LINGJIE LIU

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Homepage: https://lingjie0206.github.io/

Work Experience

Postdoctoral Research Fellow   **10/2019-04/2022**
(Expected)

Visual Computing and AI Department

Max Planck Institute for Informatics, Germany

Supervisor: Prof. Christian Theobalt

Lise Meitner Award Postdoctoral Fellowship

Education

Ph.D. in Computer Science   **08/2014-09/2019**

Department of Computer Science

The University of Hong Kong, Hong Kong

Supervisor: Prof. Wenping Wang

Hong Kong PhD Fellowship, awarded to Top 100 Ph.D. students in Hong Kong

Bachelor in Computer Science (Ranking 1st of 329)   **09/2010-06/2014**

Department of Computer Science and Technology

Huazhong University of Science and Technology, China

Award of Top-100 Excellent Undergraduates in Computer Science by China Computer Federation

Research Interests

Neural Scene Representations, Neural Rendering, Human Performance Capture and Modeling, 3D Computer Vision, 3D Reconstruction

Professional Activities

Professional Service:

Program Committee member: SIGGRAPH 2022

Reviewer: EUROGRAPHICS 2022, ICLR 2022, AAAI 2022, NeurIPS 2021, SIGGRAPH Asia 2021, SIGGRAPH 2021, CVPR 2021, AAAI 2021, CVM 2021, SIGGRAPH Asia 2020, SIGGRAPH 2020, TOG, TVCG, PG 2018, CAGD

Courses:

Neural Actor: Neural Free-view Synthesis of Human Actors with Pose Control

Tutorial in 3DV 2021 Course on Advances in Neural Rendering — **11/2021**

Fast Rendering of Neural Radiance Fields

Tutorial in SIGGRAPH 2021 Course on Advances in Neural Rendering — **08/2021**

Invited Talks:

Neural Scene Representations and Neural Rendering

The University of Edinburgh	**10/2021**
Facebook AI Research	**10/2021**
Google	**10/2021**
Peking University	**09/2021**
Siemens Healthineers	**09/2021**
Baidu Research	**08/2021**
Adobe Research	**07/2021**

Neural Rendering of Human Actors

Nanyang Technological University	**06/2021**

Learning Neural Sparse Voxel Fields for Free-viewpoint Rendering

Visual Computing Summer School, Shandong University	**07/2020**
GritGene Game Company, Germany	**08/2020**
GAMES Webinar, a popular graphics and mixed environment seminar series in China	**09/2020**

Thin Structure Reconstruction and Human Motion Reenactment

University of Washington	**05/2019**
Google Daydream Seattle	**05/2019**
Stanford University	**06/2019**
Princeton University	**06/2019**

Neural Rendering and Reenactment of Human Actor Videos

GAMES Webinar, a popular graphics and mixed environment seminar series in China	**08/2019**

CurveFusion: RGBD-based Reconstruction of Thin Structures

The Computational Fabrication Group, MIT CSAIL	**06/2018**
Department of Computer Science, Harvard University	**06/2018**
Department of Automation, Tsinghua University	**07/2018**
Baidu Research, Beijing	**07/2018**

Publications

25. NeuS: Learning Neural Implicit Surfaces by Volume Rendering for Multi-view Reconstruction

P. Wang, *L. Liu,* Y. Liu, C. Theobalt, T. Komura, W. Wang

Neural Information Processing Systems (NeurIPS) 2021 (Spotlight)

24. Neural Actor: Neural Free-view Synthesis of Human Actors with Pose Control

L. Liu, M. Habermann, V. Rudnev, K. Sarkar, J. Gu, C. Theobalt

ACM SIGGRAPH Asia 2021

23. HumanGAN: A Generative Model of Human Images

K. Sarkar, *L. Liu,* V. Golyanik, C. Theobalt

International Conference on 3D Vision (3DV) 2021 (Oral)

