J E F F R E Y L A

http://tinyurl.com/contactingJeffLa

EDUCATION

Ph.D., Biophysics, University of Massachusetts Boston, MA. Research interests: photoacoustic imaging, nonlinear photoacoustics, quantitative phase imaging, cancer biophysics, and image processing. Expected 2019.

M.S., Applied Physics, University of Massachusetts Boston. Thesis: *Image Processing Techniques for Biomedical Applications*. Dec. 2016

B.S., Physics *cum laude*, University of Massachusetts Boston**,** MA. May 2014.

RESEARCH EXPERIENCE

University of Massachusetts Boston — June 2013 – Present
Research Assistant — Boston, MA

- Built off-axis digital holographic microscopy setup, Fourier phase contrast microscopy setup, photoacoustic Z-scan setup, and photoacoustic tomography setup
- Optimized programs for parallel batch process analysis of cancer growth and treatment response using digital holographic microscopy with MATLAB
- Improved data collection automation and signal analysis of optical and acoustic signals of molecular photoacoustic contrast agents via LabVIEW and Origin
- Wrote ImageJ macros to stitch and focus-stack images of stained rat brain neurons and MATLAB programs for batch quantification of morphology
- Mentored undergraduate students, walked new graduate students through standard operating procedures, and helped structure lab meetings and goals

Dana-Farber/Harvard Cancer Center U54 Partnership — June 2015 – Aug 2015
Research Assistant — Boston, MA

- Improved photoacoustic signal response by adding bandpass filters, fitting maximum intensity projections, using said fit as filter parameters, and creating attenuation maps while processing data roughly eight times faster via parallel processing optimization

Dana-Farber/Harvard Cancer Center U54 Partnership — June 2014 – Aug 2014
Research Assistant — Boston, MA

- Expanded a photoacoustic Z-scan setup into a photoacoustic tomography setup and updated its LabVIEW routine for ex vivo chicken phantom imaging
- Wrote detailed, user-friendly MATLAB programs to process data and added write to *.raw capability for volumetric rendering via AMIDE

East West Enterprise, Inc. July 2013 – Nov 2013
Intern Boston, MA

- Furthered Fourier phase contrast microscopy (FPCM) through simultaneous FPCM and fluorescence microscopy supported by NSF SBIR Phase I for NASA via calibration of key components, beam path modeling in Zemax, and data analysis via MATLAB

TEACHING EXPERIENCE

University of Massachusetts Boston Sep 2014 – Present
Teaching Assistant, Physics Laboratory I & II Boston, MA

- Gave students from 18 to 40+ years old a deeper intuition and knowledge of Excel, Excel macros, error propagation, and error analysis
- Instructor of record for multiple lab sections with independent responsibility for its teaching and grading

Dana-Farber/Harvard Cancer Center U54 Partnership June 2015 – Aug 2015
Journal Club Leader Boston, MA

- Prepared presentations summarizing papers and facilitated discussions relating to the human papilloma virus-- its history, biology, treatment, social impacts, and relation to health disparities

PUBLICATIONS

Hatamimoslehabadi, M., Frenette, M., Bellinger-Buckley, S., **La, J.**, Ahmad, E., Rochford, J., & Yelleswarapu, C. S. (2015). Linear and Nonlinear Absorption Enhanced Photoacoustic Response of BODIPY and Curcuminoid Photoacoustic-phores. In *Optical Molecular Probes, Imaging and Drug Delivery* (pp. OW3D-4). Optical Society of America.

Frenette, M., Hatamimoslehabadi, M., Bellinger-Buckley, S., Laoui, S., **La, J.**, Bag, S., ... & Rochford, J. (2014). Shining Light on the Dark Side of Imaging: Excited State Absorption Enhancement of a Bis-styryl BODIPY Photoacoustic Contrast Agent. *Journal of the American Chemical Society*,*136*(45), 15853-15856.

Li, Y., Petrovic, L., **La, J.**, Celli, J. P., & Yelleswarapu, C. S. (2014). Digital holographic microscopy for longitudinal volumetric imaging of growth and treatment response in three-dimensional tumor models. *Journal of biomedical optics*, *19*(11), 116001-116001.

