

# WANG, ZIHAO

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<https://winswang.github.io>

## EDUCATION

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### **Ph.D. student in Computer Science**

09/2015 - present

Northwestern University, advised by Prof. Oliver Cossairt

Cumulative GPA: 3.9/4

### **B.S. in Optics with Honors**

09/2011 - 06/2015

Zhejiang University, advised by Prof. Ming Ronnier Luo, George Barbastathis (MIT)

Thesis: Gradient Index (GRIN) lens simulations using Hamiltonian ray tracing and Wigner distribution function.

Overall GPA: 3.9/4

## PROFESSIONAL PREPARATION

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### **Light Labs Inc.**

04/2017 - 08/2017

*Computational Imaging Research Intern*

*Palo Alto, CA*

- Contributed to deployment of color calibration software. Improved color rendering performance.
- Homography estimation with radial distortion.

## RESEARCH EXPERIENCE

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### **Northwestern University**

01/2016-10/2016

*Research assistant*

*Evanston, IL*

#### **Compressive video**

- Designed and implemented optical imaging system (in-line holography, coded exposure)
- Realized codes for compressive holography, optimization using two-step iterative shrinkage thresholding.
- Developed and implemented an algorithm for subsampled phase retrieval.

#### **Looking through scattering media**

- Implemented Monte Carlo simulation for imaging through scattering media.
- Developed time-gating imaging experiments.

#### **Image stitching**

- Implemented Scale-Invariant Feature Transform (SIFT) on GPU.
- Developed a tone mapping algorithm using k-means clustering and high dynamic range bracketed exposures.

### **Massachusetts Institute of Technology**

02/2015 - 05/2015

*Visiting undergraduate student*

*Cambridge, MA*

- Developed a Hamiltonian ray-tracing algorithm for GRAdient INdex (GRIN) lens simulation
- Leveraged Wigner distribution function for scattering modulation.

### **Zhejiang University**

03/2012 - 01/2015

*Research assistant*

*Hangzhou, China*

- Acquired BRDF data for surface appearance (gloss, glint, coarseness) analysis.

- Analyzed surface effects using statistical methods (multi-dimensional scaling, high-dimension data fitting)
- Rendered in-door environment with variable color temperature using 3Ds Max.

## TEACHING

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EECS 395/495 Intro to Computational Photography (TA)	Fall 2016
EECS 110 Intro to Python (TA)	Winter 2017

## SELECTED AWARDS & GRANTS

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Conference Travel Grant, EECS & The Graduate School, Northwestern University (\$ 900)	2017
CKC-Harvard-MIT undergraduate thesis fellowship, Zhejiang University (\$ 10,000)	2014-2015
Excellent Student Awards, Zhejiang University	2011-2013

## TECHNICAL SKILLS

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<b>Programming Languages</b>	MATLAB, Python, C/C++, Javascript, WebGL
<b>Software</b>	3Ds Max, SPSS

## SERVICE

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**Reviewer** OSA: Optics Express, Applied Optics, Journal of the Optical Society of America A 2017  
 IEEE: ICASSP 2017  
**Student volunteer** IEEE International Conference on Computational Photography 2016, 2017  
**Student council member** Computer Science PhD Student Advocacy Council (CSPAC), EECS Dept., Northwestern Univ. 2017

## PUBLICATIONS

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### Refereed Journals

- **Gloss evaluation from soft and hard metrologies** Z. Wang, L. Xu, Y. Hu, F. Mirjalili, and M. R. Luo, J. Opt. Soc. Am. A 34, 1679-1686 (2017) (doi: 10.1364/JOSAA.34.001679)
- **Subsampled phase retrieval for temporal resolution enhancement in lensless on-chip holographic video** D. Ryu, Z. Wang, K. He, G. Zheng, R. Horstmeyer, and O. Cossairt, Biomedical Optics Express 8, 1981-1995 (2017) (doi: 10.1364/BOE.8.001981)
- **Compressive holographic video** Z. Wang, L. Spinoulas, K. He, L. Tian, O. Cossairt, A. K. Katsaggelos, and H. Chen, Optics Express 25, 250-262 (2017) (doi: 10.1364/OE.25.000250)
- **Looking into Special Surface Effects: Glint Impression and Diffuse Coarseness** Z. W. Wang, M. R. Luo, Coloration Technology, 132: 153-161 (2016) (doi: 10.1111/cote.12203)

### Conference Proceedings

- **Dictionary-based phase retrieval for space-time super resolution using lens-free on-chip holographic video** Z. Wang, Q. Dai, D. Ryu, K. He, R. Horstmeyer, A. Katsaggelos, O. Cossairt, in OSA Imaging and Applied Optics Congress, 2017. (Oral presentation, June 27, San Francisco, USA)
- **4D Tracking of Biological Samples using Lens-free On-chip In-line Holography** Z. Wang, D. Ryu, K. He, O. Cossairt, A. Katsaggelos, in Digital Holography & 3-D Imaging, 2017. (Oral presentation, May 30, Jeju Island, South Korea)
- **High-speed holographic imaging using compressed sensing and phase retrieval** Z. Wang, D. Ryu, K. He, R. Horstmeyer, A. Katsaggelos, O. Cossairt, in SPIE DCS 10222-15, 2017. (Oral presentation, Apr. 9, Anaheim, USA)