Logan Rodriguez Graves

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Optical Engineer

PhD candidate in optical engineering studying deflectometery and advanced optical metrology methods. Background in optical metrology, biomedical imaging, and psychophysics. Seeking work related to biomedical optics, optical design and testing, and software development.

Education

PhD Optical Engineering Expected Fall 2018
College of Engineering, University of Arizona

- Advisor: Dr. Dae Wook Kim

B.S. Optical Sciences & B.S. Biomedical Engineering May 2014
College of Engineering, University of Arizona Tucson, Az

Employment Experience

Optical Intern, Arizona Optical Systems March 2018-Current
Tucson, Arizona

- Perform algorithm and hardware design and optimization for advanced metrology methods.

Optical Designer, Omniscient LLC January 2018-Current
Tucson, Arizona

- Perform lens design and optimization, as well as hardware design for advanced endoscope design.

Creator and Co-Host, The Spotlight Report Podcast March 2017-Current
http://www.loft.optics.arizona.edu/podcast/

- Interview researchers about their work in their fields, with a focus placed on the sciences and experimental setups and results.

Research Assistant, LOFT Group June 2014-Current
University of Arizona

- Created iterative software processing method for improved reconstruction accuracy of unknown optical test surfaces, particularly for low order shapes.
- Performed error analysis on deflectometery processing software methods.
- Assisted in metrology of DKIST 4.2 m Primary Mirror using deflectometery and interferometery.
- Created automated laser tracker measurement plan for rapid 3D location measurements during interferometric metrology testing of DKIST 4.2 m Primary Mirror.
- Converted proprietary software for novel Long Wave IR metrology device to standardized MATLAB functions.

Research Assistant, Rieke Vision Lab June 2013-August 2013
University of Washington

- Built haploscope for two monitor image fusion.
- Developed program for various psychophysics stimulation methods on single and dual monitor setups using psychtoolbox in MATLAB for retinal response testing.
- Created a user interface that allowed for staircase feedback during user tests.

Research Assistant, Tissue Spectroscopy & Bio-Signatures Lab November 2010-May 2013
University of Arizona

- Collaborated to create multispectral imaging technique of colon lesion samples.
- Assisted in developing multispectral microscopy technique for acquisition of cancerous cell diagnostics.
- Developed novel ratiometric image processing techniques for analysis of multispectral lesion images using MATLAB.

Teaching Experience

Optics Outreach August 2015-Current

- Perform demonstrations and lectures to inform and excite lower and middle education students about science generally and optics specifically.
- Focus is placed on realistic challenges, but also benefits of a career in science.

Teacher's Assistant, OPTI 521-Optomechanics August 2015-December 2015
University of Arizona

- Assisted in teaching both classroom and lab portions of the course.
- Met with students in one on one and group settings to answer questions and provide learning and study suggestions.
- Topics taught include optical alignment, tolerancing, material properties, system design, and mounting methods.

Skills

Software MATLAB, Zemax, Spatial Analyzer, Solidworks
Courses (Select) OPTI 617-Advanced Optical Design; OPTI 524A-Optical Systems Engineering; OPTI 523-Optomechanical Design & Analysis
Projects Performed system analysis and tolerance analysis on monochrometer subsystem of UV-Near IR spectrometer. Acted as optical engineer for winning system in LED frequency determination competition.
Certifications Practical Optics Workshop- (1)Optical Alignment; (2)Interferometery; (3)Best Practices for Scientific Software

Publications

A full list of publications and presentations can be provided upon request.

- L. Huang, C. Zhou, W. Zhao, H. Choi, L. Graves, D.W. Kim, "Close-loop performance of a high precision deflectometry controlled deformable mirror (DCDM) unit for wavefront correction in adaptive optics system," Optics Communications 393 (2017).
- W. Zhao, L.R. Graves, R. Huang, W. Song, D.W. Kim, "Iterative surface construction for blind deflectometry," Proc. SPIE 9684, 8th International Symposium on Advanced Optical Manufacturing and Testing Technologies: Optical Test, Measurement Technology, and Equipment, 96843X (2016).
- D.W. Kim, T. Su, P. Su, C.J. Oh, L.R. Graves, J. Burge, "Accurate and rapid IR metrology for the manufacture of freeform optics," SPIE Newsroom, (2015).
- W.N. Grimes, L.R. Graves, M.T. Summers, F. Rieke, "A simple retinal mechanism contributes to perceptual interactions between rod and con-mediated responses in primates," eLife 2015; 3:e08033, (2015).
- T.E. Renkoski, B. Banerjee, L.R. Graves, N.S. Rial, S.A. Reid, V.L. Tsikitis, V.N. Nfonsam, P. Tiwari, H. Gavini, U. Utzinger, "Ratio images and ultraviolet C excitation in autofluorescence imaging of neoplasms of the human colon." Journal of Biomedical Optics, 18(1):16005, (2013).

Patents and Patent Applications

- U.S. Patent Application No. US 20150185151 A1, "Formulaic imaging for tissue diagnosis," U. Utzinger, B. Banerjee, T.E. Renksoski, N.S. Rial, L.R. Graves, published July 2, 2015.