

Research Interests

My research interests center on designing novel cameras and imaging systems that bridge computational imaging and optics, with an emphasis on physics-informed vision systems and imaging inverse problems. My background spans computer vision, biomedical engineering, and optical engineering, giving me cross-disciplinary training across three fields. **I am actively seeking research-oriented positions; please feel free to contact me!**

Education

2022.09–2026.12	Zhejiang University (joint program with Westlake University) Ph.D. in Computer Science and Technology. Advisor: Prof. Xin Yuan .	Hangzhou, China
2019.09–2022.07	Southern University of Science and Technology M.S. in Biomedical Engineering. Advisor: Prof. Changfeng Wu .	Shenzhen, China
2015.09–2019.07	Changchun University of Science and Technology B.E. in Optical Engineering; International Elite Class.	Changchun, China

Publications

Grouped by type; linked titles open papers/PDFs. # equal contribution.

Conference Papers

- [C1] **Xiaodong Wang**, Zijun He, Ping Wang, Lishun Wang, Yanan Hu, and Xin Yuan. “[Spectral Compressive Imaging via Chromaticity-Intensity Decomposition](#).” *Advances in Neural Information Processing Systems (NeurIPS)*, 2025.
- [C2] **Xiaodong Wang**, Zijun He, and Xin Yuan. “[Texture-aware Intrinsic Image Decomposition with Model- and Learning-based Priors](#).” *IEEE International Conference on Multimedia and Expo (ICME)*, 2025.
- [C3] **Xiaodong Wang**#, Ping Wang#, Zhangyuan Li, and Xin Yuan. “[Plug-and-play Diffusion Models for Image Compressive Sensing with Data Consistency Projection](#).” *IEEE International Conference on Image Processing Workshop (ICIP Workshop)*, 2025.
- [C4] **Xiaodong Wang**, Siming Zheng, and Xin Yuan. “Learning to Disentangle Dispersion and Disparity: A Dual-Pixel CASSI Approach for Joint Spectral-Depth Imaging.” *International Conference on Neural Information Processing (ICONIP)*, accepted, 2026. Oral presentation.
- [C5] **Xiaodong Wang**, Yifan Si, and Xin Yuan. “Less Spectral Data, More Degradations: Rethinking Generalization Problem in CASSI Reconstruction.” *Asian Conference on Computer Vision (ACCV)*, accepted, 2026.
- [C6] **Xiaodong Wang**, Miao Cao, Liping Shi, Jiao Geng, and Xin Yuan. “[Wide-field, High-resolution Snapshot Compressive Microscopy for Laser Materials Manufacturing](#).” *Imaging Systems and Applications*, JW2A–9, Optica Publishing Group, 2023.
- [C7] Xin Yuan and **Xiaodong Wang**. “[Snapshot Spectral Compressive Imaging via Spectral Reflectance Decomposition](#).” *Three-Dimensional Imaging, Visualization, and Display 2026, SPIE*, Vol. 14033, 2026. Fumio Okano Best Paper Award.
- [C8] Yanan Hu, **Xiaodong Wang**, Zijun He, and Xin Yuan. “[Lighten-MST: Low-light Spectral Reconstruction via Illumination-guided Spectral-aware Transformer](#).” *IEEE/CVF International Conference on Computer Vision Workshops (ICCVW)*, 2025.
- [C9] Yunhao Li, **Xiaodong Wang**, Ping Wang, Xin Yuan, and Peidong Liu. “[SCINeRF: Neural Radiance Fields from A Snapshot Compressive Image](#).” *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 10542–10552, 2024. Highlight paper.
- [C10] Gang Qu, **Xiaodong Wang**, and Xin Yuan. “[Plug-and-Play Deep Image Prior for Snapshot Optical Coherence Tomography](#).” *Propagation Through and Characterization of Atmospheric and Oceanic Phenomena*, JW2A–10, Optica Publishing Group, 2023.
- [C11] Yong Tang, Yunhao Li, **Xiaodong Wang**, Qiang Song, Bing Qin, Xiaocheng Feng, and Xin Yuan. “[TI-3DGS: 3D Thermal Reconstruction via Thermal Imaging-guided 3D Gaussian Splatting](#).” *IEEE International Conference on Robotics and Automation (ICRA)*, 2026.
- [C12] Zijun He, Ping Wang, **Xiaodong Wang**, Chang Chen, and Xin Yuan. “[Joint Spectral Image Reconstruction and Semantic Segmentation with Cooperative Unfolding](#).” *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 6910–6919, 2026.
- [C13] Zheyu Shi, Lishun Wang, **Xiaodong Wang**, Yong Zhong, Ping Wang, and Xin Yuan. “Physically-Coupled PAN-Guided Unfolding for Dual-Camera Compressive Hyperspectral Imaging.” *ACM International Conference on Multimedia (ACM MM)*, accepted, 2026.
- [C14] Yunhao Li, Yanan Hu, **Xiaodong Wang**, Yuze Yang, Ziyi Meng, Xin Yuan, and Peidong Liu. “[SCIPS: Single-Shot Photometric Stereo from a Snapshot Compressed Multispectral Image](#).” *IEEE International Conference on Image Processing (ICIP)*, accepted, 2026.
- [C15] Ping Wang, Lishun Wang, Gang Qu, **Xiaodong Wang**, Yulun Zhang, and Xin Yuan. “[Proximal Algorithm Unrolling: Flexible and Efficient Reconstruction Networks for Single-Pixel Imaging](#).” *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 411–421, 2025.
- [C16] Xiaoyue Li, Yunhao Li, **Xiaodong Wang**, Xin Yuan, Mark D. Butala, and Gaoang Wang. “[SCI-Gaussian: Optimizing 3D Gaussian Radiance Fields from a Snapshot Compressive Image](#).” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 1–5, 2025.
- [C17] Haomiao Zhang, Zhangyuan Li, Yanling Piao, Zhi Li, **Xiaodong Wang**, Miao Cao, Xiongfei Su, Qiang Song, and Xin Yuan. “[Unfolding Framework with Complex-Valued Deformable Attention for High-Quality Computer-Generated Hologram Generation](#).” *IEEE International Conference on Multimedia and Expo (ICME)*, pp. 1–6, 2025.

