

Menglei Chai

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Menglei Chai is a research scientist at Google AR Perception, where he builds stuff around digital human for the next generation of AR technology.

He was a lead research scientist on Graphics and 3D Vision at Snap Research, where he led research and development on cutting-edge computer graphics, vision, and machine learning technology to unlock creativity of users and creators in various products at Snap, including face tracking and reconstruction, semantic detection and segmentation, neural stylization and translation, image generation and manipulation, physically-based modeling and simulation, and object digitization and rendering.

He received his Ph.D. and B.Sc. in Computer Science from the Graphics and Parallel Systems (GAPS) Lab at Zhejiang University in 2017 and 2011, where he worked on human digitization and animation, under the supervision of Kun Zhou.

His long-term research interests lie at the intersection between Computer Vision and Computer Graphics, especially on human digitization, image manipulation, 3D acquisition, and physics-based animation.

WORK EXPERIENCE

Google AR Perception
Research Scientist

December 2022 - Present
Playa Vista, CA, USA

Snap Research
Lead Research Scientist

July 2017 - December 2022
Santa Monica, CA, USA

Adobe Research
Research Intern

June 2014 - September 2014
San Jose, CA, USA

Zhejiang University
Research Assistant

September 2010 - June 2017
Hangzhou, PRC

EDUCATION

Zhejiang University
Ph.D. in Computer Science

September 2011 - June 2017
Hangzhou, PRC

Zhejiang University
B.Sc. in Computer Science

September 2007 - June 2011
Hangzhou, PRC

PUBLICATIONS

GroomCap: High-Fidelity Prior-Free Hair Capture

ACM Transactions on Graphics (SIGGRAPH Asia) 2024

Yuxiao Zhou, Menglei Chai, Daoye Wang, Sebastian Winberg, Erroll Wood, Kripasindhu Sarkar, Markus Gross, Thabo Beeler

MagicMirror: Fast and High-Quality Avatar Generation with a Constrained Search Space

European Conference on Computer Vision (ECCV) 2024

Armand Comas, Di Qiu, Menglei Chai, Marcel Buehler, Amit Raj, Ruiqi Gao, Qiangeng Xu, Mark Matthews, Paulo Gotardo, Sergio Orts-Escolano, Thabo Beeler

MVDD: Multi-View Depth Diffusion Models

European Conference on Computer Vision (ECCV) 2024

Zhen Wang, Qiangeng Xu, Feitong Tan, Menglei Chai, Shichen Liu, Rohit Pandey, Sean Fanello, Achuta Kadambi, Yinda Zhang

Efficient 3D Articulated Human Generation with Layered Surface Volumes

International Conference on 3D Vision (3DV) 2024

Yinghao Xu, Yifan Wang, Alexander W. Bergman, Menglei Chai, Bolei Zhou, Gordon Wetzstein

GroomGen: A High-Quality Generative Hair Model Using Hierarchical Latent Representations

ACM Transactions on Graphics (SIGGRAPH Asia) 2023

Yuxiao Zhou, Menglei Chai, Alessandro Pepe, Markus Gross, Thabo Beeler

AvatarCraft: Transforming Text into Neural Human Avatars with Parameterized Shape and Pose Control

IEEE/CVF International Conference on Computer Vision (ICCV) 2023

Ruixiang Jiang, Can Wang, Jingbo Zhang, Menglei Chai, Mingming He, Dongdong Chen, Jing Liao

InfiniCity: Infinite-Scale City Synthesis

IEEE/CVF International Conference on Computer Vision (ICCV) 2023

Chieh Hubert Lin, Hsin-Ying Lee, Willi Menapace, Menglei Chai, Aliaksandr Siarohin, Ming-Hsuan Yang, Sergey Tulyakov

Efficient Learning of Mesh-Based Physical Simulation with Bi-Stride Multi-Scale Graph Neural Network

International Conference on Machine Learning (ICML) 2023

Yadi Cao, Menglei Chai, Minchen Li, Chenfanfu Jiang

DisCoScene: Spatially Disentangled Generative Radiance Fields for Controllable 3D-aware Scene Synthesis

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Yinghao Xu, Menglei Chai, Zifan Shi, Sida Peng, Ivan Skorokhodov, Aliaksandr Siarohin, Ceyuan Yang, Yujun Shen, Hsin-Ying Lee, Bolei Zhou, Sergey Tulyakov

3DAvatarGAN: Bridging Domains for Personalized Editable Avatars

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Rameen Abdal, Hsin-Ying Lee, Peihao Zhu, Menglei Chai, Aliaksandr Siarohin, Peter Wonka, Sergey Tulyakov

Unsupervised Volumetric Animation

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Aliaksandr Siarohin, Willi Menapace, Ivan Skorokhodov, Kyle Olszewski, Jian Ren, Hsin-Ying Lee, Menglei Chai, Sergey Tulyakov

