

ABOUT ME

My background is mainly focused on **Computer Graphics**, specially in **Physics-based Rendering** and **Inverse-rendering**. I am also interested in **Material Capture and generation** by using **GAN/Diffusion** model. How to decompose **light/shadow** and material properties from a 3D model (Mesh/NeRF/**3DGS**) and make it **relightable** and **editable** are what I am willing to solve. Besides, I am interested in any project related to **Meta Human**.

EDUCATION

University of California, Irvine

Irvine, CA, US

Ph.D in Computer Science

Sept. 2016 – Aug. 2021

Dissertation: Multi-scale Appearance Modeling of Complex Materials.

Advisor: [Shuang Zhao](#)

University of Chinese Academy of Sciences

Beijing & Shenzhen, China

M.S. in Computer Science

Sept. 2010 – Jul. 2013

Thesis: GPU-based Soft Body Deformation with Nonlinear Finite Element Method.

Advisor: [Pheng Ann Heng](#) (CUHK)

Central South University

Changsha, China

B.S. in Mathematics and Applied Mathematics

Sept. 2006 – Jul. 2010

Thesis: Forces Distribution with Fractal Theory in High Velocity Compaction Technology.

WORKING
EXPERIENCES

Tencent America

New York & Playa Vista, CA, US

Senior Researcher at Pixel Lab, IEG

Sept. 2021 – Jan. 2024

Working on GenAI: diffusion model, 3D Gaussian splatting, image-based relighting; Unreal Engine 5: volumetric rendering; Photogrammetry: texture map delighting, shadow and highlight removal.

Manager: [Changxi Zheng](#) and [Bo Yang](#)

Facebook Reality Lab

Sausalito, CA, US

Research Intern at Monaco Team

July. 2020 – Sept. 2020

Working on Eye caustics rendering and its inverse problem.

Advisor: [Christophe Hery](#), [Olivier Maury](#)

Adobe Research

San Jose, CA, US

Research Intern at Emerging Graphics Group

July. 2019 – Sept. 2019

Working on Material capture and estimation.

Advisor: [Miloš Hašan](#), [Kalyan Sunkavalli](#)

Megvii (Face++) Research USA

Redmond, WA, US

Research Intern

July. 2018 – Sept. 2018

Working on Human face shadow/highlight removal and face relighting.

Advisor: [Jue Wang](#)

Autodesk

San Francisco, CA, US

Research Intern at Core Rendering team

July. 2017 – Sept. 2017

Working on efficient volumetric rendering of 3D-printing materials.

Advisor: [Miloš Hašan](#)

Nanyang Technological University

Singapore

Research Associate at BeingThere Centre (BTC), IMI

Oct. 2013 – Mar. 2016

(BTC is a US\$18 million international research project on 3D Telepresence and Virtual Reality between ETH ([Markus Gross](#)), UNC ([Henry Fuchs](#)) and NTU ([Nadia Magnenat Thalmann](#)).)

Working on stereo rendering; physical-based video manipulation; virtual try-on system for prescrip-

tion glasses.

Collaborators: [Miriam Reiner](#), [Jean-Charles Bazin](#), [Tobias Martin](#), [Claudia Plüss](#), [Pierre-Yves Laffont](#), [Qian Zhang](#)

Advisor: [Tat-Jen Cham](#)

Shenzhen Institutes of Advanced Technology

Research Assistant at HCI lab

Shenzhen, China

Sept. 2011 – Jul. 2013

Working on mesh processing; soft body simulation; virtual surgery; CUDA acceleration.

Advisor: Pheng-Ann Heng, Yongming Xie

SELECTED
PUBLICATIONS

“Woven Fabric Capture from a Single Photo” by Wenhua Jin, Beibei Wang, Milos Hasan, **Yu Guo**, Steve Marschner and Lingqi Yan. *SIGGRAPH Asia ’22*

“Beyond Mie Theory: Systematic Computation of Bulk Scattering Parameters based on Microphysical Wave Optics” by **Yu Guo**, Adrian Jarabo and Shuang Zhao. *ACM Transactions on Graphics (TOG)*, 2021 (presented at *SIGGRAPH Asia ’21*).