Journal Articles

- [J1] **Xiaodong Wang**, Miao Cao, Ziyang Chen, Jiao Geng, Ting Luo, Yufei Dou, Xing Liu, Liping Shi, and Xin Yuan. "In-situ Real-time Monitoring of Ultrafast Laser Processing Using Wide-field High-resolution Snapshot Compressive Microscopy." *Light: Advanced Manufacturing*, 5(3):332–341, 2024.
- [J2] **Xiaodong Wang**, Dayan Li, Zhihe Liu, Xiaofeng Fang, Jiani Li, Tianyue Shi, and Changfeng Wu. "Spectra-separated Depth-of-field Extended Fluorescence Imaging Through Scattering Media Using Speckle Deconvolution." *Optics and Lasers in Engineering*, 161:107393, 2023.
- [J3] Zihan Yao#, **Xiaodong Wang**#, Jie Liu, Siyu Zhou, Zhe Zhang, Shuwen He, Jing Liu, Changfeng Wu, and Xiaofeng Fang. "Photoswitchable Semiconducting Polymer Dots for Pattern Encoding and Superresolution Imaging." *Chemical Communications*, 59(17):2469–2472, 2023. Equal contribution.
- [J4] **Xiaodong Wang**, Xin Yuan, and Liping Shi. "Optical Coherence Tomography - In situ and High-speed 3D Imaging for Laser Materials Processing." *Light: Science & Applications (News & Views)*, 11(1):280, 2022.
- [J5] Yifan Si, Zijian Lin, **Xiaodong Wang**, and Sailing He. "A New Hyperspectral Reconstruction Method with Conditional Diffusion Model for Snapshot Spectral Compressive Imaging." *IEEE Transactions on Instrumentation and Measurement*, 2025.
- [J6] Yifan Si, Shuo Li, **Xiaodong Wang**, and Sailing He. "ASP-Model: An Advanced Deep Learning Framework to Reconstruct Hyperspectral Cubes for Computed Tomography Imaging System." *IEEE Transactions on Instrumentation and Measurement*, 2025.
- [J7] Yurong Chen, Yaonan Wang, **Xiaodong Wang**, Xin Yuan, and Hui Zhang. "LCTC: Lightweight Convolutional Thresholding Sparse Coding Network Prior for Compressive Hyperspectral Imaging." *IEEE Transactions on Image Processing*, 2025.
- [J8] Yufei Dou, Miao Cao, **Xiaodong Wang**, Xing Liu, and Xin Yuan. "Coded Aperture Temporal Compressive Digital Holographic Microscopy." *Optics Letters*, 48(20):5427–5430, 2023.
- [J9] Siyang Liu, Ye Liu, Zhe Zhang, **Xiaodong Wang**, Yicheng Yang, Kai Sun, Jiangbo Yu, Daniel T. Chiu, and Changfeng Wu. "Near-infrared Optical Transducer for Dynamic Imaging of Cerebrospinal Fluid Glucose in Brain Tumor." *Analytical Chemistry*, 94(41):14265–14272, 2022.
- [J10] Zhihe Liu, Jie Liu, **Xiaodong Wang**, Feixue Mi, Dan Wang, and Changfeng Wu. "Fluorescent Bioconjugates for Super-resolution Optical Nanoscopy." *Bioconjugate Chemistry*, 31(8):1857–1872, 2020.

