

# Weikai Chen

LEAD RESEARCH SCIENTIST, TENCENT US

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## POSITIONS

<b>Tencent US, U.S.A</b> <i>Lead Research Scientist</i> <i>Senior Research Scientist</i>	Feb. 2022 - Present Sep. 2019 - Feb. 2022
<b>USC Institute for Creative Technologies, U.S.A</b> <i>Research Associate, Vision and Graphics Lab</i> <i>Postdoctoral Researcher, Vision and Graphics Lab</i>	Jan. 2019 - Sep. 2019 Jun. 2017 - Jan. 2019
<b>INRIA, France</b> <i>Visiting Researcher, Alice Team</i>	Jun. 2016 - Aug. 2016

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## EDUCATION

<b>The University of Hong Kong, Hong Kong</b> - <i>Ph.D. in Computer Graphics</i> , advised by Prof. Wenping Wang,	Apr. 2013 - Apr. 2017
<b>Tianjin University, Tianjin, China</b> - <i>Mphil. in Wireless Communication</i> , - <i>B.S. in Electronic Engineering</i> ,	Sep. 2010 - Feb. 2013 Sep. 2006 - Jul. 2010

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## RESEARCH INTERESTS

Interplay among vision, graphics, and deep learning: 3D reasoning from RGB images, 3D reconstruction of general objects/body/face/hair, differentiable rendering, deep generative models.

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## PUBLICATIONS

(\* indicates equal contribution, # indicates corresponding author)

- [32] Weikai Chen, Cheng Lin, Weiyang Li, Bo Yang, “3PSDF: Three-Pole Signed Distance Function for Learning Surfaces with Arbitrary Topologies”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- [31] Haiwei Chen, Jiayi Liu, Weikai Chen, Shichen Liu, Yajie Zhao, “Exemplar-based Pattern Synthesis with Implicit Periodic Field Network”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- [30] Xiaoqian Xu, Pengxu Wei, Weikai Chen, Yang Liu, Mingzhi Mao, Liang Lin, Guanbin Li, “Dual Adversarial Adaptation for Cross-Device Real-World Image Super-Resolution”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- [29] Jia-Heng Tang\*, Weikai Chen\*, Jie Yang, Bo Wang, Songrun Liu, Bo Yang, Lin Gao, “OctField: Hierarchical Implicit Functions for 3D Modeling”, *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS)*, 2021.
- [28] Junkai Huang, Chaowei Fan, Weikai Chen, Zhenhua Chai, Xiaolin Wei, Pengxu Wei, Liang Lin, Guanbin Li, “Trash to Treasure: Harvesting OOD Data with Cross-Modal Matching for Open-Set Semi-Supervised Learning”, *International Conference on Computer Vision (ICCV)*, 2021.
- [27] Mingyue Yang, Yuxin Wen, Weikai Chen, Yongwei Chen, Kui Jia, “Deep Optimized Priors for 3D Shape Modeling and Reconstruction”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.

