

Dr. Yukang (操雨康) Cao

POSTDOC @ NANYANG TECHNOLOGY UNIVERSITY

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Research Interests

Computer Vision and Deep Learning: 3D model reconstruction, 3D artificial intelligence generated content (AIGC), 3D/4D humanoid embodied AI, 2D/3D morphing via generative model, motion generation, and modeling and understanding of human-scene-interactions.

Work Experiences

MMLab@Nanyang Technology University (NTU)

POSTDOCTORAL RESEARCH FELLOW

- Supervisor: Prof. Ziwei Liu

Singapore

Aug. 2024 - Present

The University of Hong Kong (HKU)

POSTGRADUATE RESEARCHER

- Supervisor: Prof. Kwan-Yee K. Wong
- Project: 3D Human Modeling from Image and Text

Hong Kong SAR, China

Aug. 2020 - Jun. 2024

Shanghai AI Lab

RESEARCHER INTERN

- Mentor: Dr. Liang Pan, Prof. Ziwei Liu
- Project: 4D Avatar Generation and Animation with Object Interactions

Shanghai, China

Mar. 2024 - Jun. 2024

Tencent PCG ARC Lab

RESEARCH INTERN

- Mentor: Dr. Yan-Pei Cao
- Project: 3D Human Avatar Generation via Diffusion Model

Beijing, China

Dec. 2022 - Jun. 2023

Education

The University of Hong Kong (HKU)

Ph.D., COMPUTER SCIENCE

- Supervisor: Prof. Kwan-Yee K. Wong
- Fully funded by the HKU Presidential Scholarship
- Thesis: 3D Neural Implicit Human Modeling from Image and Text
- Examiner: Prof. Yizhou Yu, Prof. Ping Luo, Prof. Rynson WH Lau

Hong Kong SAR, China

Sept. 2020 - Jun. 2024

Zhejiang University (ZJU)

Bachelor of Engineering

- GPA: 3.84/4, ranking: 3/66

Hangzhou, China

Sept. 2016 - June 2020

Research Experiences

The University of Texas at Austin

RESEARCH ASSISTANT

- Mentor: Dr. Chandrajit Bajaj
- Project: Designing Deep Nets for Variational Image Processing
- Admitted to Computational Science, Engineering, and Mathematics (CSEM) with NIMS fellowship in 2020

Austin, USA

July. 2019 - Nov. 2019

Peking University

RESEARCH FELLOW

- Mentor: Dr. Dehua Xiong
- Project: LSTM Application in Stock Forecast

Beijing, China

Sept. 2019 - Dec. 2019

- Mentor: Dr. Zuoqiang Shi
- Project: Low Dimensional Manifold Model for Image Processing

Selected Publications

Google Scholar (* Equal contribution, † Corresponding author)

First-author papers:

