

# Cheng Zhang

✉ zhangchengge@gmail.com | 🌐 holmes969.github.io/

## Education

### University of California, Irvine

PH.D. IN COMPUTER SCIENCE

- Supervisor: Prof. Shuang Zhao

Irvine, CA

September 2017 – July 2022

### Columbia University in the City of New York

M.S. IN COMPUTER SCIENCE

- GPA: 3.97/4.0

New York, NY

September 2015 – February 2017

### Beijing University of Technology

B.E. IN ELECTRONICS INFORMATION ENGINEERING

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

Beijing, China

September 2011 – June 2015

## Publications

### 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)

### 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**<sup>\*</sup>, Zihan Yu<sup>\*</sup>, Shuang Zhao (<sup>\*</sup>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 Transactions on Graphics (SIGGRAPH Asia 2019), 38(6)

### FONTCODE: EMBEDDING INFORMATION IN TEXT DOCUMENTS USING GLYPH PERTURBATION

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

ACM Transactions on Graphics (SIGGRAPH 2018), 37(2)

## Patents

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### 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

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### Meta Reality Labs

RESEARCH SCIENTIST

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

Redmond, WA

July 2022 - Present

### NVIDIA Corporation

APPLIED DEEP LEARNING RESEARCH (ADLR) GROUP: RESEARCH INTERN

- Topic: Differentiable rendering on GPU

Remote

June 2021 - November 2021

### Facebook Reality Labs

GRAPHICS GROUP: RESEARCH INTERN

- Topic: 3D reconstruction, differentiable rendering

Redmond, WA

June 2019 - September 2019

### Robert Bosch LLC

HMI GROUP: MOTION CAPTURE AND RECOGNITION INTERN

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

Sunnyvale, CA

June 2018 - September 2018

### Robert Bosch LLC

HMI GROUP: GRAPHICS RESEARCH INTERN

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

Palo Alto, CA

May 2017 - August 2017

### Columbia University

COMPUTER GRAPHICS GROUP: GRADUATE RESEARCH ASSISTANT

- Topic: Text editing, information embedding

New York, NY

June 2016 - April 2017

## Reviewer

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2023	<b>Nature Scientific Reports, ACM SIGGRAPH Asia, Pacific Graphics</b>
2022	<b>ACM SIGGRAPH</b>
2021	<b>ACM SIGGRAPH, Computer Graphics Forum</b>
2020	<b>ACM SIGGRAPH Asia</b>

## Honors & Awards

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

## Skills

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### Programming

C, C++, Python, Matlab, TeX, CUDA

### Software and Applications

Mitsuba, PyTorch, Unity3D, Blender, OptiX