Invertible Neural Skinning

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Yash Kant, Aliaksandr Siarohin, Riza Alp Guler, Menglei Chai, Jian Ren, Sergey Tulyakov, Igor Gilitschenski

NeRF-Art: Text-Driven Neural Radiance Fields Stylization

IEEE Transactions on Visualization and Graphics (TVCG) 2023

Can Wang, Ruixiang Jiang, Menglei Chai, Mingming He, Dongdong Chen, Jing Liao

Semantic Probability Distribution Modeling for Diverse Semantic Image Synthesis

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2022

Zhentao Tan, Qi Chu, Menglei Chai, Dongdong Chen, Jing Liao, Qiankun Liu, Bin Liu, Gang Hua, Nenghai Yu

Cross-Modal 3D Shape Generation and Manipulation

European Conference on Computer Vision (ECCV) 2022

Zezhou Cheng, Menglei Chai, Jian Ren, Hsin-Ying Lee, Kyle Olszewski, Zeng Huang, Subhransu Maji, Sergey Tulyakov

R2L: Distilling Neural Radiance Field to Neural Light Field for Efficient Novel View Synthesis

European Conference on Computer Vision (ECCV) 2022

Huan Wang, Jian Ren, Zeng Huang, Menglei Chai, Kyle Olszewski, Yun Fu, Sergey Tulyakov

Quantized GAN for Complex Music Generation from Dance Videos

European Conference on Computer Vision (ECCV) 2022

Ye Zhu, Kyle Olszewski, Yu Wu, Panos Achlioptas, Menglei Chai, Yan Yan, Sergey Tulyakov

NeROIC: Neural Rendering of Objects from Online Image Collections

ACM Transactions on Graphics (SIGGRAPH) 2022

Zhengfei Kuang, Kyle Olszewski, Menglei Chai, Zeng Huang, Panos Achlioptas, Sergey Tulyakov

CLIP-NeRF: Text-and-Image Driven Manipulation of Neural Radiance Fields

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022

Can Wang, Menglei Chai, Mingming He, Dongdong Chen, Jing Liao

Cross-Domain and Disentangled Face Manipulation with 3D Guidance

IEEE Transactions on Visualization and Graphics (TVCG) 2022

Can Wang, Menglei Chai, Mingming He, Dongdong Chen, Jing Liao

DisUnknown: Distilling Unknown Factors for Disentanglement Learning

IEEE/CVF International Conference on Computer Vision (ICCV) 2021

Sitao Xiang, Yuming Gu, Pengda Xiang, Menglei Chai, Hao Li, Yajie Zhao, Mingming He

Efficient Semantic Image Synthesis via Class-Adaptive Normalization

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) 2021

Zhentao Tan, Dongdong Chen, Qi Chu, Menglei Chai, Jing Liao, Mingming He, Lu Yuan, Gang Hua, Nenghai Yu

Diverse Semantic Image Synthesis via Probability Distribution Modeling

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

Zhentao Tan, Menglei Chai, Dongdong Chen, Jing Liao, Qi Chu, Bin Liu, Gang Hua, Nenghai Yu

Flow Guided Transformable Bottleneck Networks for Motion Retargeting

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

Jian Ren, Menglei Chai, Oliver Woodford, Kyle Olszewski, Sergey Tulyakov

Motion Representations for Articulated Animation

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

Aliaksandr Siarohin, Oliver Woodford, Jian Ren, Menglei Chai, Sergey Tulyakov

A Good Image Generator Is What You Need for High-Resolution Video Synthesis

International Conference on Learning Representations (ICLR) 2021

Yu Tian, Jian Ren, Menglei Chai, Kyle Olszewski, Xi Peng, Dimitris N. Metaxas, Sergey Tulyakov

Exemplar-Based 3D Portrait Stylization

IEEE Transactions on Visualization and Graphics (TVCG) 2021

Fangzhou Han, Shuquan Ye, Mingming He, Menglei Chai, Jing Liao

FaceBlit: Instant Real-Time Example-Based Style Transfer to Facial Videos

ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D) 2021

Aneta Texler, Ondrej Texler, Michal Kucera, Menglei Chai, Daniel Sykora

Neural Hair Rendering

European Conference on Computer Vision (ECCV) 2020

Menglei Chai, Jian Ren, Sergey Tulyakov

MichiGAN: Multi-Input-Conditioned Hair Image Generation for Portrait Editing

ACM Transactions on Graphics (SIGGRAPH) 2020

Zhentao Tan, Menglei Chai, Dongdong Chen, Jing Liao, Qi Chu, Lu Yuan, Sergey Tulyakov, Nenghai Yu

Interactive Video Stylization Using Few-Shot Patch-Based Training

ACM Transactions on Graphics (SIGGRAPH) 2020

Ondrej Texler, David Futschik, Michal Kucera, Ondrej Jamriska, Sarka Sochorova, Menglei Chai, Sergey Tulyakov, Daniel Sykora

