yi, Hao Su, and Shi-Min Hu. Scaling Generalist Policies for Embodied Intelligence: A Data-Centric Survey. To appear in *Computational Visual Media (CVMJ)*.

3. Meng-Hao Guo, **Zhe-Han Mo**, Jia-Jun Wang, Yi Zhang, Kejin Wang, Yi-Xuan Deng, Jia-Peng Zhang, Yongming Rao, and Shi-Min Hu. Transferring the Intelligence of VLMs to Robotic Control. *arXiv preprint arXiv:2609.22966*, 2026. [Paper] [Project Page]

4. Meng-Hao Guo*, Yi Zhang*, **Zhe-Han Mo***, Han-Zheng Wang*, Jia-Jun Wang*, Xin-Sheng Chen*, Jiaxi Song, Yi-Xuan Deng, Jia-Ning Li, Xuanyu Chu, Hengrui Zhang, Huan-ang Gao, Yongming Rao, and Shi-Min Hu. A Glimpse of Training VLMs as Foundation Models for Robotic Manipulation. *Preprint*, 2026. (*Core contributors) [Project Page]

5. Geng-Chen Cao, Bo Ren, Yanrui Xu, **Zhe-Han Mo**, and Shi-Min Hu. End-to-End Differentiable Smoothed Particle Hydrodynamics for Fluid–Rigid Optimization with Gradient Stabilization. *ACM Transactions on Graphics (TOG)*, 2026. [Paper]

6. Jia-Ming Lu, Tailing Yuan, **Zhe-Han Mo**, and Shi-Min Hu. Fast Galerkin Multigrid Method for Unstructured Meshes. *ACM Transactions on Graphics (TOG)* (Proc. SIGGRAPH Asia), 2025. [Paper]

7. Meng-Hao Guo, Xuanyu Chu, Qianrui Yang, **Zhe-Han Mo**, Yiqing Shen, Pei-lin Li, Xinjie Lin, Jinnian Zhang, Xin-Sheng Chen, Yi Zhang, Kiyohiro Nakayama, Zhengyang Geng, Houwen Peng, Han Hu, and Shi-Min Hu. RBench-V: A Primary Assessment for Visual Reasoning Models with Multimodal Outputs. *Advances in Neural Information Processing Systems (NeurIPS)*, 2025. [Paper] [Project Page]

Scholarships and Awards

Dean's Special Award, Zhili College, Tsinghua University	Nov 2026
National Scholarship, Ministry of Education of China	Oct 2026
Research Excellence Scholarship, Tsinghua University	Oct 2026
Dean's Nomination Award, Zhili College, Tsinghua University	Dec 2025
Comprehensive Excellence Scholarship, Tsinghua University	Oct 2025
Research Excellence Scholarship, Tsinghua University	Oct 2025
Best Project Honorable Mention, Physics-Based Simulation (IIIS), Tsinghua University	Jun 2025
Academic Excellence Scholarship, Tsinghua University	Oct 2024
Silver Medal, 39th Chinese Physics Olympiad	Nov 2022

Selected Coursework

Interactive AI	**A**$^+$
Introduction to High Performance Computing	**A**
Physics-Based Simulation	**A**
Fundamentals of Computer Graphics	**A**
Programming Fundamentals	**A**
Electrical Engineering and Applied Electronics	**A**
Big Data in Experimental Physics (1)	**A**
Big Data in Experimental Physics (2)	**A**