Xin Liu

Curriculum Vitae

Department of Electrical and Computer Engineering (ECE)
The University of Hong Kong
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Education and Experience

since 04/24 **Postdoctoral Researcher**, *Department of Electrical and Computer Engineering, The University of Hong Kong (HKU)*, Hong Kong SAR, China.
Computational Optics; Optics Simulator; Light Shaping; Computational Imaging; Adaptive Optics; Far-field Optical Microscopy (Nanoscopy); Optical Manufacturing

01/24 – 03/24 **Research Assistant**, *State Key Laboratory of Extreme Photonics and Instrumentation, Zhejiang University (ZJU)*, Hangzhou, China.

09/18 – 12/23 **Ph.D., Optical Engineering**, *State Key Laboratory of Extreme Photonics and Instrumentation, Zhejiang University (ZJU)*, Hangzhou, China.
Thesis: Research on principles and key issues of point spread function engineering

09/14 – 06/18 **B.E., Optoelectronic Information Science and Engineering**, *South China University of Technology (SCUT)*, Guangzhou, China.

Journal Publications (selected)

(*Equal contributors; ✉Corresponding authors)

[11] **Retained accuracy with reduced precision in wave propagation modeling**. Xin Liu and Yifan Peng. 2026, *Photonics Research*, **(IF: 7.2)**. [In press].

[10] **Learned off-aperture encoding for wide field-of-view RGBD imaging**. Haoyu Wei, Xin Liu, Yuhui Liu, Qiang Fu, Wolfgang Heidrich, Edmund Y. Lam, and Yifan Peng. 2025, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, **(IF: 20.4)**.

[9] **In situ fully vectorial tomography and pupil function retrieval of tightly focused fields**. Xin Liu, Shijie Tu, Yiwen Hu, Yifan Peng, Yubing Han, Cuifang Kuang, Xu Liu, and Xiang Hao. 2025, *Nature Communications*, **(IF: 17.2)**.

[8] **Diffraction modeling between arbitrary planes using angular spectrum rearrangement**. Yiwen Hu*, Xin Liu*,✉, Xu Liu, and Xiang Hao✉. 2025, *Optica*, **(IF: 10.1)**. **[Monthly Top Downloads]**.

[7] **Modeling off-axis diffraction with the least-sampling angular spectrum method**. Haoyu Wei*, Xin Liu*, Xiang Hao, Edmund Y. Lam, and Yifan Peng. 2023, *Optica*, **(IF: 10.1)**. **[Monthly Top Downloads]**.

[6] **Fast generation of arbitrary optical focus array**. Xin Liu, Yiwen Hu, Shijie Tu, Cuifang Kuang, Xu Liu, and Xiang Hao. 2023, *Optics and Lasers in Engineering*, **(IF: 4.4)**.

[5] **Investigating deep optics model representation in affecting resolved all-in-focus image quality and depth estimation fidelity**. Xin Liu*, Linpei Li*, Xu Liu, Xiang Hao, and Yifan Peng. 2022, *Optics Express*, **(IF: 3.5)**.

[4] **Calibration of phase-only liquid-crystal spatial light modulators by diffractogram analysis**. Xin Liu, Shijie Tu, Cuifang Kuang, Xu Liu, and Xiang Hao. 2022, *Optics and Lasers in Engineering*, **(IF: 4.4)**.

[3] **Accurate background reduction in adaptive optical three-dimensional stimulated emission depletion nanoscopy by dynamic phase switching**. Shijie Tu, Xin Liu, Difu Yuan, Wenli Tao, Yubing Han, Yan Shi, Yanghui Li, Cuifang Kuang, Xu Liu, Yufeng Yao, Yesheng Xu, and Xiang Hao. 2022, *ACS Photonics*, **(IF: 6.9)**. **[On the Cover]**.

[2] **Generation of arbitrary longitudinal polarization vortices by pupil function manipulation**. Xin Liu, Yifan Peng, Shijie Tu, Jun Guan, Cuifang Kuang, Xu Liu, and Xiang Hao. 2021, *Advanced Photonics Research*, **(IF: 3.9)**. **[On the Cover]**.

