

## BIOGRAPHY

I am a postdoctoral researcher (Shuimu Scholar) at the Institute of Future Cities and Infrastructures, Tsinghua University, working with [Prof. Dongping Fang](#). I received my Ph.D. degree from the School of Artificial Intelligence and Automation, Huazhong University of Science and Technology, supervised by [Prof. Zhiguo Cao](#). My research interests lie in (1) 3D vision and image manipulation, with a particular emphasis on computational photography; (2) multimodal language models and their applications in construction automation.

## CURRENT EMPLOYMENT AND WORKING EXPERIENCE

<b>Postdoctoral Researcher   Institute of Future Cities and Infrastructures, Tsinghua University</b> Advisor: <a href="#">Prof. Dongping Fang</a> . I lead a project on multi-modal LLMs in construction safety.	Aug 2025 – Now
<b>Project Officer   S-Lab for Advanced Intelligence, Nanyang Technological University</b> Advisor: <a href="#">Prof. Guosheng Lin</a> . I lead a project on high-fidelity human avatar modeling.	Nov 2023 – Nov 2024

## EDUCATION

<b>Huazhong University of Science and Technology, China</b> <i>Doctor of Artificial Intelligence</i>	Sep 2020 – Jun 2025 GPA: <b>90.19</b>
<b>Huazhong University of Science and Technology, China</b> <i>Bachelor of Automation</i>	Sep 2016 – Jun 2020 GPA: <b>89.2</b>

## PUBLICATIONS

## Journal Articles

<b>Defocus to Focus:</b> <b>Photo-realistic Bokeh Rendering by Fusing Defocus and Radiance Priors</b> <i>Xianrui Luo*</i> , Juewen Peng*, Ke Xian, Zijin Wu, Zhiguo Cao (*Equal Contribution)	Information Fusion 2023 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>Point-and-Shoot All-in-Focus Photo Synthesis From Smartphone Camera Pair</b> <i>Xianrui Luo</i> , Juewen Peng, Weiyue Zhao, Ke Xian, Hao Lu, Zhiguo Cao	IEEE TCSVT 2023 <a href="#">[Paper]</a>
<b>Dual-Camera All-in-Focus Neural Radiance Fields</b> <i>Xianrui Luo</i> , Zijin Wu, Juewen Peng, Huiqiang Sun, Zhiguo Cao, Guosheng Lin	IEEE TPAMI 2025 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>BokehMe++: Harmonious Fusion of Classical and Neural Rendering for Versatile Bokeh Creation</b> <i>Juewen Peng</i> , Zhiguo Cao, <i>Xianrui Luo</i> , Ke Xian, Wenfeng Tang, Jianming Zhang, Guosheng Lin	IEEE TPAMI 2024 <a href="#">[Paper]</a>

## Conference Papers

<b>Dynamic Neural Radiance Field From Defocused Monocular Video</b> <i>Xianrui Luo</i> , Huiqiang Sun, Juewen Peng, Zhiguo Cao	ECCV 2024 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>Bokeh Rendering from Defocus Estimation</b> <i>Xianrui Luo*</i> , Juewen Peng*, Ke Xian, Zijin Wu, Zhiguo Cao (*Equal Contribution)	ECCVW 2020 <a href="#">[Paper]</a>
<b>Interactive Portrait Bokeh Rendering System</b> <i>Juewen Peng</i> , <i>Xianrui Luo</i> , Ke Xian, Zhiguo Cao	ICIP 2021 <a href="#">[Paper]</a>
<b>BokehMe: When Neural Rendering Meets Classical Rendering</b> <i>Juewen Peng</i> , Zhiguo Cao, <i>Xianrui Luo</i> , Hao Lu, Ke Xian, Jianming Zhang	CVPR 2022 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>MPIB: An MPI-Based Bokeh Rendering Framework for Realistic Partial Occlusion Effects</b> <i>Juewen Peng</i> , Jianming Zhang, <i>Xianrui Luo</i> , Hao Lu, Ke Xian, Zhiguo Cao	ECCV 2022 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>Fast Full-frame Video Stabilization with Iterative Optimization</b> <i>Weiyue Zhao</i> , Xin Li, Zhan Peng, <i>Xianrui Luo</i> , Xinyi Ye, Hao Lu, Zhiguo Cao	ICCV 2023 <a href="#">[Paper]</a> <a href="#">[Code]</a>
<b>Selective Bokeh Effect Transformation</b> <i>Juewen Peng</i> , Zhiyu Pan, Chengxin Liu, <i>Xianrui Luo</i> , Huiqiang Sun, Liao Shen, Ke Xian, Zhiguo Cao	CVPRW 2023 <a href="#">[Paper]</a> <a href="#">[Code]</a>

PROJECT

<b>S-Lab Funding Project on Human Avatar Modeling</b> I serve as a core member responsible for: 1. collecting the datasets required for the character animation task. I also clean the collected data to ensure its accuracy and availability, and provide a high-quality foundation for the subsequent training of the action generation model. 2. capturing and synthesizing data for the human avatar modeling task. I conduct research on high-fidelity human avatar reconstruction, collaborating closely with team members.	Nov 2023 – Nov 2024
<b>NTIRE 2023 Challenge on Bokeh Effect Transformation (CVPR2023 Workshop)</b> Winner Award	Jun 2023
<b>Vivo Funding Project on Simulation of Bokeh Effect from DSLR</b> I serve as a core member responsible for realistic bokeh synthesis for smartphone photography, I analyze experimental results and provide ideas to improve visualizations.	Jan 2023 – Dec 2023
<b>AIM 2020 Challenge on Rendering Realistic Bokeh (ECCV2020 Workshop)</b> Runner Up Award	Aug 2020

AWARDS AND HONORS

<b>National Scholarship (1% of all students)</b>	<i>Huazhong University of Science and Technology</i>	2024
<b>Academic Scholarship</b>	<i>Huazhong University of Science and Technology</i>	2020 – 2024
<b>Outstanding Graduates</b>	<i>Huazhong University of Science and Technology</i>	2020
<b>Merit Student (5% of all students)</b>	<i>Huazhong University of Science and Technology</i>	2016, 2023
<b>Best Poster Award</b>	<i>Artificial Intelligence Conference and Entrepreneurs Summit Forum of China's Optics Valley</i>	2022

SKILLS

<b>Programming Language</b> <i>Python, MATLAB, C</i>	<b>Machine Learning Tools</b> <i>PyTorch, OpenCV</i>	<b>English</b> <i>TOEFL 109, GRE 325 (AW 4.0)</i>
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