

# Kenneth Chen

PhD Student

New York University

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## Research Interests

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I am broadly interested in computer graphics & displays, VR/AR, psychophysics, high dynamic range, color, tone mapping, image quality, and more. My thesis work focuses on display power optimization techniques for wide-field-of-view displays, especially through studies of human preference and perception.

## Education

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- 2023 – **New York University**  
*PhD in Computer Science*  
Supervised by Prof. Qi Sun
- 2021 – 2023 **New York University**  
*MS in Computer Science*
- 2017 – 2021 **University of California, Berkeley**  
*BA in Computer Science*  
Supervised by Prof. Carlo Sequin

## Publications

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- 2025 **What is HDR? Perceptual Impact of Luminance and Contrast**  
**K. Chen**, N. Matsuda, J. McElvain, Y. Zhao, T. Wan, Q. Sun<sup>†</sup>, A. Chapiro<sup>†</sup>  
*ACM SIGGRAPH*
- Image-GS: Content-Adaptive Image Representation via 2D Gaussians**  
Y. Zhang, B. Li, A. Kuznetsov, A. Jindal, S. Diolatzis, **K. Chen**, A. Sochenov, A. Kaplanyan, Q. Sun  
*ACM SIGGRAPH*
- Novel View Synthesis for 3D Computer-Generated Holograms Using Deep Neural Fields**  
**K. Chen**, A. Wen, Y. Zhang, P. Chakravarthula, Q. Sun  
*Optics Express*
- Process Only Where You Look: Hardware and Algorithm Co-optimization for Efficient Gaze-Tracked Image Rendering in Virtual Reality**  
H. Wang, W. Liu, **K. Chen**, Q. Sun, S. Q. Zhang  
*ACM/IEEE ISCA*

### Perceptually-Guided Acoustic “Foveation”

X. Peng, **K. Chen**, I. Roman, J. P. Bello, P. Chakravarthula, Q. Sun  
*IEEE VR*

2024

### PEA-PODs: Perceptual Evaluation of Algorithms for Power Optimization in XR Displays

**K. Chen**, T. Wan, N. Matsuda, A. Ninan, A. Chapiro<sup>†</sup>, Q. Sun<sup>†</sup>  
*ACM SIGGRAPH* | Best Paper Award, Honorable Mention

### Exploiting Human Color Discrimination for Memory- and Energy-Efficient Image Encoding in Virtual Reality

N. Ujjainkar, E. Shahan, **K. Chen**, B. Duinkharjav, Q. Sun, Y. Zhu  
*ACM ASPLOS*

2023

### Toward Optimized VR/AR Ergonomics: Modeling and Predicting User Neck Muscle Contraction

Y. Zhang, **K. Chen**, Q. Sun  
*ACM SIGGRAPH*

2022

### Color-Perception-Guided Display Power Reduction for Virtual Reality

B. Duinkharjav\*, **K. Chen**\*, A. Tyagi, J. He, Y. Zhu, Q. Sun  
*ACM SIGGRAPH Asia*

## Other Publications

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2024

### BlendFusion: Procedural 3D Texturing Assistant with View-Consistent Generative Models

Q. Li, F. Torrens, **K. Chen**, Q. Sun  
*ACM I3D* | Poster | Best Poster Award

2023

### Imperceptible Color Modulation for Power Saving in VR/AR

**K. Chen**, B. Duinkharjav, N. Ujjainkar, E. Shahan, A. Tyagi, J. He, Y. Zhu, Q. Sun  
*ACM SIGGRAPH* | Emerging Technologies

### Towards Learning and Generating Audience Motion from Video

**K. Chen**, N. I. Badler  
*ACM SCA* | Poster

## Honors and Awards

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2025

**Best Poster Award, ACM I3D 2025**

For “BlendFusion: Procedural 3D Texturing Assistant with View-Consistent Generative Models”.

2025

**Deborah Rosenthal, MD Award, NYU**

“Awarded to a graduate student in CS for outstanding performance on the PhD qualifying examination.”

