

# Xian Liu

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## WORKING EXPERIENCE

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- **Omni Model Pretrain Team, xAI** Seattle, United States  
Member of Technical Staff. Dec. 2025 - Now
- **Deep Imagination Research Group, NVIDIA Research** Santa Clara, United States  
Research Scientist. Jun. 2024 - Dec. 2025

## EDUCATION

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- **The Chinese University of Hong Kong** Hong Kong SAR, China  
Ph.D., Multimedia Laboratory (MMLab). Supervisor: Prof. Dahua Lin, Ziwei Liu, Xihui Liu 2021 – 2025
- **Zhejiang University** Hangzhou, China  
B.S. in Computer Science; Minor in ACEE, Chu Ko Chen Honored Class. Rank: 1/154 2017 – 2021

## RESEARCH INTERESTS

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GenAI Pre-/Post-training, Vision-Language Models, Visual Tokenizers, Image/Video Generative Models

## INDUSTRIAL RESEARCH

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- **Cosmos: World Foundation Model Platform for Physical AI**  
NVIDIA Cosmos Team: Xian Liu (Core Contributor). (**CES'25 Best of AI, Best Overall**)  
Contributions: Auto-Regressive Foundation Model Pre-Training & Post-Training.
- **Cosmos 2.5: Improved World Simulation with Video Foundation Models for Physical AI**  
NVIDIA Cosmos Team: Xian Liu (Core Contributor).  
Contributions: Data Processing Pipelines, Captioning, Long Video Generation, Evaluation, Transfer Post-training.
- **Cosmos Tokenizer: A Suite of Image and Video Neural Tokenizers**  
NVIDIA Cosmos Team: Xian Liu (Core Contributor).  
Contributions: Continuous/Discrete Image/Video Tokenizers.
- **Cosmos-Transfer: Conditional World Generation with Adaptive Multimodal Control**  
NVIDIA Cosmos Team: Xian Liu (Core Contributor).  
Contributions: Adaptive Multi-Modal Control, Data Processing Pipelines, Open-Source Repo.

## CONFERENCE PUBLICATIONS

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(\* denotes equal contribution)

- **HumanGaussian: Text-Driven 3D Human Generation with Gaussian Splatting**  
Xian Liu, Xiaohang Zhan, Jiaxiang Tang, Ying Shan, Gang Zeng, Dahua Lin, Xihui Liu, Ziwei Liu  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024. (**Highlight, Top 2.8%**)
- **HyperHuman: Hyper-Realistic Human Generation with Latent Structural Diffusion**  
Xian Liu, Jian Ren, Aliaksandr Siarohin, Ivan Skorokhodov, Yanyu Li, Dahua Lin, Xihui Liu, Ziwei Liu, Sergey Tulyakov  
International Conference on Learning Representations (**ICLR**), 2024. (**Review Score 6, 6, 8, 10, Top 1.6%**)
- **Semantic-Aware Implicit Neural Audio-Driven Video Portrait Generation**  
Xian Liu, Yinghao Xu, Qianyi Wu, Hang Zhou, Wayne Wu, Bolei Zhou  
European Conference on Computer Vision (**ECCV**), 2022. (**Oral Presentation, Top 2.7%**)
- **Audio-Driven Co-Speech Gesture Video Generation**  
Xian Liu, Qianyi Wu, Hang Zhou, Yuanqi Du, Wayne Wu, Dahua Lin, Ziwei Liu  
Advances in Neural Information Processing Systems (**NeurIPS**), 2022. (**Spotlight Presentation, Top 5%**)

