Yu Guo (update: 02/01/2024) https://tflsguoyu.github.io/ tflsguoyu@gmail.com

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** by using **Generative AI Models** or **Procedural Models**. How to decompose **light/shadow** and material properties from a 3D model (Mesh/NeRF/**3DGS**) and make it **relightable** 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, NY, US**
Senior Researcher at Pixel Lab — **Jan. 2023 – Jan. 2024**
Working on GenAI, diffusion model, 3D Gaussian splatting, image-based relighting.
Manager: Changxi Zheng

Tencent America — **Playa Vista, CA, US**
Senior Researcher at Graphics and Vision Team — **Sept. 2021 – Dec. 2022**
Working on Unreal Engine 5: volumetric rendering; Photogrammetry: texture map delighting, shadow and highlight removal.
Manager: 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 prescription 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 **Shenzhen, China**
Research Assistant at HCI lab **Sept. 2011 – Jul. 2013**
Working on mesh processing; soft body simulation; virtual surgery; CUDA acceleration.
Advisor: Pheng-Ann Heng, Yongming Xie

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.*

"**3D Faces are Recognized More Accurately and Faster than 2D Faces, but with Similar Inversion Effects**" by Derric Eng, Belle Yick, **Yu Guo**, Hong Xu, Miriam Reiner, Tat-Jen Cham, and Annabel Chen. *Vision Research, 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).*

"**GPU Accelerated CBCT Reconstruction from Few Views with SART and TV Regularization**" by Ping Liu, Lin Shi, Defeng Wang, **Yu Guo**, Jianying Li, Jing Qin, and Pheng-Ann Heng. *International Workshop on High Performance Computing for Biomedical Image Analysis (HPC-MICCAI), 2013.*

"**Real-time Hand Detection Based on Multi-stage HOG-SVM Classifier**" by Jiang Guo, Jun Cheng, Jianxin Pang, and **Yu Guo**. *International Conference on Image Processing (ICIP), 2013.*

"**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 Survey on Simulation of Soft Tissue Deformation in Virtual Surgery**(In Chinese)" by **Yu Guo**, Jing Qin. *Journal of Integration Technology (JIT), 2013.*

"**Fall over or Sliding down?**" by **Yu Guo**. *SIGGRAPH Asia (Poster), 2012.*

"**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