Revisiting Image Aesthetic Assessment via Self-supervised Feature Learning

AAAI Conference on Artificial Intelligence (AAAI) 2020

Kekai Sheng, Weiming Dong, Menglei Chai, Guohui Wang, Peng Zhou, Feiyue Huang, Bao-Gang Hu, Rongrong Ji, Chongyang Ma

Real-Time Hair Simulation with Neural Interpolation

IEEE Transactions on Visualization and Graphics (TVCG) 2020

Qing Lyu, Menglei Chai, Xiang Chen, Kun Zhou

Human Motion Transfer from Poses in the Wild

European Conference on Computer Vision Workshops (ECCVW) 2020

Jian Ren, Menglei Chai, Sergey Tulyakov, Chen Fang, Xiaohui Shen, Jianchao Yang

Learning to Assess Visual Aesthetics of Food Images

Computational Visual Media (CVM) 2020

Kekai Sheng, Weiming Dong, Haibin Huang, Menglei Chai, Yong Zhang, Chongyang Ma, Bao-Gang Hu

End-to-End Time-Lapse Video Synthesis from a Single Outdoor Image

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2019

Seonghyeon Nam, Chongyang Ma, Menglei Chai, William Brendel, Ning Xu, Seon Joo Kim

Real-Time Patch-Based Stylization of Portraits Using Generative Adversarial Network

ACM/EG Expressive Symposium (Expressive) 2019

David Futschik, Menglei Chai, Chen Cao, Chongyang Ma, Aleksei Stoliar, Sergey Korolev, Sergey Tulyakov, Michal Kucera, Daniel Sykora

Stabilized Real-time Face Tracking via a Learned Dynamic Rigidity Prior

ACM Transactions on Graphics (SIGGRAPH Asia) 2018

Chen Cao, Menglei Chai, Oliver Woodford, Linjie Luo

Parametric Reshaping of Portrait Images for Weight-Change

IEEE Computer Graphics and Applications (CG&A) 2018

Haiming Zhao, Xiaogang Jin, Xiaojian Huang, Menglei Chai, Kun Zhou

A Data-Driven Approach to Four-View Image-Based Hair Modeling

ACM Transactions on Graphics (SIGGRAPH) 2017

Meng Zhang, Menglei Chai, Hongzhi Wu, Hao Yang, Kun Zhou

AutoHair: Fully Automatic Hair Modeling from a Single Image

ACM Transactions on Graphics (SIGGRAPH) 2016

Menglei Chai, Tianjia Shao, Hongzhi Wu, Yanlin Weng, Kun Zhou

Adaptive Skinning for Interactive Hair-Solid Simulation

IEEE Transactions on Visualization and Graphics (TVCG) 2016

Menglei Chai, Changxi Zheng, Kun Zhou

High-Quality Hair Modeling from a Single Portrait Photo

ACM Transactions on Graphics (SIGGRAPH Asia) 2015

Menglei Chai, Linjie Luo, Kalyan Sunkavalli, Nathan Carr, Sunil Hadap, Kun Zhou

A Reduced Model for Interactive Hairs

ACM Transactions on Graphics (SIGGRAPH) 2014

Menglei Chai, Changxi Zheng, Kun Zhou

Cone Tracing for Furry Object Rendering

IEEE Transactions on Visualization and Graphics (TVCG) 2014

Hao Qin, Menglei Chai, Qiming Hou, Zhong Ren, Kun Zhou

Dynamic Hair Manipulation in Images and Videos

ACM Transactions on Graphics (SIGGRAPH) 2013

Menglei Chai, Lvdi Wang, Yanlin Weng, Xiaogang Jin, Kun Zhou

As-Rigid-As-Possible Distance Field Metamorphosis

Computer Graphics Forum (Pacific Graphics) 2013

Yanlin Weng, Menglei Chai, Weiwei Xu, Yiying Tong, Kun Zhou

Hair Interpolation for Portrait Morphing

Computer Graphics Forum (Pacific Graphics) 2013

Yanlin Weng, Lvdi Wang, Xiao Li, Menglei Chai, Kun Zhou

Single-View Hair Modeling for Portrait Manipulation

ACM Transactions on Graphics (SIGGRAPH) 2012

Menglei Chai, Lvdi Wang, Yanlin Weng, Yizhou Yu, Baining Guo, Kun Zhou

AWARDS

CVPR Outstanding Reviewer	2022
NeurIPS Outstanding Reviewer	2021
SIGGRAPH Real-Time Live! Best-In-Show Award	2020
SIGGRAPH Technical Paper Spotlight	2016
Adobe Fellowship Finalist	2015
Microsoft Fellowship	2012
National Scholarship, PRC	2010-2015
Outstanding Graduate Student Award, Zhejiang University	2011
First-Class Excellent Student Award, Zhejiang University	2010