

# SHENYUAN GAO

Ph.D. student at HKUST

Homepage: [github.com/Little-Podi](https://github.com/Little-Podi) ◇ Email: [sygao@connect.ust.hk](mailto:sygao@connect.ust.hk)

## RESEARCH INTEREST

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**Video World Models** for General-Purpose Robots  
**Self-Improvement** by Scaling Data and Compute

## PUBLICATION

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### DreamDojo: A Generalist Robot World Model from Large-Scale Human Videos

**Shenyuan Gao**<sup>†</sup>, William Liang<sup>†</sup>, Kaiyuan Zheng\*, Ayaan Malik\*, Seonghyeon Ye, Sihyun Yu, Wei-Cheng Tseng, Yuzhu Dong, Kaichun Mo, Chen-Hsuan Lin, Qianli Ma, Seungjun Nah, Loic Magne, Jiannan Xiang, Yuqi Xie, Ruijie Zheng, Dantong Niu, You Liang Tan, K.R. Zentner, George Kurian, Suneel Indupuru, Pooya Jannaty, Jinwei Gu, Jun Zhang, Jiten-dra Malik, Pieter Abbeel, Ming-Yu Liu, Yuke Zhu<sup>‡</sup>, Joel Jang<sup>‡</sup>, Linxi “Jim” Fan<sup>‡</sup>  
arXiv preprint 2026. [[Paper](#)] [[Web](#)] [[Code](#)]

### World Action Models are Zero-Shot Policies

Seonghyeon Ye<sup>†</sup>, Yunhao Ge\*, Kaiyuan Zheng\*, **Shenyuan Gao**\*, Sihyun Yu\*, George Kurian\*, Suneel Indupuru\*, You Liang Tan\*, Chuning Zhu, Jiannan Xiang, Ayaan Malik, Kyungmin Lee, William Liang, Nadun Ranawaka, Jiasheng Gu, Yinzhen Xu, Guanzhi Wang, Fengyuan Hu, Avnish Narayan, Johan Bjorck, Jing Wang, Gwanghyun Kim, Dantong Niu, Ruijie Zheng, Yuqi Xie, Jimmy Wu, Qi Wang, Ryan Julian, Danfei Xu, Yilun Du, Yevgen Chebotar, Scott Reed, Jan Kautz, Yuke Zhu<sup>†</sup>, Linxi “Jim” Fan<sup>†</sup>, Joel Jang<sup>†</sup>  
arXiv preprint 2026. [[Paper](#)] [[Web](#)] [[Code](#)]

### GRooT Nr.6: An Improved Open Foundation Model for Generalist Humanoid Robots

NVIDIA GEAR Team: Allison Azzolini, Johan Bjorck, Valts Blukis, Fernando Castañeda, Rahul Chand, Yan Chang, Danyi Chen, Nikita Cherniadev, Xingye Da, Runyu Ding, Shunjia Ding, Hassan Eslami, Linxi “Jim” Fan, Yu Fang, Max Fu, **Shenyuan Gao**, Yunhao Ge, Fengyuan Hu, Spencer Huang, Joel Jang, Xiaowei Jiang, Yunfan Jiang, Ryan Julian, Kaushil Kundalia, Jan Kautz, Zhiqi Li, Kevin Lin, Wei Liu, Runyu Lu, Zhengyi Luo, Loic Magne, Yunze Man, Ajay Mandlekar, Abhishek Mishra, Avnish Narayan, Connor Pederson, Nadun Ranawaka, Scott Reed, Sunil Srinivasa, You Liang Tan, Guanzhi Wang, Jing Wang, Qi Wang, Shihao Wang, Jimmy Wu, Yubo Wu, Yuqi Xie, Tianyi Xiong, Mengda Xu, Yinzhen Xu, Fu-En Yang, Seonghyeon Ye, Zhiding Yu, K.R. Zentner, Zhe Zhang, Kaiyuan Zheng, Ruijie Zheng, Yuke Zhu  
research release 2025. [[Web](#)] [[Code](#)]

### AdaWorld: Learning Adaptable World Models with Latent Actions

**Shenyuan Gao**, Siyuan Zhou, Yilun Du, Jun Zhang, Chuang Gan  
ICML 2025. [[Paper](#)] [[Web](#)] [[Code](#)]

### UniVLA: Learning to Act Anywhere with Task-Centric Latent Actions

Qingwen Bu\*, Yanting Yang\*, Jisong Cai\*, **Shenyuan Gao**, Guanghui Ren, Maoqing Yao, Ping Luo, Hongyang Li  
RSS 2025. [[Paper](#)] [[Code](#)]