Preprints and Manuscripts

- [P1] **Xiaodong Wang**, Ping Wang, Zijun He, Mengjie Qin, and Xin Yuan. "Progressive Flow-inspired Unfolding for Spectral Compressive Imaging." *arXiv preprint*, 2025.
- [P2] **Xiaodong Wang**. "User Manual for Model-based Imaging Inverse Problem." *arXiv preprint*, 2025.
- [P3] Yunhao Li, Xiang Liu, **Xiaodong Wang**, Xin Yuan, and Peidong Liu. "Learning Radiance Fields from a Single Snapshot Compressive Image." *arXiv preprint*, 2024.
- [P4] **Xiaodong Wang**, Ping Wang, Zhangyuan Li, and Xin Yuan. "Physics-Guided Plug-and-Play Reconstruction for Snapshot Compressive Tomography with Dual-Channel Side Information." *IEEE Transactions on Image Processing*, under review, 2026.
- [P5] **Xiaodong Wang**, Yifan Si, and Xin Yuan. "A Trajectory Perspective on Deep Unfolding for Compressive Spectral Imaging." *IEEE Signal Processing Letters*, under review, 2026.

Thesis

- [T1] **Xiaodong Wang**. "Research on Focusing and Deconvolution Imaging Algorithms through Scattering Media." M.S. thesis (in Chinese), Southern University of Science and Technology, 2022. [Slides](#).

Selected Talks and Academic Presentations

- [1] "Snapshot Compressive Microscopy Enables Wide-field and High-resolution In-situ Monitoring of Ultrafast Laser Processing." The 1st International Conference on Ultrafast Science and Quantum Sensing (USQS 2024), Sanya, China, Jan. 2024. **Oral presentation**; **Optica talk**.
- [2] "Progress in Single-shot Compressive Imaging." The 3rd Advanced Photonics Forum: Intelligent Photonics, Foshan, China, Nov. 2025. **Invited talk**.
- [3] "Plug-and-play Diffusion Models for Image Compressive Sensing with Data Consistency Projection." The 15th National Conference on Quantum Imaging, Hangzhou, China, Sept. 2025. **Poster presentation**; **ICIP talk**.
- [4] "Spectral Compressive Imaging via Chromaticity-Intensity Decomposition." AI TIME NeurIPS 2025 Pre-talk Series, online, WeChat, Nov. 2025. **Bilibili talk**; **SPIE talk**.

Patents

- [1] **Xiaodong Wang** and Xin Yuan. "A Dual-pixel Snapshot Compressive Spectral and Depth Joint Imaging System and Method." Chinese Patent No. 2026107105473, granted, 2026.
- [2] Jiayi Wang, **Xiaodong Wang**, Ning Zhang, and Xin Yuan. "A High-precision Wavelength Calibration Method for Spectrometers Based on Filter Hardware Interception." Chinese Patent No. 2025115436280, granted, 2025.
- [3] Ning Zhang, **Xiaodong Wang**, and Xin Yuan. "A Long-distance Snapshot Spectral Imaging Radar System." Chinese Patent No. 202510221197X, granted, 2025.

Awards and Honors

- Fumio Okano Best Paper Award, Three-Dimensional Imaging, Visualization, and Display, SPIE, 2026.
- Bode Scholarship / ByteDance Scholarship, 2025.
- National English Competition for College Students, Second Prize, 2016, 2017, and 2018.

Others

Reviewer	NeurIPS; ECCV; ICIP; IEEE Transactions on Computational Imaging; Chinese Optics Letters.
Teaching	• <i>Medical Image Processing</i>, TA, 2020.09–2021.01; instructor: Prof. Yiming Li. • <i>Biomedical Photonics</i>, TA, 2021.03–2021.07; instructor: Prof. Changfeng Wu.
Student Service	• Volunteer, OSA International Student Circle Meeting, 2018. • Laboratory administrative coordinator, School of Engineering, Westlake University, 2024.
Languages	English (IELTS 6.5), Mandarin, Hakka, Cantonese.
Technical skills	Python, PyTorch, MATLAB, LaTeX, Optical Instrumentation.
Hobby	Magic and Movie.