- **Learning Hierarchical Cross-Modal Association for Co-Speech Gesture Generation**  
Xian Liu, Qianyi Wu, Hang Zhou, Yinghao Xu, Rui Qian, Xinyi Lin, Xiaowei Zhou, Wayne Wu, Bo Dai, Bolei Zhou  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022.
- **Taming Diffusion Models for Audio-Driven Co-Speech Gesture Generation**  
Xian Liu\*, Lingting Zhu\*, Xuanyu Liu, Rui Qian, Ziwei Liu, Lequan Yu  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.
- **Visual Sound Localization in the Wild by Cross-Modal Interference Erasing**  
Xian Liu\*, Rui Qian\*, Hang Zhou\*, Di Hu, Weiyao Lin, Ziwei Liu, Bolei Zhou, Xiaowei Zhou  
AAAI Conference on Artificial Intelligence (**AAAI**), 2022.
- **HMAR: Efficient Hierarchical Masked AutoRegressive Image Generation**  
Hermann Kumbong\*, Xian Liu\*, Tsung-Yi Lin, Xihui Liu, Ziwei Liu, Daniel Y. Fu, Ming-Yu Liu, Christopher Ré, David W. Romero  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025.
- **TC4D: Trajectory-Conditioned Text-to-4D Generation**  
Sherwin Bahmani\*, Xian Liu\*, Wang Yifan\*, Ivan Skorokhodov, Victor Rong, Ziwei Liu, Xihui Liu, Jeong Joon Park, Sergey Tulyakov, Gordon Wetzstein, Andrea Tagliasacchi, David Lindell  
European Conference on Computer Vision (**ECCV**), 2024.
- **3DTrajMaster: Mastering 3D Trajectory for Multi-Entity Motion in Video Generation**  
Xiao Fu, Xian Liu, Xintao Wang, Sida Peng, Menghan Xia, Xiaoyu Shi, Ziyang Yuan, Pengfei Wan, Di Zhang, Dahua Lin  
International Conference on Learning Representations (**ICLR**), 2025.
- **High-Quality Joint Image and Video Tokenization with Causal VAE**  
Dawit Mureja Argaw, Xian Liu, Qinsheng Zhang, Joon Son Chung, Ming-Yu Liu, Fitsum Reda  
International Conference on Learning Representations (**ICLR**), 2025.
- **TextCraftor: Your Text Encoder Can be Image Quality Controller**  
Yanyu Li, Xian Liu, Anil Kag, Ju Hu, Yerlan Idelbayev, Dhritiman Sagar, Yanzhi Wang, Sergey Tulyakov, Jian Ren  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024.
- **BrushNet: A Plug-and-Play Image Inpainting Model with Decomposed Dual-Branch Diffusion**  
Xuan Ju, Xian Liu, Xintao Wang, Yuxuan Bian, Ying Shan, Qiang Xu  
European Conference on Computer Vision (**ECCV**), 2024.
- **Object-Compositional Neural Implicit Surfaces**  
Qianyi Wu, Xian Liu, Yuedong Chen, Kejie Li, Chuanxia Zheng, Jianfei Cai, Jianmin Zheng  
European Conference on Computer Vision (**ECCV**), 2022.
- **Speculative Jacobi-Denoising Decoding for Accelerating Autoregressive Text-to-image Generation**  
Yao Teng, Fu-Yun Wang, Xian Liu, Zhekai Chen, Han Shi, Yu Wang, Zhenguo Li, Weiyang Liu, Difan Zou, Xihui Liu  
Advances in Neural Information Processing Systems (**NeurIPS**), 2025.
- **Accelerating Auto-regressive Text-to-Image Generation with Training-free Speculative Jacobi Decoding**  
Yao Teng, Han Shi, Xian Liu, Xuefei Ning, Guohao Dai, Yu Wang, Zhenguo Li, Xihui Liu  
International Conference on Learning Representations (**ICLR**), 2025.
- **T2V-CompBench: A Comprehensive Benchmark for Compositional Text-to-video Generation**  
Kaiyue Sun, Kaiyi Huang, Xian Liu, Yue Wu, Zihan Xu, Zhenguo Li, Xihui Liu  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025.
- **MonoHuman: Animatable Human Neural Field from Monocular Video**  
Zhengming Yu, Wei Cheng, Xian Liu, Wayne Wu, Kwan-Yee Lin  
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.
- **Semantics Meets Temporal Correspondence: Self-supervised Object-centric Learning in Videos**  
Rui Qian, Shuangrui Ding, Xian Liu, Dahua Lin  
International Conference on Computer Vision (**ICCV**), 2023.

