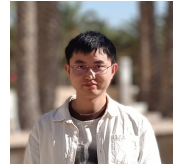# LIU, XIN

✉ liuxin.optics@gmail.com 🎓 Google Scholar

⌨ github.com/LiuX2018 🌐 liux2018.github.io

Research Interests

Computational Optics, with a particular focus on *Optics Simulator, 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

Prof. Xiang Hao
Professor
Zhejiang University,
38 Zheda Road, Hangzhou,
China.
✉ haox@zju.edu.cn

Prof. Yifan Peng
Professor
The University of Hong Kong,
Pokfulam, Hong Kong,
China.
✉ evanpeng@hku.hk

Prof. Cuifang Kuang
Professor
Zhejiang University,
38 Zheda Road, Hangzhou,
China.
✉ cfkuang@zju.edu.cn

Prof. Xu Liu
Professor
Zhejiang University,
38 Zheda Road, Hangzhou,
China.
✉ liuxu@zju.edu.cn