### Vista: A Generalizable Driving World Model with High Fidelity and Versatile Controllability

**Shenyuan Gao**, Jiazhi Yang, Li Chen, Kashyap Chitta, Yihang Qiu, Andreas Geiger, Jun Zhang, Hongyang Li  
NeurIPS 2024. [[Paper](#)] [[Web](#)] [[Code](#)]

### Generalized Predictive Model for Autonomous Driving

Jiazhi Yang\*, **Shenyuan Gao**\*, Yihang Qiu\*, Li Chen, Tianyu Li, Bo Dai, Kashyap Chitta, Penghao Wu, Jia Zeng, Ping Luo, Jun Zhang, Andreas Geiger, Yu Qiao, Hongyang Li  
CVPR 2024 *Highlight* (**Top 2.8%**). [[Paper](#)] [[Dataset](#)]

### **ReSim: Reliable World Simulation for Autonomous Driving**

Jiazhi Yang, Kashyap Chitta, **Shenyuan Gao**, Long Chen, Yuqian Shao, Xiaosong Jia, Hongyang Li, Andreas Geiger, Xiangyu Yue, Li Chen

NeurIPS 2025 *Spotlight* (**Top 3.2%**). [\[Paper\]](#) [\[Web\]](#) [\[Code\]](#)

### **AgiBot World Colosseo: A Large-Scale Manipulation Platform for Scalable and Intelligent Embodied Systems**

AgiBot-World-Contributors: Qingwen Bu, Jisong Cai, Li Chen, Xiuqi Cui, Yan Ding, Siyuan Feng, **Shenyuan Gao**, Xindong He, Xu Huang, Shu Jiang, Yuxin Jiang, Cheng Jing, Hongyang Li, Jialu Li, Chiming Liu, Yi Liu, Yuxiang Lu, Jianlan Luo, Ping Luo, Yao Mu, Yuehan Niu, Yixuan Pan, Jiangmiao Pang, Yu Qiao, Guanghui Ren, Cheng Ruan, Jiaqi Shan, Yongjian Shen, Chengshi Shi, Mingkan Shi, Modi Shi, Chonghao Sima, Jianheng Song, Huijie Wang, Wenhao Wang, Dafeng Wei, Chengen Xie, Guo Xu, Junchi Yan, Cunbiao Yang, Lei Yang, Shukai Yang, Maoqing Yao, Jia Zeng, Chi Zhang, Qinglin Zhang, Bin Zhao, Chengyue Zhao, Jiaqi Zhao, Jianchao Zhu

IROS 2025 **Best Paper Award Finalist**. Hugging Face most popular robotics dataset. [\[Paper\]](#) [\[Web\]](#) [\[Code\]](#) [\[Dataset\]](#)

### **3D and 4D World Modeling: A Survey**

Lingdong Kong, Wesley Yang, Jianbiao Mei, Youquan Liu, Ao Liang, Dekai Zhu, Dongyue Lu, Wei Yin, Xiaotao Hu, Mingkai Jia, Junyuan Deng, Kaiwen Zhang, Yang Wu, Tianyi Yan, **Shenyuan Gao**, Song Wang, Linfeng Li, Liang Pan, Yong Liu, Jianke Zhu, Wei Tsang Ooi, Steven Hoi, Ziwei Liu

arXiv preprint 2025. [\[Paper\]](#) [\[Web\]](#) [\[List\]](#)

### **StaMo: Unsupervised Learning of Generalizable Robot Motion from Compact State Representation**

Mingyu Liu, Jiuhe Shu, Hui Chen, Zeju Li, Canyu Zhao, Jiange Yang, **Shenyuan Gao**, Hao Chen, Chunhua Shen

arXiv preprint 2025. [\[Paper\]](#) [\[Web\]](#) [\[Code\]](#)

### **Seeing Farther and Smarter: Value-Guided Multi-Path Reflection for VLM Policy Optimization**

Yanting Yang, **Shenyuan Gao**, Qingwen Bu, Li Chen, Dimitris Metaxas

ICRA 2026.