- **Static and Dynamic Concepts for Self-supervised Video Representation Learning**  
Rui Qian, Shuangrui Ding, Xian Liu, Dahua Lin  
European Conference on Computer Vision (**ECCV**), 2022.
- **Motion Capture from Internet Videos**  
Junting Dong, Qing Shuai, Yuanqing Zhang, Xian Liu, Xiaowei Zhou, Hujun Bao  
European Conference on Computer Vision (**ECCV**), 2020. (**Oral Presentation, Top 2%**)
- **EdgeRunner: Auto-regressive Auto-encoder for Artistic Mesh Generation**  
Jiaxiang Tang, Zhaoshuo Li, Zekun Hao, Xian Liu, Gang Zeng, Ming-Yu Liu, Qinsheng Zhang  
International Conference on Learning Representations (**ICLR**), 2025.
- **MotionCraft: Crafting Whole-Body Motion with Plug-and-Play Multimodal Controls**  
Yuxuan Bian, Ailing Zeng, Xuan Ju, Xian Liu, Zhaoyang Zhang, Wei Liu, Qiang Xu  
AAAI Conference on Artificial Intelligence (**AAAI**), 2025.
- **E<sup>2</sup>GAN: Efficient Training of Efficient GANs for Image-to-Image Translation**  
Yifan Gong, Zheng Zhan, Qing Jin, Yanyu Li, Yerlan Idelbayev, Xian Liu, Andrey Zharkov, Kfir Aberman, Sergey Tulyakov, Yanzhi Wang, Jian Ren  
International Conference on Machine Learning (**ICML**), 2024.
- **Make-A-Volume: Leveraging Latent Diffusion Models for Cross-Modality 3D Brain MRI Synthesis**  
Lingting Zhu, Zeyue Xue, Zhenchao Jin, Xian Liu, Jingzhen He, Xuanyu Liu, Ziwei Liu, Lequan Yu  
Medical Image Computing and Computer Assisted Intervention (**MICCAI**), 2023.
- **DPoser-X: Diffusion Model as Robust 3D Whole-body Human Pose Prior**  
Junzhe Lu, Jing Lin, Hongkun Dou, Ailing Zeng, Yue Deng, Xian Liu, Zhongang Cai, Lei Yang, Yulun Zhang, Haoqian Wang, Ziwei Liu  
International Conference on Computer Vision (**ICCV**), 2025. (**Oral Presentation, Top 2%**)
- **Enhancing Self-supervised Video Representation Learning via Multi-level Feature Optimization**  
Rui Qian, Yuxi Li, Huabin Liu, John See, Shuangrui Ding, Xian Liu, Dian Li, Weiyao Lin  
International Conference on Computer Vision (**ICCV**), 2021.

## JOURNAL PUBLICATIONS

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- **ChemSpacE: Toward Steerable and Interpretable Chemical Space Exploration**  
Yuanqi Du, Xian Liu, Shengchao Liu, Jieyu Zhang, Bolei Zhou  
Transactions on Machine Learning Research (**TMLR**), 2023.

## WORKSHOP PAPERS

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- **Interpreting Molecular Space with Deep Generative Models**  
Yuanqi Du, Xian Liu, Shengchao Liu, Jieyu Zhang, Bolei Zhou  
ELLIS Machine Learning for Molecule Discovery Workshop, 2021. (**Oral Presentation**)  
ICLR Machine Learning for Drug Discovery Workshop, 2022.

## INTERNSHIP EXPERIENCE

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• <b>Deep Imagination Research Group, NVIDIA Research</b>	Santa Clara, United States
• Research Scientist Intern. Supervisor: Ting-Chun Wang, Yogesh Balaji, Ming-Yu Liu	Mar. 2024 - Jun. 2024
• <b>University of Toronto</b>	Toronto, Canada
• Visiting Student. Collaborator: Sherwin Bahmani, David B. Lindell	Dec. 2023 - Mar. 2024
• <b>Tencent AI Laboratory</b>	Shenzhen, China
• Research Intern. Supervisor: Ying Shan, Xiaohang Zhan	Sept. 2023 - Dec. 2023
• <b>Creative Vision Group, Snap Research</b>	Los Angeles, United States
• Research Intern. Supervisor: Sergey Tulyakov, Jian Ren, Aliaksandr Siarohin	May. 2023 - Sept. 2023
• <b>Digital Content Group, Shanghai AI Laboratory</b>	Shanghai, China
• Research Intern. Supervisor: Hang Zhou, Wayne Wu	Jul. 2021 - Feb. 2022
• <b>Intelligent Video Group, SenseTime Research</b>	Shanghai, China
• Research Intern. Supervisor: Qianyi Wu, Bo Dai	Aug. 2020 - Jun. 2021

## PROFESSIONAL SERVICES

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- **Area Chair / Senior Program Committee:** AAAI.
- **Conference Program Committee / Reviewer:** CVPR, ECCV, ICCV, WACV, SIGGRAPH, SIGGRAPH Asia, NeurIPS, ICML, ICLR, AISTATS, AAAI, ACM MM.
- **Journal Reviewer:** TPAMI, IJCV, TVCG, TMM, EG, CGF, PG.

## SELECTED HONORS & AWARDS

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- **CNET 2025 Best of CES, Best of AI, and Best Overall Award** 2025
- **ECCV Outstanding Reviewer Award** 2024
- **CVPR Travel Award** 2024
- **ICLR Travel Award** 2024
- **National Scholarship** 2019, 2020
- **Hong Kong Ph.D. Fellowship Scheme (HKPFS)** 2021-2025
- **Outstanding Graduate, Zhejiang Province** 2021
- **SenseTime Scholarship** 2020
- **Tang Lixin Scholarship** 2019
- **First Class Scholarship for Academic Excellence** 2019, 2020