Cheng Zhang

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Education

University of California, Irvine — *Irvine, CA*

Ph.D. in Computer Science — *September 2017 – July 2022*

- Supervisor: Prof. Shuang Zhao

Columbia University in the City of New York — *New York, NY*

M.S. in Computer Science — *September 2015 – February 2017*

- GPA: 3.97/4.0

Beijing University of Technology — *Beijing, China*

B.E. in Electronics Information Engineering — *September 2011 – June 2015*

- GPA: 3.74/4.0
- Exchange student at **University of Illinois at Chicago** (senior year)

Publications

Image-space Adaptive Sampling for Fast Inverse Rendering

*Kai Yan, **Cheng Zhang**, Sébastien Speierer, Guangyan Cai, Yufeng Zhu, Zhao Dong, Shuang Zhao*

*ACM Transactions on Graphics (**SIGGRAPH**), 2025*

LIRM: Large Inverse Rendering Model for Progressive Reconstruction of Shape, Materials and View-dependent Radiance Fields

*Zhengqin Li, Dilin Wang, Ka Chen, Zhaoyang Lv, Thu Nguyen-Phuoc, Milim Lee, Jia-Bin Huang, Lei Xiao, **Cheng Zhang**, Yufeng Zhu, Carl S Marshall, Yuheng Ren, Richard Newcombe, Zhao Dong*

*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025*

Digital Twin Catalog: A large-scale Photorealistic 3D Object Digital Twin Dataset

*Zhao Dong, Ka Chen, Zhaoyang Lv, Hong-Xing Yu, Yunzhi Zhang, **Cheng Zhang**, Yufeng Zhu, Stephen Tian, Zhengqin Li, Geordie Moffatt, Sean Christofferson, James Fort, Xiaqing Pan, Mingfei Yan, Jiajun Wu, Carl Yuheng Ren, Richard Newcombe*

*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025*

Estimating Uncertainty in Appearance Acquisition

*Zhiqian Zhou, **Cheng Zhang**, Zhao Dong, Carl Marshall, Shuang Zhao*

*Eurographics Symposium on Rendering (**EGSR**), 2024*

TextureDreamer: Image-Guided Texture Synthesis Through Geometry-Aware Diffusion

*Yu-Ying Yeh, Jia-Bin Huang, Changil Kim, Lei Xiao, Thu Nguyen-Phuoc, Numair Khan, **Cheng Zhang**, Manmohan Chandraker, Carl S Marshall, Zhao Dong, Zhengqin Li*

*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024*

Efficient Path-Space Differentiable Volume Rendering With Respect To Shapes

*Zihan Yu, **Cheng Zhang**, Olivier Maury, Christophe Hery, Zhao Dong, Shuang Zhao*

Computer Graphics Forum, 2023

Neural-PBIR Reconstruction of Shape, Material, and Illumination

*Cheng Sun, Guangyan Cai, Zhengqin Li, Kai Yan, **Cheng Zhang**, Carl Marshall, Jia-Bin Huang, Shuang Zhao, Zhao Dong*

*International Conference on Computer Vision (**ICCV**), 2023*

SAM-RL: Sensing-Aware Model-Based Reinforcement Learning via Differentiable Physics-Based Simulation and Rendering

*Jun Lv, Yunhai Feng, **Cheng Zhang**, Shuang Zhao, Lin Shao, Cewu Lu*

Robotics: Science and Systems (Best System Paper Award Finalist), *2023*

Efficient Path-Space Differentiable Volume Rendering With Respect To Shapes

*Zihan Yu, **Cheng Zhang**, Olivier Maury, Christophe Hery, Zhao Dong, Shuang Zhao*

Computer Graphics Forum (Eurographics Symposium on Rendering), 42(4)

Efficient Differentiation of Pixel Reconstruction Filters for Path-Space Differentiable Rendering

