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github.com/LiuX2018
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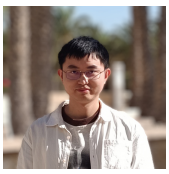

Research Interests

Computational Optics, with a particular focus on *Optical Simulation*, *Light Shaping*, *Computational Imaging*, *Adaptive Optics*, *Far-field Optical Microscopy (Nanoscopy)*, and *Optical Fabrication & Testing*.

Research Experience

2024/04 – Present
Department of Electrical and Electronic Engineering, **The University of Hong Kong**, Hong Kong SAR, China
Postdoctoral Fellow
Advisor: Prof. Yifan Peng

2024/01 – 2024/03
College of Optical Science and Engineering, **Zhejiang University**, Hangzhou, China
Research Assistant
Advisors: Prof. Xiang Hao & Prof. Xu Liu & Prof. Cuifang Kuang

Education

2018/09 – 2023/12
Zhejiang University, Hangzhou, China
Ph.D. in Optical Engineering
Advisors: Prof. Xiang Hao & Prof. Xu Liu & Prof. Cuifang Kuang

2022/12 – 2023/03
The University of Hong Kong, Hong Kong SAR, China
Research Postgraduate Visiting Student in Electrical and Electronic Engineering
Advisor: Prof. Yifan Peng

2014/09 – 2018/06
South China University of Technology, Guangzhou, China
B.S. in Optoelectronic Information Science and Engineering

Representative Publications

([*]Equal contributors; [†]Corresponding authors)

1. Y. Hu[*], **X. Liu**[*,†], X. Liu, and X. Hao[†], "Diffraction modeling between arbitrary planes using angular spectrum rearrangement," *Optica*, vol. 12, no. 1, pp. 39–45, 2025, **(IF = 8.4)**.
2. **X. Liu**, Y. Hu, S. Tu, C. Kuang, X. Liu, and X. Hao, "Fast generation of arbitrary optical focus array," *Optics and Lasers in Engineering*, vol. 162, p. 107 405, 2023, **(IF = 3.5)**.
3. H. Wei[*], **X. Liu**[*], X. Hao, E. Y. Lam, and Y. Peng, "Modeling off-axis diffraction with the least-sampling angular spectrum method," *Optica*, vol. 10, no. 7, pp. 959–962, 2023, **(IF = 8.4), [Monthly Top Downloads]**.
4. **X. Liu**, S. Tu, C. Kuang, X. Liu, and X. Hao, "Calibration of phase-only liquid-crystal spatial light modulators by diffractogram analysis," *Optics and Lasers in Engineering*, vol. 156, p. 107 056, 2022, **(IF = 3.5)**.
5. **X. Liu**[*], L. Li[*], X. Liu, X. Hao, and Y. Peng, "Investigating deep optics model representation in affecting resolved all-in-focus image quality and depth estimation fidelity," *Optics Express*, vol. 30, no. 20, pp. 36 973–36 984, 2022, **(IF = 3.2)**.

6 **X. Liu**, Y. Peng, S. Tu, J. Guan, C. Kuang, X. Liu, and X. Hao, "Generation of arbitrary longitudinal polarization vortices by pupil function manipulation," *Advanced Photonics Research*, vol. 2, no. 1, p. 2 000 087, 2021, **(IF = 3.7), [Cover Story]**.

7 **X. Liu**, S. Tu, Y. Xu, H. Song, W. Liu, Q. Liu, C. Kuang, X. Liu, and X. Hao, "Aberrations in structured illumination microscopy: A theoretical analysis," *Frontiers in Physics*, vol. 7, no. 254, 2020, **(IF = 1.9)**.

Honors & Achievements

2024 **Nomination Award at the Three-Year Achievement Exhibition of Computational Imaging**, Chinese Society for Optical Engineering.

2022 **Individual scholarship for innovation and entrepreneurship**, Zhejiang University.

Junshi Chen scholarship, Zhejiang University.

Outstanding graduate student, Zhejiang University.

Merit graduate student, Zhejiang University.

2021 **Junshi Chen scholarship**, Zhejiang University.

Outstanding graduate student, Zhejiang University.

Merit graduate student, Zhejiang University.

Outstanding graduate student cadres, Zhejiang University.

2020 **Junshi Chen scholarship**, Zhejiang University.

Outstanding graduate student cadres, Zhejiang University.

2019 **Outstanding graduate student**, Zhejiang University.

2015 **Third-class award on 3rd Physics Tournament of SCUT**, South China University of Technology.

Reviewer Service

- Optica, Laser & Photonics Review, Advanced Science, Optics Letters, Optics Express, Journal of Microscopy, and Optics Communications.
- Siggraph (Asia) and ICCP

Conference Presentations & Invited Talks

2024/09 **The 4th International Conference on Computational Imaging**, Xiamen, China
Invited talk "Free-space wave propagation modeling with least-sampling angular spectrum method"

2024/05 **Guest Lecture**, King Abdullah University of Science and Technology, Saudi Arabia
Invited talk "Exploring wave propagation modeling in free space"

Teaching Experience & Mentorship

2022 – Present **Student Mentorship**
Doctoral Thesis: "Joint design of optics and algorithms for large-FoV imaging", Haoyu Wei, *The University of Hong Kong*

2021 – 2024 **Student Mentorship**
Doctoral Thesis: "Manipulation and Characterization of Optical Field with Differentiable Optics", Yiwen Hu, *Zhejiang University*

Teaching Experience & Mentorship (continued)

2023 **Student Mentorship**
Master Thesis: "Deep Stereo Optics Imaging for High Fidelity Depth Estimation", Yuhui Liu, *The University of Hong Kong*

2022 **Student Mentorship**
Undergraduate Thesis: "Full Vectorial Manipulation of Tightly Focused Optical Field", Haiwei Wang, *Zhejiang University*

Remote Student Mentorship
Undergraduate Thesis: "Numerical Simulation of Vectorial Field Based on Vectorial Diffraction Theory", Yunpeng Wang, *Changchun University of Science and Technology*

Granted Patents

- Xiang Hao, **Xin Liu**, Cuifang Kuang, Xu Liu, "A Method for Point Spread Function Reconstruction", CN110133849B, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Shijie Tu, Xu Liu, "A Two-Dimensional Rapid Beam Scanning Module for Confocal Fluorescence Microscopy", CN109491065A, National Invention Patent of China.
- Xu Liu, **Xin Liu**, Xiang Hao, Cuifang Kuang, Haifeng Li, "A Device for Common-path Beam Modulation in Imaging and Lithography Systems", CN110568650B, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Yubing Han, Cuifang Kuang, Xu Liu, "A Method and Device for Calibration of Phase-only Spatial Light Modulators", CN112697401A, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Cuifang Kuang, Xu Liu, "A Device for Generating Super-resolution Optical Focus Arrays", CN110568731B, National Invention Patent of China.
- Xiang Hao, Shijie Tu, **Xin Liu**, Xu Liu, "A Multicolor Super-Resolution Microscope with Automatic Alignment Capability", CN109358030B, National Invention Patent of China.

Skills

Basic	Optics and Machine Learning.
Coding	MATLAB, Python, LabVIEW, and LaTeX.
Languages	Good reading, writing and speaking competencies in English and Mandarin Chinese.

References

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