- [26] Haiwei Chen, Shichen Liu, *Weikai Chen*, Hao Li, “Equivariant Point Network for 3D Point Cloud Analysis”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- [25] Yuda Qiu, Xiaojie Xu, Linteng Qiu, Yan Pan, Yushuang Wu, *Weikai Chen*, Xiaoguang Han, “3DCaricShop: A Dataset and A Baseline Method for Single-view 3D Caricature Face Reconstruction”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- [24] Heming Zhu, Yu Cao, Hang Jin, *Weikai Chen*, Dong Du, Zhangye Wang, Shuguang Cui, Xiaoguang Han, “Deep Fashion3D: A Dataset and Benchmark for 3D Garment Reconstruction from Single Images”, *European Conference on Computer Vision (ECCV)*, 2020, **Oral Presentation**.
- [23] Shichen Liu, Tianye Li, *Weikai Chen*<sup>#</sup>, Hao Li, “A General Differentiable Mesh Renderer for Image-based 3D Reasoning”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2020.
- [22] Kyle Olszewski, Duygu Ceylan, Jun Xing, Jose I. Echevarria, Zhili Chen, *Weikai Chen*, Hao Li, “Intuitive, Interactive Beard and Hair Synthesis with Generative Models”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020, **Oral Presentation**.
- [21] Lihao Tian, Lin Lu, *Weikai Chen*, Yang Xia, Charlie C. L. Wang and Wenping Wang, “Organic Open-cell Porous Structure Modeling”, *ACM Symposium on Computational Fabrication (ACM SCF)*, 2020.
- [20] Shichen Liu, Shunsuke Saito, *Weikai Chen*<sup>#</sup>, Hao Li, “Learning to Infer Implicit Surfaces without 3D Supervision”, *Neural Information Processing Systems (NeurIPS)*, 2019.
- [19] Shichen Liu, Tianye Li, *Weikai Chen*, Hao Li, “Soft Rasterizer: A Differentiable Renderer for Image-based 3D Reasoning”, *International Conference on Computer Vision (ICCV)*, 2019, **Oral Presentation. – Accepted with 3 Strong Accepts**
- [18] Yajie Zhao, Zeng Huang, Tianye Li, *Weikai Chen*, Chloe LeGendre, Xinglei Ren, Ari Shapiro, Hao Li, “Learning Perspective Undistortion of Portraits”, *International Conference on Computer Vision (ICCV)*, 2019, **Oral Presentation**.
- [17] Junyi Pan, Xiaoguang Han, *Weikai Chen*, Jiapeng Tang, Kui Jia, “Deep Mesh Reconstruction from Single RGB Images via Topology Modification Networks”, *International Conference on Computer Vision (ICCV)*, 2019.
- [16] Jun Xing, Koki Nagano, *Weikai Chen*, Haotian Xu, Li-Yi Wei, Jingwan Lu, Byungmoon Kim, Yajie Zhao, Hao Li, “HairBrush for Immersive Data-Driven Hair Modeling”, *ACM Symposium on User Interface Software and Technology (UIST)*, 2019.
- [15] Ryota Natsume, Shunsuke Saito, Zeng Huang, *Weikai Chen*, Chongyang Ma, Hao Li, Shigeo Morishima, “SiCloPe: Silhouette-Based Clothed People”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019, **Oral Presentation. – CVPR Best Paper Finalists**
- [14] Yajie Zhao, Qingguo Xu, *Weikai Chen*, Jun Xing, Chao Du, Xinyu Huang, Ruigang Yang, “Mask-off: Synthesizing Face Images in the Presence of Head-mounted Displays”, *IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)*, 2019.
- [13] Zeng Huang, Tianye Li, *Weikai Chen*, Yajie Zhao, Jun Xing, Chloe LeGendre, Linjie Luo, Chongyang Ma and Hao Li, “Deep Volumetric Video From Very Sparse Multi-View Performance Capture”, *European Conference on Computer Vision (ECCV)*, 2018.
- [12] Yi Zhou, Liwen Hu, Jun Xing, *Weikai Chen*, Han-Wei Kung, Xin Tong, and Hao Li, “HairNet: Single-View Hair Reconstruction using Convolutional Neural Networks”, *European Conference on Computer Vision (ECCV)*, 2018.

- [11] Shugo Yamaguchi, Shunsuke Saito, Koki Nagano, Yajie Zhao, *Weikai Chen*, Shigeo Morishima and Hao Li, “High-Fidelity Facial Reflectance and Geometry Inference From an Unconstrained Image”, *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018)*.
- [10] Loc Huynh, *Weikai Chen*, Shunsuke Saito, Jun Xing, Koki Nagano, Andrew Jones, Hao Li and Paul Debevec, “Mesoscopic Facial Geometry inference Using Deep Neural Networks”, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018, **Spotlight**.
- [9] Yajie Zhao, *Weikai Chen*, Jun Xing, Xiaoming Li, Zach Bessinger, Fuchang Liu, Wangmeng Zuo and Ruigang Yang, “Identity Preserving Face Completion for Large Ocular Region Occlusion”, *British Machine Vision Conference (BMVC)*, 2018.
- [8] *Weikai Chen*, Xiaoguang Han, Guanbin Li, Chao Chen, Jun Xing, Yajie Zhao and Hao Li, “Deep RBFNet: Point Cloud Feature Learning using Radial Basis Functions”, *arXiv:1812.04302*, 2018.
- [7] *Weikai Chen*, Yuexin Ma, Sylvain Lefebvre, Shiqing Xin, Jonàs Martínez and Wenping Wang, “Fabricable Tile Decors,” *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia)*, 2017.
- [6] Jonathan Palacios, Lawrence Roy, Prashant Kumar, Chen-Yuan Hsu, *Weikai Chen*, Chongyang Ma, Li-Yi Wei and Eugene Zhang, “Tensor Field Design in Volumes”, *ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia)*, 2017.
- [5] *Weikai Chen*, Xiaolong Zhang, Shiqing Xin, Yang Xia, Sylvain Lefebvre and Wenping Wang, “Synthesis of Filigrees for Digital Fabrication”, *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 2016.
- [4] Hui Zhang, *Weikai Chen*, Bin Wang, and Wenping Wang, “By Example Synthesis of Three-Dimensional Porous Materials”, *Computer Aided Geometric Design (GMP)*, 2017.
- [3] Jonathan Palacios, Chongyang Ma, *Weikai Chen*, Li-Yi Wei, and Eugene Zhang, “Tensor Field Design in Volumes”, *SIGGRAPH Asia Technical Briefs*, 2016.
- [2] *Weikai Chen*, and Yunhui Chen, “Second-order Differential based Matching Pursuit Method for Compressive Sensing Signal Recovery”, in *International Conference on Wireless Communications and Signal Processing (WCSP)*, 2012.
- [1] Kaihua Liu, *Weikai Chen*<sup>#</sup> and Yongtao Ma, “A compressive sensing method for estimating doubly-selective sparse channels in OFDM system”, *Journal of Tianjin University*, Dec. 2012.

