Mengqi (Mandy) Xia

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Research Interests

Physically-based Rendering, Material Models, Differentiable Rendering, Inverse Rendering.

Education

Cornell University Sept 2016 – July 2022

- Ph.D. in Computer Science
- Advisor: **Prof. Steve Marschner**

University of California, Los Angeles (UCLA) Sept 2012 – June 2016

- B.S. in Applied Mathematics with specialization in computing
- Graduated with Summa Cum Laude.

Academic and Industry Experience

Yale University, New Haven, CT July 2024 – Present

- Postdoctoral researcher working at the Computer Graphics Lab with **Prof. Julie Dorsey** and **Prof. Holly Rushmeier**

École Polytechnique Fédérale de Lausanne (EPFL), Sept 2022 – June 2024
Lausanne, Switzerland

- Postdoctoral researcher working at the Realistic Graphics Lab with **Prof. Wenzel Jakob**

Facebook Reality Lab, Remote May - Sept 2021, May - Sept 2020

- Research intern working with **Dr. Christophe Hery**

Pixar Animation Studios, Emeryville, CA June - Sept 2018

- Research intern working with **Dr. Christophe Hery** and **Dr. Mark Meyers**

Publications

A Practical Wave Optics Reflection Model for Hair and Fur
Mengqi (Mandy) Xia, Bruce Walter, Christophe Hery, Olivier Maury, Eric Michielssen, Steve Marschner
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2023)

A Full-Wave Reference Simulator for Computing Surface Reflectance
Yunchen Yu, ***Mengqi (Mandy) Xia***, Bruce Walter, Eric Michielssen, Steve Marschner
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2023)

Iridescent Water Droplets Beyond Mie Scattering
Mengqi (Mandy) Xia, Bruce Walter, Steve Marschner
Computer Graphics Forum 42 (4) (Proceedings of Eurographics Symposium on Rendering 2023)

A Hyperspectral Space of Skin Tones for Inverse Rendering of Biophysical Skin Properties
Carlos Aliaga, ***Mengqi (Mandy) Xia***, Hao Xie, Adrian Jarab, Gustav Braun, Christophe Hery
Computer Graphics Forum 42 (4) (Proceedings of Eurographics Symposium on Rendering 2023)

A Wave Optics Based Fiber Scattering Model
Mengqi (Mandy) Xia, Bruce Walter, Eric Michielssen, David Bindel, Steve Marschner
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2020)

Gaussian Product Sampling for Rendering Layered Materials
Mengqi (Mandy) Xia, Bruce Walter, Christophe Hery, Steve Marschner

Computer Graphics Forum 39 (1), 420-435 (2020)

An Efficient Primal-Dual Method for the Obstacle Problem
Dominique Zosso, Braxton Osting, ***Mengqi (Mandy) Xia***, Bruce Walter, Stanley Osher
Journal of Scientific Computing 73.1: 416-437 (2017)

Physically Realistic Rendering of Complex Materials Using Wave Optics
Mengqi (Mandy) Xia
Ph.D. thesis, 2022

Teaching

CS5625 Interactive Computer Graphics, Cornell University — Jan - May, 2019
- Teaching Assistant
- Held office hours, graded homework and exams.

CS4620 Introduction to Computer Graphics, Cornell University — Jan - May, 2018
- Teaching Assistant
- Helped design exam problems, written and programming homework.
- Held office hours, graded homework and exams.
- Led rendering reading group discussion among course staff.

CS1112 Introduction to Computing Using MATLAB, Cornell University — Sept 2016 - May 2017
- Teaching Assistant
- Led discussion sessions, held office hours, and graded homework and exams.

Mentoring

Rachel Liang, M.S., Yale University — Sept 2024 - May 2025
- Master thesis: *Hyperspectral Inverse Rendering*

Jonathan Chuah, M.S., EPFL — Feb - June 2024
- *Differentiable Lens Design*

Joachiam Favre, B.S., EPFL — Sept 2023 - June 2024
- *Uncertainty Estimation in Forward and Inverse Rendering*

Yuxin Wang, M.S., EPFL — Feb - June 2023
- *Line by Line Absorption Coefficient Solver*

Ningwei Ma, M.S., EPFL — Sept 2022 - Jan 2023
- *Hair Shading in Mitsuba 3*

Helen Wang, B.S., Cornell University — Sept 2021 - May 2022
- *Wavefront Tracing*

Ryan Lefkowitz, B.S., Cornell University — Jan - May 2020
- *Elliptical Fiber Rendering*

Jeremy Paton, B.S., Cornell University — Jan - May 2017
- *Procedural Modeling in Houdini*

Invited Talks

Physically Realistic Rendering of Complex Materials Using Wave Optics
- Standford Computational Imaging Lab — Dec, 2023
- Carnegie Mellon University Computer Graphics Group — Dec, 2023
- University of Zurich, Switzerland — Mar, 2023
- Pixel Cafe Seminar, University of California San Diego — Jan, 2022

- Cornell CS Colloquium — Sept, 2021

A Practical Wave Optics Reflection Model for Hair and Fur — SIGGRAPH 2023
Iridescent Water Droplets Beyond Mie Scattering — EGSR 2023
Gaussian Product Sampling for Rendering Layered Materials — Eurographics 2021
A Wave Optics Based Fiber Scattering Model — SIGGRAPH Asia 2020

Honors & Awards

WiGRAPH Rising Stars in Computer Graphics, co-located with SIGGRAPH — 2022-2023
Rising Stars in EECS, University of California, Berkeley — Nov, 2020
Travel Grant to Grace Hopper Conference, Cornell University — Oct, 2016
Dean's Honors List, University of California, Los Angeles — 2012-2016
Best Visualization Honorable Mention, Datafest, Los Angeles — May 2014

Professional Services

- **Technical papers committee member** for SIGGRAPH 2025
- **Reviewer** for SIGGRAPH, SIGGRAPH Asia, Eurographics, Computer Graphics Forum, Pacific Graphics, Journal of Computer Graphics Techniques, Computers & Graphics, The Visual Computer, Journal of Quantitative Spectroscopy and Radiative Transfer.