

Zhaoqiang Wang

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Education

University of California, Los Angeles	Present - 2024
Ph.D. Candidate in Bioengineering	
University of California, Los Angeles	2019
M.S. in Bioengineering	GPA: 3.943/4
Huazhong University of Science and Technology, China	2018
B.E in Optoelectronic Information Science and Engineering	Rank: 1st/261, GPA: 3.93/4

Professional Summary

My research focuses on computational imaging and high-speed 3D microscopes:

- Optical design. Familiar with high-speed photography and microscopy systems (light field microscope, light field tomography, light sheet fluorescent microscope, etc.)
- Imaging system implementation. Abundant hand-on experience on optical alignment and hardware (camera sensor, motor, galvo mirror, laser, etc.) synchronization and automation
- Algorithms for image reconstruction and analysis. Worked with both model-based and learning-based methods for imaging-related inverse problem solving.

Research Experience

UCLA Intelligent Optics Laboratory	Los Angeles, CA
Graduate Research Assistant	September 2021 - Present

Advisor: Dr. Liang Gao

- Developed a spectrum-encoding light field tomography for ultrafast imaging (kilohertz 3D imaging)
- Developed a scanning light sheet illuminated light field tomography (LIFT) microscope for neural and cardiovascular imaging in zebrafish embryos

UCLA Cardiovascular Engineering Research Laboratory	Los Angeles, CA
Graduate Research Assistant	September 2018 – September 2021

Advisors: Dr. Tzung K. Hsiai, Dr. Peng Fei

- Integrated light sheet and light field microscopy to quantify 3D biomechanics inside a beating embryonic zebrafish heart

HUST Biophotonics and Microfluidics Laboratory	Wuhan, China
Undergraduate Research Assistant	December 2017 - September 2018

Advisor: Dr. Peng Fei

- Designed deep learning based reconstruction algorithm for light field microscopy
- Implemented modularized illumination plugin to transform a commercial epi-fluorescent microscopy into light sheet fluorescent microscopy

Publications and Conferences

- **Wang, Z.**, Hsiai, T., Gao, L., Augmented light field tomography through parallel spectral encoding. **Optica** 10, 62-65 (2023)
- **Wang, Z.**, Zhu, L., Zhang, H. et al. Real-time volumetric reconstruction of biological dynamics with light-field microscopy and deep learning. **Nat Methods** 18, 551–556 (2021).
- **Wang Z.**, Ding Y, Satta S, Roustaei M, Fei P, et al. A hybrid of light-field and light-sheet imaging to study myocardial function and intracardiac blood flow during zebrafish development. **PLOS Computational Biology** 17(7): e1009175. (2021)
- Cui, Q., Park, J., Lee, J., Wang, Z., Gao, L., Tunable image projection spectrometry, **Biomed. Opt.**

Express 13, 6457-6469 (2022)

- Roustaei, M., Baek, K.I., **Wang, Z.**, Cavallero, S., Satta, S., Lai, A., O'Donnell, R., Vedula, V., Ding, Y., Marsden, A.L. and Hsiai, T., Computational simulations of the 4D micro-circulatory network in zebrafish tail amputation and regeneration, **J. R. Soc. Interface.**192021089820210898
- Ding Y., Gudapati V., Lin R., Fei Y., Packard RRS., Song S., Chang CC., Baek KI., **Wang Z.**, Roustaei M., Kuang D., Kuo J., Hsiai TK. Saak Transform-Based Machine Learning for Light-Sheet Imaging of Cardiac Trabeculation. **IEEE Trans Biomed Eng.** 2020
- Li G., **Wang Z.**, Zhang H., Zhu L., Fei P., Deep-learning light-field microscopy with improved resolution and reconstruction speed (Selected Post-deadline Submission Presentation). **Biophotonics Congress: Biomedical Optics** 2020, OSA
- Xie, X., Yang, Y., Yao, Y., **Wang, Z.**, Zhu, D., & Fei, P. Low-cost and high-performance 3D light-sheet fluorescence imaging on pre-owned conventional microscopes (Oral Presentation). **Proc. SPIE** 10493, Dynamics and Fluctuations in Biomedical Photonics XV, 2018

Selected Honors

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| • Amazon Doctoral Student Fellowship | 2022 |
| • China National Scholarship (Highest scholarship given by Chinese government) | 2015, 2016, 2017 |
| • Merit Student Scholarship, HUST, Wuhan, China | 2015, 2016, 2017 |
| • Excellent Student Scholarship, Qiming College, HUST, Wuhan, China | 2016 |
| • Goodix Technology Scholarship, Goodix Technology, Shenzhen, China | 2018 |

Skills

- **Optical system simulation:** OpticStudio (zemax)
- **Mechanical design:** SolidWorks, Fusion 360
- **Programming:** C++, Python, Matlab, Labview
- **Optics alignment and testbench**