

# Bozhen Zhou

Tsinghua University

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## EDUCATION

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**Tsinghua University** Beijing, China 09/2022-present

- Master's student in the final year, Overall GPA: 3.83/4.0
- Major in Electrical Engineering at Tsinghua Shenzhen International Graduate School
- Core curriculums: Fourier Optics; LED Technology and Application; Imaging Optics; Precision Measurement and Metrology; Industrial Measurement Systems

**Huazhong University of Science and Technology (HUST)** Wuhan, China 09/2018-06/2022

- Bachelor of Engineering, Overall GPA: 3.58/4.0
- Major in Measurement & Control Technology and Instrumentation at School of Mechanical Science and Engineering
- Core curriculums: Applied Optics (4.0); Foundation of Engineering Control (4.0); Engineering Mechanics (4.0); Analog Electronic Technology (4.0); Theory of Machines and Mechanisms (4.0); Digital Circuit and Logic Design (4.0); Error Theory and Data Processing (4.0); Robotics (4.0)

## RESEARCH EXPERIENCE

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**Learning from Better Simulation (LBS)** title withheld due to review process 11/2023-present

- Under Review in *Laser & Photonics Reviews* (JCR 2023 Q1, IF = 9.8, Top journal in Optics).
- Proposed the LBS method to bridge the gap between the synthetic simulation data and real experimental data and to create highly realistic synthetic data for supervised deep learning.
- Solved the problem of the lack of ground truth for objects in deep scattering media, especially in dynamic turbid media.
- Eliminated the need for laborious manual labeling and extensive preparation of large datasets for deep learning training, as well as the need for an in-depth understanding of the complex multiple-scattering process.

**Super-Resolution Lensless On-Chip Microscopy Based on LED Array Illumination** 10/2024-present

- Proposed a method for recovering the amplitude and phase of an object using multiple holograms obtained from multi-angle and multi-wavelength illumination.
- Designed a data pre-processing and network training strategy for a modified U-Net architecture.

## Digital Holographic Particle Field Imaging Based on Infrared Illumination (invited)02/2023-10/2023

- Published: **Bozhen Zhou**, Zhitao Hao, Jianshe Ma, et al. on *Laser & Optoelectronics Progress*[J], 2024,61(02):349-355. (JCR 2023 Q4, IF = 1.0)
- Theoretically analyzed the relationship between focal depth and axial positioning accuracy in digital holographic particle field reconstruction.
- Conducted simulation and experimental analysis of holographic particle field reconstruction under green, red, and infrared light illumination.
- Improved axial positioning accuracy by utilizing a 940 nm infrared coherent light source, reducing the focal depth by approximately 19% and 39% compared to red (520 nm) and green light (638 nm).

## Design of a Spherical Roller Diameter Measurement System undergraduate thesis, 11/2021-06/2022

- Proposed a non-contact measurement method based on a cross-sectional light curtain combined with a circle fitting algorithm using the least squares method.
- Designed and set up the mechanical system and control system.
- Eliminated the need for cumbersome contact measurement methods, greatly improving the measurement efficiency, with accuracy reaching  $\pm 1 \mu\text{m}$ .

## HONORS AND AWARDS

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| ● Silver medal in long jump at the Tsinghua University Sports Meeting               | 10/2022   |
| ● Outstanding Graduate of Huazhong University of Science and Technology             | 06/2022   |
| ● Academic Excellence Scholarship of Huazhong University of Science and Technology  | 2019-2020 |
| ● The first prize of the 11th National Mathematics Competition for College Students | 09/2019   |

## SKILLS

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### Software & Programming:

- Python, MATLAB, SOLIDWORKS, LABVIEW, AutoCAD, Microsoft Office, Pytorch, Tensorflow.

Languages: TOEFL 103, GRE 155+170 (4.0).

## RESEARCH INTEREST

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- Fields: Computational Imaging, Quantitative Phase Imaging, Biomedical Imaging, Imaging in & through Scattering Media, Deep tissue Imaging, Computer Vision, Imaging Robotics, Adaptive Optics.
- Methods: Super-Resolution, Lensless On-Chip Microscopy, Fourier Ptychography Microscopy, LED Array Microscope, Optical Coherence Tomography, Digital Holography, Photoacoustic Tomography.