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), Lausanne, Switzerland Sept 2022 – June 2024

- 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

Predicting Fabric Appearance Through Thread Scattering and Inversion

Mengqi (Mandy) Xia, Zhaoyang Zhang, Sumit Chaturvedi, Yutong Yi, Rungdong Wu, Holly Rushmeier, Julie Dorsey

ACM Transactions on Graphics (Proceedings of SIGGRAPH 2025)

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

CPCS 479/579 Advanced Topics in Computer Graphics, Yale University — Jan - May, 2025
- Guest Instructor
- Lecture on Computational Photography.

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's 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

Unveiling Reality Through Multiscale Optical Simulations and Inverse Rendering

- Peking University, China — June, 2025
- Tsinghua University, China — June, 2025
- Beijing Normal University, China — June, 2025
- New England Symposium on Graphics, MIT — April, 2025
- School of Interactive Computing, Georgia Tech — Feb, 2025
- Bio Inspired Vision Lab, Northwestern University — Jan, 2025

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
- **Program committee member** for EGSR 2025
- **International program committee member** for Eurographics 2025 Short Paper program
- **International program committee member** for CAD/Graphics 2025
- **Reviewer** for SIGGRAPH, SIGGRAPH Asia, Eurographics, Pacific Graphics, Computer Graphics Forum, IEEE Transactions on Visualization and Computer Graphics, Journal of Computer Graphics Techniques, Computers & Graphics, The Visual Computer, Journal of Quantitative Spectroscopy and Radiative Transfer.