Tianshan Zhang

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Bio

As an **undergraduate researcher**, I had a paper accepted for publication in the **International Journal of Computer Vision (IJCV)**. I am also a **Chinese Mathematical Olympiad (CMO) silver medalist**. My earlier research involved generative modeling at the Institute of Automation, Chinese Academy of Sciences (CASIA), and mathematical reasoning for LLMs at **Zhipu AI**. I currently conduct research at **Peking University**, advised by Prof. Hao Tang, and **AI^2 Robotics**, focusing on articulated 3D generation, dexterous interaction, humanoid control, and long-horizon mobile manipulation. My broader interests center on generative modeling and reinforcement learning, particularly how VLA models and world models can support physical understanding and long-horizon decision-making.

Publications

[1] **DragMesh: Interactive 3D Generation Made Easy**
Tianshan Zhang*, Zeyu Zhang*, Hao Tang
International Journal of Computer Vision (IJCV), *2026*
Accepted

arXiv

Research Experience

Peking University Oct. 2025 – Present
Research Intern | Advised by Prof. Hao Tang

- **Interactive 3D generation [1]:** Developed DragMesh to turn static meshes into controllable articulated objects with kinematically valid motion and 85 FPS local rendering via 3D Gaussian Splatting.
- **Dexterous manipulation [2]:** Developed PICA, a contact-aware reinforcement learning framework for articulated hand–object interaction. Achieved a 56% mean success rate under 4× damping across seven GAPartNet objects, compared with 27% for state-only PPO.
- **Neural style transfer [3]:** Authored a survey spanning images, video, and 3D scenes, organizing methods by how style is represented and applied.
- **Whole-body humanoid interaction:** Developed a motion-retargeting and physics-based control pipeline for Unitree G1, integrating SMPL-X IK, UMR, and SONIC.
- **Long-horizon mobile manipulation:** Developed a stage-wise navigation–manipulation pipeline for AlphaBot 2 using $\pi_{0.5}$-based VLA policies. Investigating online reinforcement learning and multi-fidelity rollout scaling to improve end-to-end task success.

AI^2 Robotics Oct. 2026 – Present
Research Intern | Embodied Intelligence

- Developing real-robot deployment and evaluation pipelines for AlphaBot 2, integrating VLA-based navigation and manipulation policies with hardware execution for long-horizon tasks.

Zhipu AI Jul. 2025 – Feb. 2026
Research Intern | Mathematical Reasoning for LLMs

- Wrote solutions to competition-level mathematics problems and reviewed model reasoning traces to support reinforcement learning for LLM mathematical reasoning.

Institute of Automation, Chinese Academy of Sciences (CASIA) Mar. 2024 – Sep. 2025
Research Intern | Advised by Prof. Xinwen Hou

- Studied adversarial generative modeling and cross-domain image translation for architectural design visualization.

Education

Dalian Jiaotong University, Dalian, China Sep. 2022 – Jun. 2027 (expected)
B.Eng. in Materials Forming and Control Engineering; double degree in Computer Science

Honors, Awards & Research Funding

- National Third Prize, China Collegiate Computer Design Competition, 2026.
- **Bronze Medals, ICPC Asia Regional Contest and Northeast China Invitational Contest**, 2025.
- **Outstanding Winner, Mathematical / Interdisciplinary Contest in Modeling (MCM/ICM)**, 2024.
- National Second Prize, China Undergraduate Mathematical Contest in Modeling (CUMCM), 2024.
- National Third Prize, China Computer Games Championship, 2024.
- **Silver Medal, Chinese Mathematical Olympiad (CMO)**, 2021.
- Provincial First Prize, Chinese Chemistry Olympiad (CChO), 2020.

Funded undergraduate research: Principal investigator on two national-level projects (2023–2025) and core member on three additional projects: two national-level and one provincial-level (2023–2026). All five projects focused on multimodal fusion and were completed under the National College Students' Innovation and Entrepreneurship Training Program.

Manuscripts Under Review

[2] **DragMesh-2: Physically Plausible Dexterous Hand-Object Interaction with Articulated Objects**
Tianshan Zhang, Yijia Duan, Yanjun Li, Zeyu Zhang, Hao Tang
Under review arXiv

[3] **Style Transfer: A Decade Survey**
Tianshan Zhang, Sizhe Xu, Liuan Ding, Bingyu Chen, Hao Tang
Under review

Technical Skills

Programming	Python, C/C++, Java
ML & 3D	PyTorch, reinforcement learning, generative models, 3D Gaussian Splatting
Simulation	NVIDIA Isaac Sim, Isaac Lab, MuJoCo
Real robots	AI^2 Robotics AlphaBot 2, Unitree G1 humanoid
Languages	Chinese (native), English