### **Generalized Relation Modeling for Transformer Tracking**

**Shenyuan Gao**, Chunluan Zhou, Jun Zhang

CVPR 2023. [\[Paper\]](#) [\[Code\]](#)

### **AiATrack: Attention in Attention for Transformer Visual Tracking**

**Shenyuan Gao**, Chunluan Zhou, Chao Ma, Xinggang Wang, Junsong Yuan

ECCV 2022. [\[Paper\]](#) [\[Code\]](#)

### **Content-Aware Masked Image Modeling Transformer for Stereo Image Compression**

Xinjie Zhang, **Shenyuan Gao**, Zhening Liu, Jiawei Shao, Xingtong Ge, Dailan He, Tongda Xu, Yan Wang, Jun Zhang

AAAI 2025. [\[Paper\]](#) [\[Code\]](#)

## **EXPERIENCE**

### **NVIDIA Research, GEAR**

*Research Scientist Intern*

May 2025 - present

*San Jose, California, United States*

- Working with Prof. [Yuke Zhu](#), [Jim Fan](#), [Scott Reed](#), and the [Cosmos](#) team.
- Working on scaling foundation models for humanoid robots.

### **University of Massachusetts Amherst**

*Visiting Scholar*

August 2024 - January 2025

*Amherst, Massachusetts, United States*

- Worked with Prof. [Chuang Gan](#), [Yilun Du](#).
- Worked on boosting the adaptability of video world models.

### **Shanghai AI Laboratory, OpenDriveLab**

*Research Intern*

April 2023 - May 2025

*Shanghai, China*

- Worked with Prof. [Hongyang Li](#).
- Worked on generalizable world models for autonomous driving.

### University at Buffalo

*Research Intern*

July 2021 - March 2022  
Buffalo, New York, United States

- Worked with Prof. [Junsong Yuan](#) (IEEE Fellow).
- Worked on object tracking. Proposed Attention in Attention.

### University of Hong Kong, MMLab

*HKU CS Summer Research Internship Programme*

July 2021 - August 2021  
Hong Kong SAR, China

- Worked with Prof. [Ping Luo](#).
- Worked on visual tracking and grounding. Successfully completed the project and received the full stipend award.

## EDUCATION

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### Hong Kong University of Science and Technology

2022 - 2026 (*expected*)

Ph.D. in Electronic and Computer Engineering

Advised by Prof. [Jun Zhang](#) (IEEE Fellow)

### Huazhong University of Science and Technology

2018 - 2022

B.Eng. in Electronic Information Engineering

GPA: 3.9/4.0

Advanced Class (Elite Program for Information Science, 30/400)

Rank: 1/30

## HONORS AND AWARDS

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|---|-----------|
| • XingQi Intern ( <i>the highest honor for research interns at Shanghai AI Laboratory</i> ) | 2024-2025 |
| • NeurIPS Top Reviewer  | 2024      |
| • Full Postgraduate Scholarship   | 2022-2026 |
| • RedBird PhD Scholarship   | 2022-2023 |
| • Outstanding Graduate  | 2022      |
| • Outstanding Graduation Thesis   | 2022      |
| • Outstanding Undergraduate in Terms of Academic Performance ( <b>Top 1%</b> )              | 2019      |
| • National Scholarship ( <b>Top 2%</b> )  | 2019      |

## ACADEMIC SERVICES

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### Workshop Organizer

CVPR 2025 Workshop on Scalable Robot Learning Systems

NeurIPS 2025 Workshop on Embodied World Models for Decision Making

### Conference Reviewer

ICLR, ICML, NeurIPS, RSS, SIGGRAPH, CVPR, ICCV, ECCV, WACV, AAAI, AISTATS, BMVC, ICPR

### Journal Reviewer

CSUR, TMLR, RAL, TPAMI, TMM, TCSVT, TASE, IMAVIS, PR, ASOC

### Teaching Assistant

COMP 5214: Advanced Deep Learning Architectures (graduate/undergraduate)

ELEC 3100: Signal Processing and Communications (undergraduate)

## MISC

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During my undergraduate, I built and launched a personal blog on my own.

So far, I have posted about 177,000 words of notes and already received 150,000 views from 100,000 unique visitors.

I am a crazy fan of One Piece manga (not its animation).

I own 14 T-shirts with One Piece characters, which allows me to change for 2 weeks without repeating.