22. Direct Dense Pose Estimation

L. Ma, *L. Liu,* C. Theobalt, L. V. Gool

International Conference on 3D Vision (3DV) 2021

21. Estimating Egocentric 3D Human Pose in Global Space

J. Wang, *L. Liu,* W. Xu, K. Sarkar, C. Theobalt

International Conference on Computer Vision (ICCV) 2021 (Oral)

20. Efficient and Differentiable Shadow Computation for Inverse Problems

L. Lyu, M. Habermann, *L. Liu*, M. B R, A. Tewari, C. Theobalt

International Conference on Computer Vision (ICCV) 2021

19. Adaptive Surface Normal Constraint for Depth Estimation

X. Long, C. Lin, *L. Liu,* W. Li, C. Theobalt, R. Yang, W. Wang

International Conference on Computer Vision (ICCV) 2021

18. EgoRenderer: Rendering Human Avatars from Egocentric Camera Images

T. Hu, K. Sarkar, *L. Liu*, M. Zwicker, C. Theobalt

International Conference on Computer Vision (ICCV) 2021

17. Real-time Deep Dynamic Characters

M. Habermann, *L. Liu,* W. Xu, M. Zollhoefer, G. Pons-Moll, and C. Theobalt

ACM SIGGRAPH 2021

16. Learning Speech-driven 3D Conversational Gestures from Video

I. Habibie, W. Xu, D. Mehta, *L. Liu,* H-P. Seidel, G. Pons-Moll, M. Elgharib, C. Theobalt

ACM International Conference on Intelligent Virtual Agents (IVA) 2021 (Oral, Best Paper Award)

15. Pose-Guided Human Animation from a Single Image in the Wild

J. S. Yoon, *L. Liu,* V. Golyanik, K. Sarkar, H. S. Park, and C. Theobalt

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021

14. Learnable Motion Coherence for Correspondence Pruning

Y. Liu, *L. Liu,* C. Lin, Z. Dong, and W. Wang

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021

13. Multi-view Depth Estimation using Epipolar Spatio-Temporal Networks

X. Long, *L. Liu,* W. Li, C. Theobalt, and W. Wang

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2021

12. Neural Sparse Voxel Fields

L. Liu*, J. Gu*, K. Zaw Lin, TS. Chua, and C. Theobalt (*equal contribution)

Neural Information Processing Systems (NeurIPS) 2020 (Spotlight)

11. Neural Human Video Rendering by Learning Dynamic Textures and Rendering-to-Video Translation

L. Liu, W. Xu, M. Habermann, M. Zollhöfer, F. Bernard, H. Kim, W. Wang, and C. Theobalt

IEEE Transactions on Visualization and Computer Graphics (TVCG) 2020

10. SEG-MAT: 3D Shape Segmentation Using Medial Axis Transform

C. Lin, *L. Liu*, C. Li, L. Kobbelt, B. Wang, S. Xin, and W. Wang

IEEE Transactions on Visualization and Computer Graphics (TVCG) 2020

9. MulayCap: Multi-layer Human Performance Capture Using A Monocular Video Camera

Z. Su, W. Wan, T. Yu , *L. Liu*, L. Fang, W. Wang, and Y. Liu

IEEE Transactions on Visualization and Computer Graphics (TVCG) 2020

8. Occlusion-Aware Depth Estimation with Adaptive Normal Constraints

X. Long, *L. Liu*, C. Theobalt, and W. Wang

European Conference on Computer Vision (ECCV), 2020

7. Vid2Curve: Simultaneous Camera Motion Estimation and Thin Structure Reconstruction from an RGB Video

P. Wang, *L. Liu*, N. Chen, HK. Chu, C. Theobalt, and W. Wang

ACM SIGGRAPH 2020

6. Unsupervised Learning of Intrinsic Structural Representation Points

N. Chen, *L. Liu*, Z. Cui, R. Chen, D. Ceylan, C. Tu, and W. Wang

IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020

5. Neural Animation and Reenactment of Human Actor Videos

L. Liu, W. Xu, M. Zollhöfer, H. Kim, F. Bernard, M. Habermann, W. Wang, and C. Theobalt

ACM Transactions on Graphics (TOG), 2019. Presented at SIGGRAPH 2019.