\* indicates corresponding author.

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## PATENTS

- [3] *Weikai Chen*, Cheng Lin, Weiyang Li, Bo Yang, “PSDF: Three-Pole Signed Distance Function for Learning Surfaces with Arbitrary Topologies”, Pending.
- [2] *Weikai Chen*, Bo Wang, Songrun Liu, Bo Yang, “OctField: Hierarchical implicit representation for 3D modeling”, *031384-7120-US*, Pending.
- [1] Bo Wang, *Weikai Chen*, Bo Wang, Bo Yang, Songrun Liu, “Contrastive Point Completion with Fine-to-Coarse Refinement”, *031384-7121-US*, Pending.

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PROFESSIONAL  
ACTIVITIES

**Guest Editor:**

- Frontiers in Virtual Reality

**Senior Program Committee:**

- IJCAI 2021

**Program Committee:**

- IJCAI-ECAI 2022
- AAAI 2020, 2021
- Computational Visual Media Conference (CVM) 2019, 2020, 2021
- IEEE Artificial Intelligence & Virtual Reality (AIVR) 2019, 2020
- Shape Modeling International (SMI) - Fabrication and Sculpting Event 2019
- Pacific Graphics 2018

**Reviewer:**

- Conference
  - ICML 2021
  - ICLR 2021
  - CVPR 2019 - 2022
  - NeurIPS 2020, 2021
  - ECCV 2020
  - ICCV 2019, 2021
  - SIGGRAPH 2021, 2022
  - SIGGRAPH Asia 2017, 2019
  - WACV 2020
  - ACCV 2020
  - International Conference on 3D Vision (3DV) 2018
  - Pacific Graphics 2015, 2018
  - ACM Symposium on Virtual Reality Software and Technology 2018
  - International Conference on Machine Vision Applications (MVA) 2019
- Journal
  - IEEE Transactions on Visualization and Computer Graphics
  - NeuroComputing
  - Computer Graphics Forum
  - Computer Aided Geometric Design
  - The Visual Computer Journal
  - Graphical Models
  - Journal of Visual Communication and Image Representation

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SELECTED AWARDS	Outstanding Contributor (top 5% performance) - Tencent	2021
	Second Place (top 10%) of Tencent IEG Innovation Competition - Tencent	2021
	Best Open-source Dataset Award (Deep Fashion3D) - China Computer Federation	2020
	ACCV Outstanding Reviewer,	2020
	CVPR Best Paper Finalist,	2019
	HKU Postgraduate Scholarship,	2013 - 2017
	National Scholarship by Ministry of Education,	2012
	First-Class Postgraduate Scholarship,	2010 - 2013
	Huawei Scholarship,	2008
	Outstanding Student of Tianjin University,	2006 - 2010

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MENTEES	Mingyue Wei @ SCUT	2019 - current
	Haiwei Chen @ Tencent US	2021
	Shichen Liu @ USC	2018 - 2019
	Tianye Li @ USC	2018 - 2019
	Zeng Huang @ USC (now Snap Research Scientist)	2017

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SKILLS	<b>Programming:</b> C/C++, Python, Matlab, Lua, Mel; OpenGL; Tensorflow, Pytorch, Caffe <b>Languages:</b> Mandarin Chinese (native), English (professional), Cantonese (professional)
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