“MaterialGAN: Reflectance Capture using a Generative SVBRDF Model” by **Yu Guo**, Cameron Smith, Miloš Hašan, Kalyan Sunkavalli and Shuang Zhao. *ACM Transactions on Graphics (TOG)*, 2020 (presented at *SIGGRAPH Asia ’20*).

“A Bayesian Inference Framework for Procedural Material Parameter Estimation” by **Yu Guo**, Miloš Hašan, Lingqi Yan and Shuang Zhao. *Computer Graphics Forum (CGF)*, 2020 (presented at *Pacific Graphics ’20*).

“Position-Free Monte Carlo Simulation for Arbitrary Layered BSDFs” by **Yu Guo**, Miloš Hašan and Shuang Zhao. *ACM Transactions on Graphics (TOG)*, 2018 (presented at *SIGGRAPH Asia ’18*).

“A Virtual Try-on System for Prescription Eyeglasses” by Qian Zhang, **Yu Guo**, Pierre-Yves Laffont, Tobias Martin, and Markus Gross. *IEEE Computer Graphics and Applications (CG&A)*, 2017.

“Physically Based Video Editing” by Jean-Charles Bazin, Claudia Plüss (Kuster), **Yu Guo**, Tobias Martin, Alec Jacobson, and Markus Gross. *Computer Graphics Forum (CGF)*, 2016 (presented at *Pacific Graphics ’16*).

“A GPU-Accelerated Finite Element Solver for Simulation of Soft-Body Deformation” by **Yu Guo**, Jianying Li, Ping Liu, Qiong Wang, and Jing Qin. *International Conference on Information and Automation (ICIA)*, 2013.

“A Master-Slave Robotic Simulator Based on GPUDirect” by Jianying Li, **Yu Guo**, Heye Zhang, Yongming Xie. *International Conference on Intelligent Robots and Systems (IROS)*, 2012.

REVIEWS

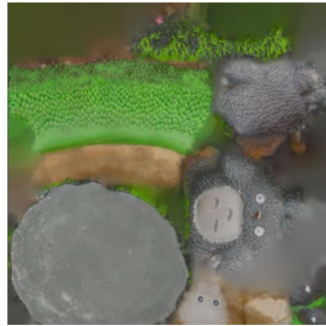
TOG, CGF, SIGGRAPH, SIGGRAPH Asia, EG, PG

Previous Projects (main contribution)

Tencent America:



- UE5 plugin
- Snow rendering
- Multiple scattering



- Photogrammetry
- Texture delighting
- Shadow removal



- Image generation
- Diffusion models
- Relighting

During PhD:



- Forward rendering
- Layered BSDF
- PBRT-v4



- Volume rendering
- Wave optics

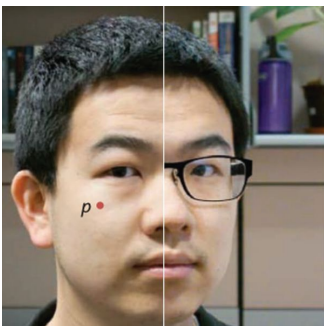


- Inverse-rendering
- SVBRDF
- MaterialGAN

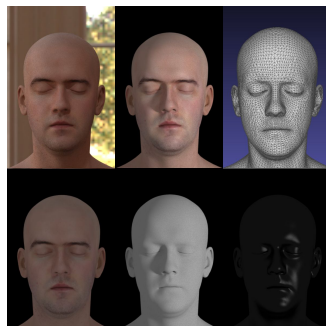


- Procedural material
- Bayesian theory
- MCMC sampling

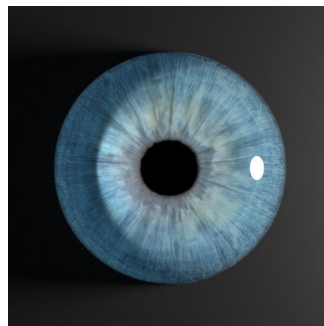
Human face related:



- Virtual try-on
- Prescription glasses



- Face relighting
- Face rendering



- Eye rendering
- Eye reconstruction