Zhenyu Xie

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Research Interests

My primary research interests lie in high-fidelity human-centric 2D/3D modeling and 3D generative models. Human-centric modeling plays a critical role in a wide range of applications, from social media to the metaverse, with the potential to revolutionize human lifestyles. To advance its development, I have extensively explored 2D/3D virtual try-on, text-to-motion synthesis, and 3D human reconstruction from videos. Additionally, automatic 3D content generation is crucial for building virtual worlds, so I have also focused on high-quality 3D content generation from a single image.

Education

Carnegie Mellon University, Pittsburgh, PA, USA November 2023 - Present
Visiting Ph.D. in Robotics Institute
Advisor: Prof. *Fernando De la Torre*

Sun Yat-sen University, Shenzhen China September 2020 - Present
Ph.D. candidate in School of Intelligent Systems Engineering
Advisor: Prof. *Xiandan Liang*

Sun Yat-sen University, Guangzhou China September 2018 - June 2020
M.S. in School of Computer Science and Engineering
Advisor: Prof. *Jianhuang Lai*

Sun Yat-sen University, Guangzhou China September 2014 - June 2018
B.S. in School of Computer Science and Engineering
Advisor: Prof. *Xiaohua Xie*

Selected Publications

[1] Zhenyu Xie, Haoye Dong, Yufei Gao, Zehua Ma, Xiaodan Liang. DreamVTON: Customizing 3D Virtual Try-on with Personalized Diffusion Models, in **ACMMM** 2024. *[PDF] [Code]*

[2] Xuehao Gao, Yang Yang, Zhenyu Xie, Shaoyi Du, Zhongqian Sun, Yang Wu. Guess: Gradually enriching synthesis for text-driven human motion generation, in **TVCG** 2024. *[PDF] [Code]*

[3] Zhenyu Xie, Yang Wu, Xuehao Gao, Zhongqian Sun, Wei Yang, Xiaodan Liang. Towards Detailed Text-to-Motion Synthesis via Basic-to-Advanced Hierarchical Diffusion Model, in **AAAI** 2024. *[PDF] [Code]*

[4] Zhenyu Xie, Zaiyu Huang, Xin Dong, Fuwei Zhao, Haoye Dong, Xijin Zhang, Feida Zhu, and Xiaodan Liang. GP-VTON: Towards General Purpose Virtual Try-on via Collaborative Local-Flow Global-Parsing, in **CVPR** 2023. *[PDF] [Code]*

[5] Zaiyu Huang, Hanhui Li, Zhenyu Xie, Michael Kampffmeyer, Qingling Cai, Xiaodan Liang. Towards Hard-pose Virtual Try-on via 3D-aware Global Correspondence Learning, in **NeurIPS** 2022. *[PDF] [Code]*

[6] Xujie Zhang, Yu Sha, Michael Kampffmeyer, Zhenyu Xie, Zequn Jie, Chengwen Huang, Jianqing Peng, Xiaodan Liang. ARMANI: Part-level Garment-Text Alignment for Unified Cross-Modal Fashion Design, in **ACMMM** 2022. *[PDF]*

[7] Xin Dong, Fuwei Zhao, Zhenyu Xie, Xijin Zhang, Kang Du, Min Zheng, Xiang Long, Xiaodan Liang Jianchao Yang. Dressing in the Wild by Watching Dance Videos, in **CVPR** 2022. *[PDF] [Project]*

[8] Zhenyu Xie, Zaiyu Huang, Fuwei Zhao, Haoye Dong, Michael Kampffmeyer, Xiaodan Liang. Towards Scalable Unpaired Virtual Try-On via Patch-Routed Spatially-Adaptive GAN, in **NuerIPS** 2021. *[PDF] [Code]*

[9] Fuwei Zhao, Zhenyu Xie, Michael Kampffmeyer, Haoye Dong, Songfang Han, Tianxiang Zheng, Tao Zhang, Xiaodan Liang. M3D-VTON: A Monocular-to-3D Virtual Try-On Network, in **ICCV** 2021. *[PDF] [Code]*

[10] Zhenyu Xie, Xujie Zhang, Fuwei Zhao, Haoye Dong, Michael Kampffmeyer, Haonan Yan, Xiaodan Liang. WAS-VTON: Warping Architecture Search for Virtual Try-on Network, in **ACMMM** 2021. *[PDF]*

[11] Bowen Wu, Zhenyu Xie, Xiaodan Liang Yubei Xiao, Haoye Dong, Liang Lin. Image Comes Dancing with Collaborative Parsing-Flow Video Synthesis, in **TIP** 2021. *[PDF]*

[12] Haoye Dong, Xiaodan Liang, Yixuan Zhang, Xujie Zhang, Xiaohui Shen, Zhenyu Xie, Bowen Wu, Jian Yin. Fashion Editing with Adversarial Parsing Learning, in **CVPR** 2020. *[PDF]*

Industrial Experience

Bytedance, Shenzhen China Jun 2023 - Nov 2023
Research intern in Intelligence Creation Platform, advised by Xin Dong
Research Topic: High-fidelity Virtual Try-on and 3D Virtual Try-on

Tencent, Shenzhen China Sep 2022 - May 2023
Research intern in Artificial Intelligence Platform Department, advised by *Prof. Yang Wu*
Research Topic: Cross-modal Human Motion Synthesis

Bytedance, Beijing China Jul 2021 - Aug 2022
Research intern in Intelligence Creation Platform, advised by Xin Dong and Xijin Zhang
Research Topic: High-fidelity 2D Garment-to-Person Virtual Try-on

Academic Services

Organizer for CVPR 2020 Workshop on Human-centric Image/Video Synthesis. *L.I.P*

Conference Reviewer: ICCV(2021,2023), CVPR(2022,2023,2024), ECCV(2022,2024), NeurIPS (2023,2024)

Journal Reviewer: IJCV

Teaching Assistant for Artificial Intelligence Experiment (2020-2021), Sun Yat-sen University

Invited Talks

VALSE Webniar, Online January 2022
A talk about scalable unpaired virtual try-on. *Video Recording*