- [1] **ACE-Data-0: Human-Centric Ambient Capture as Embodied Data Engine** *Tech Report 2026*
Yukang Cao^{*}, Haozhe Xie^{*}, Beichen Wen^{*}, Runmao Yao, Yinghao Liu, Yue Huang, Zhichao Liao, Yunxiang Wang, Haiheng Liu, Xingshun Tian, Dawei Su, Long Zhuo, Dacheng Tao, Xiaogang Wang, Liang Pan, Ziwei Liu.
- [2] **AURORA-LM: Autoencoding Unified Representation for Continuous-Latent Diffusion Language Modeling** *Tech Report 2026*
Jiajun Liang^{*}, Yucheng Liao^{*}, Yukang Cao^{*}, Jiazhe Wei, Ken Li, Wende Tan, ZY Cui, Jingkang Yang, Liucheng Guo, B. Yang, Caifeng Shan, Ziwei Liu, Chenyang Si
- [3] **HSImul3R: Physics-in-the-loop Reconstruction of Simulation-ready Human-Scene Interactions** *ECCV 2026*
Yukang Cao, Haozhe Xie, Fangzhou Hong, Long Zhuo, Zhaoxi Chen, Liang Pan, Ziwei Liu.
- [4] **Reconstructing 4D Spatial Intelligence: A Survey** *Under review*
Yukang Cao, Jiahao Lu, Zhisheng Huang, Zhuowen Shen, Chengfeng Zhao, Fangzhou Hong, Zhaoxi Chen, Xin Li, Wenping Wang, Yuan Liu, Ziwei Liu.
- [5] **GS-VTON: Controllable 3D Virtual Try-on with Gaussian Splatting** *IJCV 2026*
Yukang Cao^{*}, Masoud Hadi^{*}, Liang Pan, Ziwei Liu.
- [6] **CrowdMoGen: Event-Driven Collective Human Motion Generation** *IJCV 2025*
Yukang Cao, Xinying Guo, Mingyuan Zhang, Haozhe Xie, Gu Chenyang, Ziwei Liu
- [7] **AvatarGO: Compositional 4D Avatar Generation and Animation with Object Interactions** *ICLR 2025*
Yukang Cao, Liang Pan, Kai Han, Kwan-Yee K. Wong, Ziwei Liu.
- [8] **FreeMorph: Tuning-Free Generalized Image Morphing with Diffusion Model** *ICCV 2025*
Yukang Cao, Chenyang Si, Jinghao Wang, Ziwei Liu.
- [9] **DreamAvatar: Text-and-Shape Guided 3D Human Avatar Generation via Diffusion Models** *CVPR 2024*
Yukang Cao^{*}, Yan-Pei Cao^{*}, Kai Han[†], Ying Shan, Kwan-Yee K. Wong.
- [10] **A Survey on 3D Human Avatar Modeling - From Reconstruction to Generation** *Under Review*
Ruihe Wang^{*}, Yukang Cao^{*†}, Kai Han, Kwan-Yee K. Wong.
- [11] **Guide3D: Create 3D Avatars from Text and Image Guidance** *arXiv 2023*
Yukang Cao, Yan-Pei Cao, Kai Han[†], Ying Shan, Kwan-Yee K. Wong.
- [12] **HeadSculpt: Crafting 3D Head Avatars with Text** *NeurIPS 2023*
Xiao Han^{*}, Yukang Cao^{*}, Kai Han, Xiatian Zhu, Jiankang Deng, Yi-Zhe Song, Tao Xiang[†], Kwan-Yee K. Wong[†].
- [13] **SeSDF: Self-evolved Signed Distance Field for Implicit 3D Clothed Human Reconstruction** *CVPR 2023*
Yukang Cao, Kai Han, Kwan-Yee K. Wong.
- [14] **JIFF: Jointly-aligned Implicit Face Function for High Quality Single View Clothed Human Reconstruction** *CVPR 2022*
Yukang Cao, Guanying Chen, Kai Han, Wenqi Yang, Kwan-Yee K. Wong. (Oral Presentation)

Supervised papers:

- [15] **ArtiFade: Learning to Generate High-quality Subject from Blemished Images** *CVPR 2025*
Shuya Yang^{*}, Shaoze Hao^{*}, Yukang Cao[†], Kwan-Yee K. Wong[†].

Co-authors papers:

- [16] **Apple- π : Benchmarking Thinking with Video Towards Law-Grounded Physical Intelligence** *NeurIPS 2026*
Runmao Yao*, Kairui Hu*, Yukang Cao, Ruisi Wang, Shulin Tian, Ziang Cao, Weichen Fan, Ziqi Huang, Yuhao Dong, Hao Li, Zhaoxi Chen, Zhongang Cai, Lei Yang, Ziwei Liu
- [17] **VibeGame: Prompt-to-Game Development with AI-Native Engine and Self-Evolving Adversarial Agent Team** *Preprint 2026*
Wenbo Hu*, Ken Li*, Jiazhe Wei*, Yukang Cao, Weiye Hong, Jiayi Dai, Chenjun Bai, Jiajun Liang, Yucheng Liao, Ruichuan An, Zeyu Lou, Haofan Wang, Wende Tan, Liucheng Guo, Yueming Lyu, Ziwei Liu, Chenyang Si
- [18] **Wukong's 72 Transformations: High-fidelity 3D Morphing via Flow Models** *NeurIPS 2025*
Minghao Yin, Yukang Cao, Kai Han.
- [19] **Splat4D: Diffusion-Enhanced 4D Gaussian Splatting for Temporally and Spatially Consistent Content Creation** *Siggraph 2025*
Minghao Yin, Yukang Cao, Songyou Peng, Kai Han.
- [20] **IGGT: Instance-Grounded Geometry Transformer for Semantic 3D Reconstruction** *ICLR 2026*
Hao Li, Zhengyu Zou, Fangfu Liu, Xuanyang Zhang, Fangzhou Hong, Yukang Cao, Yushi LAN, Manyuan Zhang, Gang YU, Dingwen Zhang, Ziwei Liu.
- [21] **AudCast: Audio-Driven Human Video Generation by Cascaded Diffusion Transformers** *CVPR 2025*
Jiazhi Guan, Kaisiyuan Wang, Zhiliang Xu, Quanwei Yang, Yasheng SUN, Shengyi He, Borong Liang, Yukang Cao, Yingying Li, Haocheng Feng, Errui Ding, Jingdon Wang, Youjiang Zhao, Hang Zhou, Ziwei Liu.
- [22] **AniFeats: Animate 3D Feature Meshes for Character Video Generation** *TVCG 2026*
Beijia Lu, Zekai Gu, Zhiyang Dou, Haotian Yuan, Yuan Liu, Chenyang Si, Yukang Cao, Yuming Jiang, Wenping Wang, Ziwei Liu.
- [23] **MA-NeRF: Motion-Assisted Neural Radiance Fields for Face Synthesis from Sparse Images** *ICME 2023*
Weichen Zhang*, Xiang Zhou*, Yukang Cao, Wensen Feng, Chun Yuan.

