Zachary F. Phillips

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

Education

University of California, Berkeley
Current Ph.D. Student, Graduate Group in Applied Science and Technology 2014-Present
- Cumulative GPA: 3.58/4.00
- Research Area: Computational Imaging System Design and Methods
- Research Advisor: Prof. Laura L. Waller

University of North Carolina, Chapel Hill
Bachelor of Science with Highest Honors, Applied Science and Engineering 2009-2013
- Cumulative GPA: 3.33/4.00
- Research Advisor: Prof. Amy L. Oldenburg

Research Experience

Waller Lab, University of California, Berkeley, Berkeley, CA
Graduate Student Researcher - (PI: Prof. Laura Waller) May 2013-May 2014
- Graduate research in computational Imaging using coded Illumination
- Implemented both convex and non-convex optimization methods with applications in phase recovery, super-resolution, and high-throughput microscopy
- Designed and assembled LED array illuminators consisting of 500+ programmable LEDs
- Mentored 7 undergraduates for summer and semester projects

DISP Lab, Duke University, Durham, NC
Associate in Research - PI.: Prof. David Brady May 2013-May 2014
- Full-time (staff) research engineer position as part of the DARPA AWARE program
- Responsible for coordinating assembly of several multi-gigapixel resolution cameras
- Primary optomechanical designer for AWARE 40 (2.3 Gigapixel) and MOAC (8.1 gigapixel) cameras
- Developed software applications for quality control during camera assembly
- Work featured in NPR's *All Things Considered*

Coherence Imaging Lab, UNC Chapel Hill, Chapel Hill, NC
Undergraduate Research Assistant - PI: Prof. Amy Oldenburg May 2011-May 2013
- Full-time, salaried research engineer position as part of DARPA AWARE project
- Responsible for coordinating assembly of several multi-gigapixel resolution cameras
- Primary optomechanical designer for AWARE 40 (2.3 Gigapixel) and MOAC (8.1 Gigapixel) cameras

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
Matlab, Java (Android Development), AutoDesk Inventor, CADSoft EAGLE, SolidWorks, LaTeX and MS Office, Git, Linux/bash, Arduino, C++ Development (Linux and embedded)

Basic knowledge
Python, LabVIEW, Adobe Creative Suite, ZEMAX OpticStudio

Activities & Interests

UC Berkeley SEED Elementary School Outreach (2016-), UNC WaterSki Club Team (2010-2012), UNC Underwater Hockey Club (2009-2013), Surfing, Kitesurfing, Running, Woodworking

Publications

Phillips, Z.F. D'Ambrosio, M.V., Tian, L, Rulison, J.J.,Patel, H.S., Sadras, N., Gande, A.V., Switz, N.A. Fletcher, D.A. & Waller, L. (13 May 2015). *Multi-Contrast Imaging and Digital Refocusing on a Mobile Microscope with a Domed LED Array*. PLoS ONE 10(5): e0124938. doi: 10.1371/journal.pone.0124938

Marks D.L., Llull P.R., **Phillips Z.F.**, *et.al*. (2014). *Characterization of the AWARE 10 two-gigapixel wide-field-of-view visible imager*. Applied Optics 53(14) C54-C63. doi: 10.1364/AO.53.000C54

Chhetri, R.K., **Phillips, Z.F.**, Troester, M.A., Oldenburg, A.L. (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: 10.1371/journal.pone.0049148

Talks

Phillips, Z.F., Chen, M., Waller, L. (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.

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

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

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

Phillips, Z.F., D'Ambrosio, M.V., Tian, L., Rulison, J.,Patel, H.S., Sadras, N. Gande, A., Switz, N., Fletcher, D.A., Waller, L. (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.

Phillips, Z.F., 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.

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

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