2024 – 2025

**U.S. DoE Graduate Assistance in Areas of National Need Fellowship (GAANN), NYU**

*“This program provides fellowships, through academic departments and programs of IHEs, to assist graduate students with excellent records who demonstrate financial need and plan to pursue the highest degree available in their course study at the institution in a field designated as an area of national need.”*

- 2024 **Best Paper Award (Honorable Mention), ACM SIGGRAPH 2024**  
*For the paper “PEA-PODs: Perceptual Evaluation of Algorithms for Power Optimization in XR Displays”.*
- 2023 **Tandon School of Engineering PhD Fellowship, NYU**
- 2021 **Graduate Scholarship, NYU**
- 2020 **Computer Graphics (CS 184) Final Project Showcase Winner, UC Berkeley**
- 2019 **Probability and Random Processes (EE 126) Catan AI Competition 1<sup>st</sup> Place, UC Berkeley**

## Patents

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- 2025 **Color-Perception-Guided Display Power Reduction for Extended Reality**  
Q. Sun, Y. Zhu, B. Duinkharjav, **K. Chen**, A. Tyagi, J. He  
*US Patent 2025 0095532 A1*
- 2025 **Human Color Discrimination for Memory-Efficient Encoding in Extended Reality**  
Y. Zhu, Q. Sun, N. Ujjainkar, E. Shahan, **K. Chen**, B. Duinkharjav  
*US Patent 2025 0095232 A1*

## Research Experience

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- 2025 **University of Cambridge**  
*w/ Prof. Rafal Mantiuk*  
Working on image quality metrics.
- 2024 – 2025 **Meta Reality Labs, Applied Perception Science**  
*w/ Dr. Alex Chapiro*  
Studied/modelled contrast and luminance preferences in HDR displays.  
Developed perceptual tone mapping algorithms for HDR video.  
Resulted in a SIGGRAPH 2025 publication.
- 2023 – 2024 **Meta Reality Labs, Applied Perception Science**  
*w/ Dr. Alex Chapiro*  
Studied the visibility of different display power optimization algorithms in a VR setting.  
Measured and modelled power consumption of the Quest Pro display.  
Resulted in a SIGGRAPH 2024 paper which won a best paper award, honorable mention.
- 2022 **Cesium GS**  
*w/ Prof. Norman I. Badler*  
Resulted in a poster presentation at SCA 2023.

## Teaching

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SP 2025	<b>Data Visualization (CS-GY 6313)</b> <i>New York University, Course Assistant</i>
FA 2024	<b>Virtual and Augmented Reality (CS-GY 9223)</b> <i>New York University, Course Assistant</i>
SP 2023	<b>Data Visualization (CS-GY 6313)</b> <i>New York University, Course Assistant</i>
FA 2021	<b>Interactive Computer Graphics (CS-GY 6533)</b> <i>New York University, Course Assistant</i>
SP 2021	<b>Computer Graphics and Imaging (CS 184)</b> <i>UC Berkeley, Undergraduate Student Instructor</i>
FA 2020	<b>Introduction to Computer Vision and Computational Photography (CS 194-26)</b> <i>UC Berkeley, Group Tutor &amp; Reader</i>

## Talks

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11/2024	<b>Perceptually-Inspired Algorithms for Power Optimization in XR Displays</b> High-Beams Seminar   University College London (Remote) <i>Invited by Prof. Kaan Aksit</i>
08/2024	<b>PEAPODs: Perceptual Evaluation of Algorithms for Power Optimization in XR Displays</b> ACM SIGGRAPH 2024   Denver, Colorado
12/2022	<b>Color-Perception-Guided Display Power Reduction for Virtual Reality</b> ACM SIGGRAPH Asia 2022   Daegu, South Korea

## Academic Service

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### *Program Committee:*

2025	EuroXR
2025	ACM Intelligent User Interfaces (IUI)

### *Peer Review:*

2025	Eurographics
2025	ACM Intelligent User Interfaces (IUI)
2025	IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)
2025, 2024	ACM Special Interest Group on Computer Graphics (SIGGRAPH)
2024	ACM Special Interest Group on Computer Graphics Asia (SIGGRAPH Asia)
2025, 2024	IEEE Transactions on Visualization and Computer Graphics (TVCG)

## Outreach & Volunteering

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- 2020 – 2021     **Innovative Design at Cal**  
*Vice President of Technology*  
Led a web development team, provided pro-bono technical services to on-campus orgs.
- 2018            **Special Needs Aquatics Program (SNAP kids)**  
*Volunteer Instructor*  
Swim lessons/mobility exercises with special needs children.

## Media Coverage

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- 2024            [Immersive Computing Lab teams up with Meta to uncover how energy-saving tactics affect perceived quality of XR experiences.](#)  
*NYU Engineering News*