Brian **Chao**

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— Education

Stanford University | Ph.D. Candidate in Electrical Engineering | 2022 – Present
Advisor: Gordon Wetzstein. **Supported by NSF GRFP and Stanford SGF Fellowships.**

National Taiwan University | B.S. in Electrical Engineering | 2017 – 2021

— Research Interests

My research focuses on physically grounded neural rendering algorithms and 3D representations for scene reconstruction, generative world modelling, and next-generation spatial computing systems.

— Industry Experience

Meta Reality Labs, Display Systems Research | Research Scientist Intern
Meta | 2025 / 6 –
Working on neural rendering algorithms for next-generation 3D displays. Paper under submission to SIGGRAPH 2026.

Meta Reality Labs, XR Hyperscape (formerly XR Hyperreal) | Research Scientist Intern
Meta | 2024 / 6 – 2025 / 1
Worked on Gaussian splatting with texture mapping for 3D scene reconstruction [3]. Paper accepted to CVPR 2025.

— Selected Publications

1. **Brian Chao**, Jacqueline Yang, Suyeon Choi, Manu Gopakumar, Gordon Wetzstein, "Random-phase Gaussian Wave Splatting for Computer-generated Holography", *in submission*

2. Suyeon Choi*, **Brian Chao***, Jacqueline Yang, Manu Gopakumar, Gordon Wetzstein, "Gaussian Wave Splatting for Computer-generated Holography", *SIGGRAPH,* 2025

3. **Brian Chao**, Hung-Yu Tseng, Lorenzo Porzi, Chen Gao, Tuotuo Li, Qinbo Li, Ayush Saraf, Jia-Bin Huang, Johannes Kopf, Gordon Wetzstein, and Changil Kim, "Textured Gaussians for Enhanced 3D Scene Appearance Modeling", *CVPR,* 2025

4. **Brian Chao**, Manu Gopakumar, Suyeon Choi, Liang Shi, Jonghyun Kim, and Gordon Wetzstein, "Large Etendue 3D Holographic Display with Content-Adaptive Dynamic Fourier Modulation", *SIGGRAPH Asia*, 2024

5. **Brian Chao**, Manu Gopakumar, Suyeon Choi, and Gordon Wetzstein, "High-Brightness Holographic Projection", *Optics Letters*, 2023

6. Manu Gopakumar, Gun-Yeal Lee, Suyeon Choi, **Brian Chao**, Yifan Peng, Jonghyun Kim, and Gordon Wetzstein, "Full-colour 3D Holographic Augmented-Reality Displays with Metasurface Waveguides", *Nature*, 2024

7. **Brian Chao***, Suyeon Choi*, Manu Gopakumar*, Gun-Yeal Lee, Jonghyun Kim, and Gordon Wetzstein, "Neural Holographic Near-eye Displays for Virtual Reality", *SIGGRAPH Emerging Technologies*, 2023

8. Seung-Woo Nam, Dongyeon Kim, Suyeon Choi, Juhyun Lee, Siwoo Lee, Manu Gopakumar, **Brian Chao**, Gordon Wetzstein, and Yoochan Jeong, "Holographic Parallax", *SIGGRAPH Emerging Technologies*, 2024

9. **Brian Chao***, Chang-Le Liu*, and Homer H. Chen, "Time-Division Multiplexing Light Field Display with Learned Coded Apertures", *Transactions on Image Processing*, 2022

10. **Brian Chao**, Chang-Le Liu, and Homer H. Chen, "Robust Light Field Synthesis from Stereo Images with Left-Right Geometric Consistency", *International Conference on Image Processing*, 2021

11. **Brian Chao***, Pin-Lun Hsu*, and Yu-Chiang Frank Wang, "Self-supervised Deep Learning for Fisheye Image Rectification", *International Conference on Acoustics, Speech, and Signal Processing*, 2020

— Skills

Python · PyTorch · Javascript · MATLAB · C++ · C · CUDA

— Relevant Coursework

Stanford University

Computer Graphics: Rendering, Geometry, and Image Manipulation · Computational Imaging · Virtual Reality · Signal Processing for Machine Learning · Neural Models for 3D Geometry · Introduction to Linear Dynamical Systems · Modern Optics

National Taiwan University

Digital Visual Effects · Computer Vision · Computer Graphics · Convex Optimization · Scientific Computing · Optical System Design · Fundamentals of Electro-optics