Manuscripts in preparation:

La, J., Lue, N., Li, Y, Rao, DVGLN, & Yelleswarapu, C. (2017). Low-cost Quantitative Fourier Phase Contrast Microscope. *Optics Communications*

La, J., Donadlson, T. S., & Yelleswarapu C. (2017). User friendly GUI for reliable and repeatable analysis of cell counting. *Microscopy and Microanalysis*

Ravenelle, R., Joseph, M., Scira, J., Berman, A. K., La, J., Mason, B., Yelleswarapu, C., Donaldson, T. S., (2017). Sex matters: Females in proestrus show greater diazepam anxiolysis and protein levels of BDNF and parvalbumin than males.

Acknowledgements:
Hempstead, J., Jones, D. P., Ziouche, A., Cramer, G. M., Rizvi, I., Arnason, S., ... & Celli, J. P. (2015). Low-cost photodynamic therapy devices for global health settings: Characterization of battery-powered LED performance and smartphone imaging in 3D tumor models. *Scientific Reports 5*, 10093.

INVITED PRESENTATIONS

La, J., et al. (2016, April). *Photoacoustic Tomography Optimization through Signal Processing and Attenuation Correction*. Poster presentation at the New England Science Symposium, Boston, MA.

La, J., et al. (2015, August). *Signal Processing Optimization of Photoacoustic Tomography System*. Poster presentation at Dana-Farber/Harvard Cancer Center U54 Partnership**'s 9th** Annual Research Symposium, Boston, MA.

La, J., et al. (2014, August). *Development and Optimization of Photoacoustic Tomography System*. Poster presentation at Dana-Farber/Harvard Cancer Center U54 Partnership**'s 8th** Annual Research Symposium, Boston, MA.

La, J., et al. (2014, March). *Fourier Phase Contrast Microscopy via White Light Microscope Camera Port*. Poster presentation at the New England Undergraduate Research and Development Symposium, Biddeford, ME.

AWARDS

Entrepreneur Design Contest Co-Winner 2009 – 2010
Boston University College of Engineering, Technology Entrepreneurship Club
- Collaborator of the design of a disposable rucksack-able UAS system, LADAR, a Low Altitude Disposable Aerial Reconnaissance System

Scholarship Cadet Sep 2007 – Jan 2011
US Army Reserve Officer's Training Corps

UNIVERSITY SERVICE

University of Massachusetts Boston, Boston, MA
Graduated Student Officer, Society of Physics Students 2016 – Present
Student Member, Society of Physics Students 2013 – 2016

Boston University, Boston, MA
Coordinator, Boston University Red Cross Volunteer 2009 - 2010
Student Member, Society of Manufacturing Engineers 2009 - 2010

SEMESTER-LONG PROJECTS

La, J. (2015). Identity Relationships of Exact Distributions for Stochastic Gene Expression. *Physics 697, Introduction to Biological Physics*, Prof. Rahul Kulkarni

La, J. (2015). Quantum Counteradiabatic Driving in the Heisenberg Picture. *Physics 623, Quantum Mechanics: Scattering and Many-Body Physics*, Prof. Adolfo Del Campo

La, J. (2015). Video-based Microrheology Modality Comparison: Epi-Fluorescence vs. Phase Contrast Imaging. *Physics 697, Experimental Soft Condensed Matter Physics*, Prof. Jonathan Celli

La, J. (2014). NIH Proposal Draft: Combining Quantitative Phase and Epi-Fluorescence Imaging with Flow Cytometry. *Physics 645, Cancer Biophysics*, Prof. Jonathan Celli

VOLUNTEER SERVICE

Chiu Mo Kwoon, Boston, MA — 2001 – Present
Lion Dancer and Martial Arts Performer

Society for Chinese Instrumental Music, Boston, MA — 2007 – 2010
Dulcimerist

MUSIC BANDS

The Modern Voice, a doom jazz/metal band — 2012 - Present
Fable Grazer, an experimental improve collective — 2012 - Present
Vilicon Sally, a loop-based electronic oriental folk band — 2017
the pinyin pals! (拼音朋友！**)**, a Chinese folk pop band — 2010-2012
Benson-La Experiment, a world fusion duo — 2012