Zachary F. Phillips

1930 Vine St. Apt. 305
Berkeley, CA 94709

C: +1-910-617-0922
zkphil@berkeley.edu
[website] [github] [linkedIn] [scholar]

Summary

Fourth-year doctoral student at UC Berkeley exploring internship opportunities in both hardware and computational techniques for imaging and display

Education

University of California, Berkeley
Ph.D. (In Progress), Graduate Group in Applied Science and Technology, GPA: 3.52/4.00 — 2014-Present
- Research Area: Computational Imaging System Design and Methods
- Research Advisor: Laura Waller

University of California, Berkeley
M.S., Graduate Group in Applied Science and Technology — 2014-2016
- Thesis: Coded Illumination Techniques for Phase Imaging and Motion Blur
- Research Advisor: Laura Waller

University of North Carolina, Chapel Hill
B.S. with Highest Honors, Applied Science and Engineering, GPA: 3.33/4.00 — 2009-2013
- Senior Thesis: μCulture: A portable micro-incubator for cellular motility studies (...)
- Research Advisor: Amy L. Oldenburg

Research Experience

Waller Lab, University of California, Berkeley, Berkeley, CA
Graduate Student Researcher - (PI: Prof. Laura Waller) — May 2013-May 2014
- Developed methods for phase retreival, super-resolution, and high-throughput imaging
- Designed, constructed, and demonstrated programmable LED illuminators
- Mentored 11 undergraduates for summer and semester projects

DISP Lab, Duke University, Durham, NC
Associate in Research - PI.: David Brady — May 2013-May 2014
- Full-time (staff) research engineer position as part of the DARPA AWARE program
- Primary optomechanical designer for AWARE 40 (2.3 Gigapixel) camera
- Work featured in NPR's *All Things Considered*

Coherence Imaging Lab, UNC Chapel Hill, Chapel Hill, NC
Undergraduate Research Assistant - PI: Amy Oldenburg — May 2011-May 2013
- Assisted with experiments using Optical Coherence Tomography system
- Developed methods of robust segmentation for approximately 10,000 images
- Maintained MCF10DCIS.com and MCF10A cell lines for a period of 14 months

Relevant Awards

Eagle Scout, Boy Scouts of America — 2008
Invention Lab Fellow, UC Berkeley CITRIS Invention Lab — 2014 - 2016
Qinf Fellowship Recipient, Qualcomm inc. — 2016 - 2017

Software Proficiencies

Working Knowledge
Python (numpy, scipy), CAD Design (Solidworks, Fusion360), PCB Design (CADSoft EAGLE, KiCAD), LaTeX and MS Office, Git, Linux/bash, Arduino, Matlab

Basic knowledge
LabVIEW, Java (Android Development), Adobe Creative Suite, C++ Development (Linux and embedded)

Startup Experience

Co-founder and CEO, Spectral Coded Illumination, Inc. 2017-
- Developed, assembled, and sold LED Array devices to collaborators and research groups
- Consulted for patents related to work done at UC Berkeley

Hotdesk Member, Skydeck (UC Berkeley) 2017-

Founding Member, Baker Innovation Fellows (UC Berkeley) 2017-

Member, CITRIS Foundry Founders in Residence (UC Berkeley) 2018-

Activities & Interests

UC Berkeley SEED Elementary School Outreach 2015-

UNC WaterSki Club Team 2010-2012

UNC Underwater Hockey Club 2009-2013

Publications

Z.F. Phillips, M. Chen and L. Waller (13 May 2015). *Single-shot quantitative phase microscopy with color-multiplexed differential phase contrast (cDPC)*. PLoS ONE 12(2): e0171228. doi

Z.F. Phillips, M.V. D'Ambrosio, L. Tian, J. Rulison, H.S. Patel, N. Sadras, A. Gande, N. Switz, D.A. Fletcher and L. Waller (13 May 2015). *Multi-Contrast Imaging and Digital Refocusing on a Mobile Microscope with a Domed LED Array*. PLoS ONE 10(5): e0124938. (doi)

