Xiao Li

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⚗ Research Interests

Computer Graphics and **Computer Vision** in the following topic:

- 3D reconstruction and representation
- Neural rendering
- Multi-modality content generation

🎓 Education

University of Science and Technology of China   2013 – 2019

USTC-MSRA Joint Ph.D. in Pattern Recognition & Intelligent Systems
Department of Automation
Supervisor: Prof. Baining Guo and Prof. Yong Wang

University of Science and Technology of China   2009 – 2013

B.Eng. in Electronic Engineering
Department of Electronic Engineering and Information Science

👥 Experience

Media Computing group, Microsoft Research Asia   May. 2020 – Present

Senior Researcher   Manager: Dr. Yan Lu

Working as a researcher in Media Computing group.

Y-tech Graphics AI group, Kuaishou Technology   Aug. 2019 – May 2020

Algorithm Engineer   Manager: Dr. Chongyang Ma

Worked on innovative R&D projects in the topic of AI for Computer Graphics. Provided algorithm solutions for Kuaishou's apps, e.g. Kuaishou / Yitian camera.

Internet Graphics group, Microsoft Research Asia   July. 2014 – June. 2019

Research Intern (Joint Ph.D. program)   Mentor: Dr. Xin Tong and Dr. Yue Dong

Worked as a research intern in Internet Graphics group. Conducted research on 3D shape modeling, appearance capture and modeling with learning approach.

Internet Graphics group, Microsoft Research Asia   July. 2012 – June. 2013

Research Intern (Pre-Ph.D. program)   Mentor: Dr. Lvdi Wang

Worked as a research intern in Internet Graphics group. Conducted research and development on news visualization, image morphing, image-based hair modeling and interpolation.

◕ Professional Activities

- **Paper reviewer**: CVPR 2020 / 2021 / 2023; ECCV 2020 / 2022; ICCV 2023; AAAI 2022 / 2023; SIGGRAPH Asia 2019; PG 2015 / 2016 / 2017; SMI 2020; EGSR 2021; 3DV 2022
- **Co-chair**: MSRA Student TechFest 2016 / 2018

👥 Social Activities

- **Team leader**, MSRA Aspire Community, 2021 - Present
- **Executive director**, MSRA Joint Ph.D. Alumni, 2019 - Present
- **Team leader**, MSRA Intern Committee Activity Team, 2015 - 2018
- **City Volunteer**, Beijing 2008 Summer Olympic Games

⚙ Projects

Real-time computer vision towards immersive meetings   Jun. 2020 – Present

Collaborating with Microsoft product teams. Providing solutions for real-time video features for Microsoft Teams software, including portrait segmentation, video enhancement, voice-driven animation, etc. Also conducting long-term research on computer vision and graphics. Research results are published on top-tier conferences and journels.

Portrait image manipulation and stylization   Oct. 2019 – May. 2020

Developed multiple algorithms for application on portrait image manipulation, including semantic edge extraction, hand-drawn portrait stylization, and face image synthesis with GANs. Some implemented algorithms have been integrated as features into "Kuaishou" video app and "Yitian" camera app. One research paper on stylization have been accepted to ACM TOMM journal.

3D shape synthesis from image collections   July. 2017 - Apr. 2019

Developed methods for category-specific 3D shapes generation with GAN. As 3D shape data of novel categories are either non-accessible or having few amounts, We developed a novel multi projection GAN method to use large amount of 2D silhouette image collections for training 3D shape generators. One research paper have been published on CVPR 2019.

Appearance modeling and capturing with deep learning   June. 2015 - Apr. 2019

Developed multiple methods for appearance modeling and capturing with learning methods. For single image appearance modeling, we developed a novel self-augment training scheme that utilize large amount of unlabeled photographs, overcoming the lack of labeled training data in appearance modeling field; for appearance capturing, we developed a unified deep inverse rendering framework that optimizes for the appearance parameters in a data-driven latent embedded space, which enables high-resolution appearance estimation from an arbitrary number of inputs. Research results have been published on SIGGRAPH 2017, PG 2018 and SIGGRAPH 2019.

Hair modeling and synthesis from portrait images   Nov. 2012 - July 2013

Developed demo apps with Qt and C++ to generate strand-based 3D hair models from single portrait images and synthesis novel 3D hair shapes by building strand-to-strand correspondences, and morphing between multiple hair models. The corresponded research paper have been published on PG 2013.