[1] **Aberrations in structured illumination microscopy: A theoretical analysis**. Xin Liu, Shijie Tu, Yan Xu, Hongya Song, Wenjie Liu, Qiulan Liu, Cuifang Kuang, Xu Liu, and Xiang Hao. 2020, *Frontiers in Physics*, **(IF: 2.5)**.

Awards

2025 **Outstanding Young Rising Star Awards (1/20)**, *The 5th International Conference on Computational Imaging (CITA 2025)*, Chinese Society for Optical Engineering.

2024 **Honorable Mention**, *The three-year achievement exhibition of computational imaging*, The 4th International Conference on Computational Imaging (CITA 2024), Chinese Society for Optical Engineering.

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

2022 **Junshi Chen Scholarship**, *Zhejiang University*.

2022 **Outstanding Graduate Student**, *Zhejiang University*.

2022 **Merit Graduate Student**, *Zhejiang University*.

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

2021 **Outstanding Graduate Student**, *Zhejiang University*.

2021 **Merit Graduate Student**, *Zhejiang University*.

2021 **Outstanding Graduate Student Cadres**, *Zhejiang University*.

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

2020 **Outstanding Graduate Student Cadres**, *Zhejiang University*.

2019 **Outstanding Graduate Student**, *Zhejiang University*.

Invited Talks

2025/09 **Exploring advanced imaging with computational optics**, *The 5th International Conference on Computational Imaging (CITA 2025)*, Suzhou, China.

2024/09 **Free-space wave propagation modeling with least-sampling angular spectrum method**, *The 4th International Conference on Computational Imaging (CITA 2024)*, Xiamen, China.

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

Student Mentorship

2022 – 2025 **PhD Thesis**, *"Learned wide-angle imaging with optical modeling and optimization"*, Haoyu Wei, The University of Hong Kong.

2021 – 2025 **PhD Thesis**, *"Characterization of optical field with computational methods"*, Yiwen Hu, Zhejiang University.

2023 **Master's Thesis**, *"Deep stereo optics imaging for high fidelity depth estimation"*, Yuhui Liu, The University of Hong Kong.

2022 **Bachelor's Thesis**, *"Full vectorial manipulation of tightly focused optical field"*, Haiwei Wang, Zhejiang University.

2022 **Bachelor's Thesis**, *"Numerical simulation of vectorial field based on vectorial diffraction theory"*, Yunpeng Wang, Changchun University of Science and Technology.

Service

Reviewer Optica; SIGGRAPH (Asia); Advanced Functional Materials; International Conference on Computational Photography (ICCP); Laser & Photonics Reviews; Advanced Science; Optics Letters; Optics Express; JOSA A; JOSA B; Applied Optics; Journal of Microscopy; Optics Communications

Committee The 5th International Conference on Computational Imaging (CITA 2025)

Coordinator HKU-KAUST Joint Postgraduate Workshop on Computational Imaging 2025

Patents

2022 **A method and device for calibration of phase-only spatial light modulators**, *Xiang Hao, Xin Liu, Yubing Han, Cuifang Kuang, Xu Liu*, CN112697401A.

2020 **A method for point spread function reconstruction**, *Xiang Hao, Xin Liu, Cuifang Kuang, Xu Liu*, CN110133849B.

2020 **A two-dimensional rapid beam scanning module for confocal fluorescence microscopy**, *Xiang Hao, Xin Liu, Shijie Tu, Xu Liu*, CN109491065A.

2020 **A device for common-path beam modulation in imaging and lithography systems**, *Xu Liu, Xin Liu, Xiang Hao, Cuifang Kuang, Haifeng Li*, CN110568650B.

2020 **A device for generating super-resolution optical focus arrays**, *Xiang Hao, Xin Liu, Cuifang Kuang, Xu Liu*, CN110568731B.

2020 **A multicolor super-resolution microscope with automatic alignment capability**, *Xiang Hao, Shijie Tu, Xin Liu, Xu Liu*, CN109358030B.

Referees

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