D.L. Marks, P.R. Llull, **Z.F. Phillips** *et.al.* (2014). *Characterization of the AWARE 10 two-gigapixel wide-field-of-view visible imager*. Applied Optics 53(14) C54-C63. (doi)

R.K. Chhetri, **Z.F. Phillips**, M.A. Troester, A.L. Oldenburg (2012). *Longitudinal study of mammary epithelial and fibroblast co-cultures using optical coherence tomography reveals morphological hallmarks of pre-malignancy*. PLoS ONE 7(11) e49148 (doi)

Talks

Z.F. Phillips, S. Dean, B. Recht, and L. Waller (27 March. 2018) *Multi-Frame Motion Imaging For Optical Microscopy* Focus on Microscopy 2018.

Waller, **Z.F. Phillips**, M. Chen, R. Eckert, L.H. Yeh, L. Waller (7 Nov. 2017) *Algorithmic Self-Calibration in Computational Imaging.* SIAM Data Driven Approaches in Imaging Science 2017.

Z.F. Phillips, R. Eckert, L. Waller (7 June. 2017) *Quasi-Dome: A Self-Calibrated High-NA LED Illuminator for Fourier Ptychography.* OSA Imaging Systems and Applications, Paper IW4E.5.

Z.F. Phillips, M. Chen, L. Waller (7 April. 2017) *Quantitative Differential Phase Contrast Imaging with Pupil Recovery.* OSA Bio-Optics, Design and Application, Paper JTu5A.2.

Z.F. Phillips, M. Chen, L. Waller (7 July. 2016) *Single-Shot Quantitative Phase and Amplitude Retrieval Using Color-Multiplexed Differential Phase Contrast Microscopy.* OSA Computational Optical Sensing and Imaging, Paper CT1D.4.

Z.F. Phillips, M. Chen, L. Waller (7 April. 2016) *Amplitude and Phase Recovery from Motion Blur Deconvolution.* SPIE DCS Computational Imaging, Paper 9870-17.

G. Gunjala, **Z.F. Phillips**, L. Waller (7 April. 2016) *Optimal LED illuminator design for Fourier ptychographic microscopy* SPIE DCS Computational Imaging, Paper 9870-13.

Z.F. Phillips, G. Gunjala, P. Varma, J. Zhong, L. Waller (7 June. 2015) *Design of a Domed LED Illuminator for High-Angle Computational Illumination.* OSA Imaging Systems, Paper FTu2F.5.

Z.F. Phillips, M.V. D'Ambrosio, L. Tian, J. Rulison, H.S. Patel, N. Sadras, A. Gande, N. Switz, D.A. Fletcher, L. Waller (12 April. 2015) *Computational CellScope: Multi-Contrast Imaging on a Smartphone-Based Microscope Using a Domed Programmable LED Array*. OSA Bio-Optics: Design and Application, Paper BM3A.7.

Z.F. Phillips, Chhetri, R.K., Cooper, J., Troester, M.A., Oldenburg, A.L. (2 feb. 2013) *Fractals and fluctuations: spatial and temporal correlations in optical coherence tomography of human breast cancer models*. Dynamics and Fluctuations in Biomedical Photonics X (SPIE Photonics West), Paper 8580-2.

D.L. Marks, J.G. Anderson, **Z.F. Phillips**, S.T. McCain, D.J. Brady (19 oct. 2014) *Gigapixel Whole-Body Microscopy.* Frontiers in Optics, Paper FTu2F.5.

D.L. Marks, **Z.F. Phillips**, S.D. Feller, D.J. Brady (22 June. 2014) *Multiscale Camera Objective with sub 2 Arcsec Resolution, 36 degree Field-of-View* Computational Optical Sensing and Imaging, Paper CTh1C.3.