*Zihan Yu, **Cheng Zhang**, Derek Nowrouzezahrai, Zhao Dong, Shuang Zhao*

*ACM Transactions on Graphics (**SIGGRAPH Asia 2022**), 41(6)*

Antithetic Sampling for Monte Carlo Differentiable Rendering

***Cheng Zhang**, Zhao Dong, Michael Doggett, Shuang Zhao*

*ACM Transactions on Graphics (**SIGGRAPH 2021**), 40(4)*

Path-Space Differentiable Rendering of Participating Media

Cheng Zhang, Zihan Yu*, Shuang Zhao (*equal contribution)*

*ACM Transactions on Graphics (**SIGGRAPH 2021**), 40(4)*

Path-Space Differentiable Rendering

***Cheng Zhang**, Bailey Miller, Kai Yan, Ioannis Gkioulekas, Shuang Zhao*

*ACM Transactions on Graphics (**SIGGRAPH 2020**), 39(4)*

Multi-Scale Appearance Modeling of Granular Materials with Continuously Varying Grain Properties

***Cheng Zhang**, Shuang Zhao*

*Eurographics Symposium on Rendering (**EGSR**), 2020*

A Differential Theory of Radiative Transfer

***Cheng Zhang**, Lifan Wu, Changxi Zheng, Ioannis Gkioulekas, Ravi Ramamoorthi, Shuang Zhao*

*ACM Transctions on Graphics (**SIGGRAPH Asia 2019**), 38(6)*

FontCode: Embedding Information in Text Documents using Glyph Perturbation

*Chang Xiao, **Cheng Zhang**, Changxi Zheng*

*ACM Transctions on Graphics (**SIGGRAPH 2018**), 37(2)*

Patents

Systems and methods for steganography based on text fonts

*Changxi Zheng, Chang Xiao, **Cheng Zhang***

US Patent 10,755,375

Method and device for efficient building footprint determination

*Lincan Zou, Liu Ren, Zeng Dai, **Cheng Zhang***

US Patent 10,553,025

Employment

Meta Reality Labs — *Redmond, WA*

Research Scientist — *July 2022 - Present*

- Topic: Computer graphics research (e.g., differentiable rendering, inverse rendering) , 3D Reconstruction

NVIDIA Corporation — *Remote*

Applied Deep Learning Research (ADLR) Group: Research intern — *June 2021 - November 2021*

- Topic: Differentiable rendering on GPU

Facebook Reality Labs — *Redmond, WA*

Graphics Group: Research intern — *June 2019 - September 2019*

- Topic: 3D reconstruction, differentiable rendering

Robert Bosch LLC — *Sunnyvale, CA*

HMI Group: Motion Capture and Recognition intern — *June 2018 - September 2018*

- Topic: Automatic cycle detection and similarity evaluation of time series data

Robert Bosch LLC — *Palo Alto, CA*

HMI Group: Graphics Research intern — *May 2017 - August 2017*

- Topic: Building footprints determination for real-time shadow generation

Columbia University — *New York, NY*

Computer Graphics Group: Graduate Research Assistant — *June 2016 - April 2017*

- Topic: Text editing, information embedding

Reviewer

2025 **ACM SIGGRAPH, ACM SIGGRAPH Asia**
2024 **ACM SIGGRAPH, ACM SIGGRAPH Asia, EGSR**
2023 **Nature Scientific Reports, ACM SIGGRAPH Asia, Pacific Graphics**
2022 **ACM SIGGRAPH**
2021 **ACM SIGGRAPH, Computer Graphics Forum**
2020 **ACM SIGGRAPH Asia**

Honors & Awards

2023 **ACM SIGGRAPH Outstanding Doctoral Dissertation Award** *Worldwide*
2021 **Facebook Fellowship** *Worldwide*
2013 **Beichuan Academic Scholarship** *Beijing University of Technology*
2011-2014 **Academic Excellence Award** *Beijing University of Technology*

Skills

Programming C, C++, Python, Matlab, TEX, CUDA
Software and Applications Mitsuba, PyTorch, Unity3D, Blender, OptiX