Honors & Awards

2020 - 2024	HKU Presidential Scholarship (HKU-PS, Highest Distinction in Hong Kong)	<i>Hong Kong SAR, China</i>
2023	M. Braun Postgraduate Prize	<i>HKU, China</i>
2022, 2023, 2024	The Arthur and Louise May Memorial Fund Scholarship	<i>HKU, China</i>
2022	HK & China Gas Co Ltd Postgraduate Prize	<i>Hong Kong SAR, China</i>
2021	Y S and Christabel Lung Postgraduate Scholarship	<i>HKU, China</i>
2018	China Harbor second-class scholarship	<i>Zhejiang University, China</i>
2018	Honorable Mention Prize, Mathematical Contest in Modeling (MCM)	<i>COMAP, USA</i>
2017, 2018	Zhejiang University Outstanding Second Class Scholarship	<i>Zhejiang University, China</i>
2017, 2018	Zhejiang Provincial Government Scholarship (Top Distinction in Zhejiang)	<i>Zhejiang province, China</i>

Professional Services

Conference reviewer / Program Committee

- Conference on Neural Information Processing Systems (NeurIPS) 2023 -
- International Conference on Computer Vision (ICCV) 2023 -
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023 -
- ACM SIGGRAPH Asia 2023 -
- Pacific Graphics 2023 -
- Association for the Advancement of Artificial Intelligence (AAAI) 2024 -
- International Conference on Learning Representations (ICLR) 2024 -
- International Conference on Machine Learning (ICML) 2024 -
- European Conference on Computer Vision (ECCV) 2024 -
- Asian Conference on Computer Vision (ACCV) 2024 -

Journal reviewer

- IEEE International Journal of Computer Vision (IJCV)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- IEEE Transactions on Circuits and Systems for Video Technology (TVCST)

Workshop reviewer

- CVPR Workshop: AI for 3D Generation
- CVPR Workshop: POETS - Virtual Humans for Robotics and Autonomous Driving

Invited Talks

7. Aug 2026	ACE-Data-0: Human-Centric Ambient Capture as Embodied Data Engine	青稞社区
19. March 2026	HSimul3R: Physics-in-the-loop Reconstruction of Simulation-ready Human-Scene Interactions	WiseModel
25. April 2025	Modeling Virtual Worlds: Humans, Objects, Scenes & Interactions via Generative AI	Huawei InnovWave
23. Oct. 2024	GS-VTON: Controllable 3D Virtual Try-on with Gaussian Splatting	Anysyn3D
07. Dec. 2023	3D Human Modeling from Text and Image Guidance	S-Lab NTU
17. July. 2023	Avatar-X: Text Guided Controllable and Editable 3D Human Generation	Gap Lab CUHK-Shenzhen
10. Aug. 2023	Avatar-X: Text Guided Controllable and Editable 3D Human Generation	Online at 智东西

Teaching Activities

2025 Spring	MSAI Advanced Computer Vision	NTU, Singapore
2022 Fall	COMP3270 Artificial Intelligence	HKU, China
2021 Fall	COMP2396 Object-Oriented Programming and Java	HKU, China

Skills

Programming Languages	Python, Matlab, C, C++, Java
Languages	Chinese (native speaker), English (proficiency)
Others	PyTorch(3d), Tensorflow, LaTeX, OpenCV, etc