

TAO HU

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RESEARCH INTERESTS

Neural Rendering, 3D Reconstruction, 3D Content Creation, Digital Human, 3D Motion Capture, Animation.

EDUCATION

University of Maryland, College Park, USA.

2018 – 2023

Ph.D. student in CS Department, working with Prof. Matthias Zwicker.

Research Topic: Dense 3D Reconstructions from Sparse Visual Data. GPA: 3.86/4.0

Beijing Institute of Technology, Beijing, R.P.China.

2011–2015–2018

B.Eng., M.S. (Digital Performance) at School of Software. Advisor: Prof. Gangyi Ding.

RESEARCH EXPERIENCE

Postdoc Research Fellow, NTU, Singapore.

Jun. 2023 - now

Mentor: Prof. Ziwei Liu

Topic: 3D Human generation, 4D motion modeling.

Intern with Intelligent Creation Lab, ByteDance Inc USA, Remote.

Dec. 2021 - Jul. 2022

Mentor: Dr. Hongyi Xu, Dr. Linjie Luo

Topic: Neural rendering for human avatars.

Intern with 3DV Lab at Tshinghua University, China.

Apr. 2021 - Nov. 2021

Mentor: Prof. Yebin Liu.

Topic: Neural rendering for human avatars.

Intern with GVV group at Max Planck Institute for Informatics, Germany.

Mar. 2020 - Sep. 2020

Mentor: Prof. Christian Theobalt, Graphics, Vision & Video group at MPII.

Topic: Neural rendering for human avatars in egocentric telepresence system.

Intern with Speech group at Microsoft Research Asia (MSRA), China.

Jun. 2017 - Nov. 2017

Mentor: Dr. Kai Chen

Topic: Optimize deep neural networks for Optical Character Recognition (OCR) in the Wild.

SELECTED PUBLICATIONS & MANUSCRIPTS

Tao Hu, Fangzhou Hong, Zhaoxi Chen, Ziwei Liu. FashionEngine: Interactive Generation and Editing of 3D Clothed Humans. *Technical Report*, 2024.

Tao Hu, Fangzhou Hong, Ziwei Liu. StructLDM: Structured Latent Diffusion for 3D Human Generation. *Technical Report*, 2024.

Tao Hu, Fangzhou Hong, Ziwei Liu. SurMo: Surface-based 4D Motion Modeling for Dynamic Human Rendering. *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.

Tao Hu, Hongyi Xu, Linjie Luo, Tao Yu, Zerong Zheng, He Zhang, Yebin Liu, Matthias Zwicker. HVTR++: Image and Pose Driven Human Avatars using Hybrid Volumetric-Textural Rendering. *IEEE Transactions on Visualization and Computer Graphics (TVCG)*, 2023.

Tao Hu, Tao Yu, Zerong Zheng, He Zhang, Yebin Liu, Matthias Zwicker. HVTR: Hybrid Volumetric-Textural Rendering for Human Avatars. *International Conference on 3D Vision (3DV)*, 2022.

Tao Hu, Kripasindhu Sarkar, Lingjie Liu, Matthias Zwicker, Christian Theobalt. EgoRenderer: Rendering Human Avatars from Egocentric Camera Images. *International Conference on Computer Vision (ICCV)*, 2021.

Tao Hu, Geng Lin, Zhizhong Han, Matthias Zwicker. Learning to Generate Dense Point Clouds with Textures on Multiple Categories. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.

Tao Hu, Zhizhong Han, Matthias Zwicker. 3D Shape Completion with Multi-View Consistent Inference. *AAAI Conference on Artificial Intelligence (AAAI)*, 2020. (**Oral**, top 10% of accepted papers in 3D vision track)

Tao Hu, Zhizhong Han, Abhinav Shrivastava, Matthias Zwicker. Render4Completion: Synthesizing Multi-View Depth Maps for 3D Shape Completion. *ICCV Geometry Meets Deep Learning Workshop*, 2019. (Oral)

Tao Hu, Gangyi Ding, Lijie Li, Longfei Zhang. *A Parallel Video Player Plugin for CryEngine*.

- Highlights of Sciencepaper. Chinese Journal, May 2016.
- Software Copyright (2016SR010412)

Shoukang Hu, Fangzhou Hong, **Tao Hu**, Liang Pan, Haiyi Mei, Weiye Xiao, Lei Yang, Ziwei Liu. Humanliff: Layer-wise 3d human generation with diffusion model. *Technical Report*, 2023.

TEACHING

Teaching Assistant, Dept. of Computer Science, UMD.

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|---|-------------|
| CMSC425 Game Programming (Prof. Roger Eastman) | Fall 2019 |
| CMSC425 Game Programming (Prof. Roger Eastman) | Spring 2019 |
| CMSC 216 Introduction to Computer Systems (Mr. Laurence Herman) | Fall 2018 |

REFEREE

Conference Reviewer:

Conference on Computer Vision and Pattern Recognition (CVPR) 2023, 2024
International Conference on Computer Vision (ICCV) 2023
European Conference on Computer Vision (ECCV) 2022, 2024
International Conference on 3D Vision (3DV) 2022
Winter Conference on Applications of Computer Vision (WACV) 2022, 2023, 2024
Asian Conference on Computer Vision (ACCV) 2024
International Conference on Pattern Recognition (ICPR) 2024

Journal Reviewer: Computer Graphics Forum

Image and Vision Computing
Pattern Recognition Letters

SELECTED AWARDS & HONORS

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| Graduate National Scholarship (Top 2%) , Ministry of Education of China | 2016 |
| Undergraduate National Scholarship (Top 2%) , Ministry of Education of China | 2014 |

TECHNICAL SKILLS

Programming Languages: C/C++, Python, C#, Java, PHP, JavaScript, MATLAB.
Software Libraries: SIMD, Blender, OpenGL, OpenGL ES, PyTorch.