4. MAT-Net: Medial Axis Transform Network for 3D Object Recognition

J. Hu, B. Wang, L. Qian, Y. Pan, X. Guo, *L. Liu*, and W. Wang

International Joint Conferences on Artificial Intelligence (IJCAI) 2019

3. CurveFusion: Reconstructing Thin Structures from RGBD Sequences

L. Liu*, N. Chen*, D. Ceylan, C. Theobalt, W. Wang, and N. J. Mitra (*equal contribution)

ACM SIGGRAPH Asia 2018

2. Image-based Reconstruction of Wire Art

L. Liu, D. Ceylan, C. Lin, W. Wang, and N. J. Mitra

ACM SIGGRAPH 2017

1. Correlation-preserving Photo Collage

L. Liu, H. Zhang, G. Jing, Y. Guo, Z. Chen, and W. Wang

IEEE Transactions on Visualization and Computer Graphics (TVCG) 2017

Preprints (under review)

3. StyleNeRF: A Style-based 3D-Aware Generator for High-resolution Image Synthesis

J. Gu, *L. Liu*, P. Wang, C. Theobalt

Arxiv 2021

2. Neural Rays for Occlusion-aware Image-based Rendering

Y. Liu, S. Peng, *L. Liu,* Q. Wang, P. Wang, C. Theobalt, X. Zhou, W. Wang

Arxiv 2021

1. Style and Pose Control for Image Synthesis of Humans from a Single Monocular View

K. Sarkar, V. Golyanik, *L. Liu,* C. Theobalt

Arxiv 2021

Research Experience

New York University	**02/2019-06/2019**

Visiting scholar, Courant Institute of Mathematical Sciences

Advisor: Prof. Daniele Panozzo

Max Planck Institute for Informatics	**03/2018-01/2019**

Research Intern, 3D Video and Vision-based Graphics Group

Advisor: Prof. Christian Theobalt

University College London	**09/2016-01/2017**
	05/2017-11/2017

Visiting student, Virtual Environment and Computer Graphics

Advisor: Prof. Niloy J. Mitra and Dr. Duygu Ceylan

Teaching Experience

Mentor
Summer 2020
Summer 2021

Max Planck Institute for Informatics, Germany

Computer Vision and Machine Learning for Computer Graphics

Teaching Assistant
Fall 2014
Fall 2015

The University of Hong Kong, Hong Kong

Computer Programming and Applications

Students Mentored

PhD

Jian Wang (MPI, 2019-now)

Marc Habermann (MPI, 2019-2021)

Alex Trevithick (UCSD & MPI, 2021-now)

Viktor Rudnev (MPI, 2020-now)

Jiang Yue (MPI, 2020-now)

Jae Shin Yoon (University of Minnesota & MPI, 2020)

Tao Hu (Maryland University & MPI, 2020)

Ikhsanul Habibie (MPI, 2020-2021)

Peng Wang (HKU, 2019-now)

Yuan Liu (HKU, 2019-now)

Xiaoxiao Long (HKU, 2019-now)

Nenglun Chen (HKU, 2019)

Cheng Lin (HKU, 2017-2019)

Jiepeng Wang (HKU, 2021-now)

Liqian Ma (KU Leuven, 2020-2021)

Master

Linjie Lyu (MPI, 2020-2021)

Erik Johnson (MPI, 2021-now)

Awards

Best Paper Award of ACM International Conference on Intelligent Virtual Agents (IVA), 2021

Lise Meitner Award Postdoctoral Fellowship, 2019

Hong Kong PhD Fellowship, 2014

CCF (China Computer Federation) Top 100 Excellent Undergraduates, 2014

References

Christian Theobalt

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University College London (UCL)

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Ravi Ramamoorthi

Ronald L. Graham Professor, Computer Science Department

Director, Visual Computing Center

University of California, San Diego (UCSD)

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Duygu Ceylan

Senior Research Scientist

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