Brian **Chao**

brian.chao@stanford.edu | https://bchao1.github.io

— Education

Stanford University | Ph.D. Candidate in Electrical Engineering | 2022 – Present

National Taiwan University | B.S. in Electrical Engineering | 2017 – 2021
Cum. GPA: 4.25 / 4.30 Major GPA: 4.25 / 4.30 Rank: 3%

— Research Interest

My research focuses on computational photography, display, and optics, and how they can be combined with modern graphics and 3D-ML techniques (such as NeRF, Gaussian Splatting) to create novel AR/VR or camera user experiences.

— Research Experience

Stanford Computational Imaging Lab | PhD Student | Advisor: Gordon Wetzstein
Stanford University | 2022 / 9 – Present
Supported by NSF GRFP and the Stanford Graduate Fellowship.

Multimedia Processing and Communications Lab | Undergraduate Research Assistant | Advisor: Homer H. Chen
National Taiwan University | 2020 / 9 – 2022 / 1

Vision and Learning Lab | Undergraduate Research Assistant | Advisor: Y.C. Frank Wang
National Taiwan University | 2018 / 7 – 2020 / 6

— Industry Experience

Meta Reality Labs | Research Scientist Intern | Manager: Changil Kim
Meta | 2024 / 6 – Present

— Publications

1. **Brian Chao**, Manu Gopakumar, Sueyon Choi, Liang Shi, Jonghyun Kim, and Gordon Wetzstein, "Large Etendue 3D Holographic Display with Content-adaptive Dynamic Fourier Modulation", *ACM SIGGRAPH Asia, 2024*
2. **Brian Chao**, Manu Gopakumar, Suyeon Choi, and Gordon Wetzstein, "High-Brightness Holographic Projection", *Optics Letters*, 2023
3. **Brian Chao***, Suyeon Choi*, Manu Gopakumar*, Gun-Yeal Lee, Jonghyun Kim, and Gordon Wetzstein, "Neural Holographic Near-eye Displays for Virtual Reality", *ACM SIGGRAPH Emerging Technologies*, 2023
4. 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*
5. Seong-Woo Nam, Dongyeon Kim, Suyeon Choi, Juhyun Lee, Siwoo Lee, Manu Gopakumar, **Brian Chao**, Gordon Wetzstein, and Yoochan Jeong, "Holographic Parallax", *ACM SIGGRAPH Emerging Technologies*, 2024

6. **Brian Chao***, Chang-Le Li*u, and Homer H. Chen, “Time-Division Multiplexing Light Field Display with Learned Coded Apertures”, *IEEE Transactions on Image Processing*, 2022
7. **Brian Chao**, Chang-Le Liu, and Homer H. Chen, “Robust Light Field Synthesis from Stereo Images with Left-Right Geometric Consistency”, *IEEE International Conference on Image Processing*, 2021
8. **Brian Chao***, Pin-Lun Hsu*, and Yu-Chiang Frank Wang, “Self-supervised Deep Learning for Fisheye Image Rectification”, *IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2020

— Skills

Proficient

Python · PyTorch · Javascript · MATLAB

Familiar

C++ · C · Verilog · Tensorflow · Julia · CUDA

— Relevant Coursework

Stanford University

Computer Graphics: Rendering, Geometry, and Image Manipulation · 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