SHENYUAN GAO

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RESEARCH INTEREST

Embodied AI Generalist Robots, Learning from Web Data
Generative AI Video World Models, Open-Ended Learning

PUBLICATION

GRooT N1.6: 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, Mingkang 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 CH 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]

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 May 2025 - present
Research Scientist Intern *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 August 2024 - January 2025
Visiting Scholar *Amherst, Massachusetts, United States*

- Worked with Prof. Chuang Gan, Yilun Du.
- Worked on boosting the adaptability of video world models.

Shanghai AI Laboratory, OpenDriveLab April 2023 - May 2025
Research Intern *Shanghai, China*

- Worked with Prof. Hongyang Li.
- Worked on generalizable world models for autonomous driving.

University at Buffalo July 2021 - March 2022
Research Intern *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 July 2021 - Augest 2021
HKU CS Summer Research Internship Programme *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

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

- XingQi Intern (*the highest honor for research interns at Shanghai AI Laboratory*) 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 (**Top 1%**) 2019
- National Scholarship (**Top 2%**) 2019

ACADEMIC SERVICES

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, CVPR, ICCV, ECCV, WACV, AAAI, AISTATS, ICPR

Journal Reviewer
TMLR, 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

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.