⚙ Skills

- Programming: C++ / C# / Python / CUDA
- Machine learning framework: PyTorch / Tensorflow / Caffe
- Languages: Mandarin / English

♡ Honors and Awards

Microsoft Research Asia Stars of Tomorrow (Award of Excellence)	June. 2019
Most Creative Award, MSRA Student TestFest 2018	April. 2018
Hitachi Scholarship, University of Science and Technology of China	Sept. 2012
Excellent Student Scholarship, Sliver, University of Science and Technology of China	Sept. 2011
Excellent Student Scholarship, Bronze, University of Science and Technology of China	Sept. 2010

📑 Publications

CVPR 2023	High-Fidelity and Freely Controllable Talking Head Video Generation Yue Gao, Yuan Zhou, Jinglu Wang, **Xiao Li**, Xiang Ming, Yan Lu
CVPR 2023	SCoDA: Domain Adaptive Shape Completion for Real Scans Yushuang Wu, Zizheng Yan, Ce Chen, Lai Wei, **Xiao Li**, Guanbin Li, Yihao Li, Shuguang Cui, Xiaoguang Han
CVPR 2023	Structural Multiplane Image: Bridging Neural View Synthesis and 3D Reconstruction Mingfang Zhang, Jinglu Wang, **Xiao Li**, Yifei Huang, Yoichi Sato, Yan Lu
CVPR 2023	Two-shot Video Object Segmentation Kun Yan, **Xiao Li**, Fangyun Wei, Jinglu Wang, Chengbin Zhang, Ping Wang, Yan Lu
ECCV 2022	Neural Capture of Animatable 3D Human from Monocular Video Gusi Te, Xiu Li, **Xiao Li**, Jinglu Wang, Wei Hu, Yan Lu
AAAI 2022	Reliable Propagation-Correction Modulation for Video Object Segmentation Xiaohao Xu, Jinglu Wang, **Xiao Li**, Yan Lu
AAAI 2022	Hybrid Instance-aware Temporal Fusion for Online Video Instance Segmentation Xiang Li, Jinglu Wang, **Xiao Li**, Yan Lu
IEEE TMM	Video Instance Segmentation with Instance Flow Assembly Xiang Li, Jinglu Wang, **Xiao Li**, Yan Lu
ACM TOMM	Distribution Aligned Multi-Domain and Multimodal Image Stylization Minxuan Lin, Fan Tang, Weiming Dong, **Xiao Li**, Chongyang Ma, Changsheng Xu
CVPR 2019	Synthesizing 3D Shapes from Silhouette Image Collections using Multi-projection Generative Adversarial Networks **Xiao Li**, Yue Dong, Pieter Peers, Xin Tong
SIGGRAPH 2019	Deep Inverse Rendering for High-resolution SVBRDF Estimation from an Arbitrary Number of Images Duan Gao*, **Xiao Li***, Yue Dong, Pieter Peers, Xin Tong (*equal contribution)
CGI 2019 (short paper)	Capturing Piecewise SVBRDFs with Content Aware Lighting **Xiao Li**, Peiran Ren, Yue Dong, Gang Hua, Xin Tong, Baining Guo
Pacific Graphics 2018	Single Photograph Surface Appearance Modeling with Self-augmented CNNs and Inexact Supervision Wenjie Ye, **Xiao Li**, Yue Dong, Pieter Peers, Xin Tong
SIGGRAPH 2017	Modeling Surface Appearance from a Single Photograph using Self-Augmented Convolutional Neural Networks **Xiao Li**, Yue Dong, Pieter Peers, Xin Tong
Pacific Graphics 2013	Hair Interpolation for Portrait Morphing Yanlin Weng, Lvdi Wang, **Xiao Li**, Menglei Chai, Kun Zhou

⌥ Preprints

arxiv preprint R^2-VOS: Robust Referring Video Object Segmentation via Relational Cycle Consistency
Xiang Li, Jinglu Wang, Xiaohao Xu, **Xiao Li**, Yan Lu, Bhiksha Raj

arxiv preprint   Estimating Neural Reflectance Field from Radiance Field using Tree Structures
Xiu Li, **Xiao Li**, Yan Lu

arxiv preprint   Mimicking the In-Camera Color Pipeline for Camera-Aware Object Compositing
Jun Gao, **Xiao Li**, Liwei Wang, Sanja Fidler, Stephen Lin