**Elaine M. Wells-Gray**

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**PROFESSIONAL EXPERIENCE:**

**7/2013 – 9/2019**

**College of Optometry, Ohio State University (OSU), Columbus, OH**

Postdoctoral Researcher (7/2013 – 1/2016)

Senior Research Associate (1/2016 – 9/2019)

* Developed software for custom-built high-resolution adaptive optics (AO) retinal imaging systems.
* Developed 3D image registration algorithms to compensate for eye motion artifacts and provide multi-image volume averaging.
* Management and cleansing of medical images and structural biomarker data for multiple concurrent projects
* Created image processing libraries for registration, quality assessment, image sorting, image segmentation, and cellular classification.
* Performed ray tracing optimization in Zemax to compensate for optical aberrations.
* Collaborated with researchers and students across different departments and colleges.
* Trained and supervised students and interns in image processing procedures and analysis of clinical research data.
* Presented technical findings at scientific conferences and seminars and in peer-reviewed journals.

**1/2012 – 6/2013**

**Cactus Communications**

Science Editor

* Edited biomedical and engineering articles.

**1/2011 – 10/2011**

**PathoLase Inc, Chico, CA**

Biophotonics Engineer

* Medical laser-device research and development using spectroscopic and near-infrared imaging techniques.
* Analyzed laser interaction with fungal and bacterial pathogens, including ablation and thermal inhibition.
* Implemented Monte Carlo photon propagation simulations to model light transport though human tissue.
* Performed finite-difference numerical analysis for pulsed-laser irradiation thermal diffusion.
* Coordinated and wrote NIH-SBIR grant submissions.

**9/2005 – 1/2011**

**Biomechanical Optics Laboratory, Oregon Heath & Science University**

PhD Research Assistant

* Performed statistical analyses of photon propagation in the single and multiple-scattering regimes.
* Developed multi-pixel dynamic light scattering numerical processing algorithms.
* Analyzed temporal fluctuations in biomaterials and tissue using laser speckle contrast imaging.

**EDUCATION:**

**2011 PhD in Biomedical Engineering, focus in Biomedical Optics**

Oregon Health & Science University, Portland, OR

* Achievement Rewards for College Scientists (ARCS) Scholarship

**2003 BS in Biomedical Engineering, focus in Biomechanics**

University of Iowa, Iowa City, IA

**SKILLS**

* **Data Science**: Computer Vision, 2D/3D Signal Processing, Image Analysis, Linear Algebra, Calculus, Automation, Statistical Testing, Machine Learning, Classification, Data visualization, Tableau
* **Mathematics**: Calculus, Linear Algebra, Statistics
* **Languages/Applications**: Python, Matlab, C/C++, TensorFlow, Scikit-Learn, OpenCV, SQL, LabVIEW, Zemax, Microsoft Word, Microsoft Excel, Microsoft Powerpoint.
* Proficient in writing, editing, and presenting scientific information

**CERTIFICATIONS & COURSEWORK**

* **Computer Vision and Image Analysis** (Microsoft: DEV290x) – Oct 2019
  + <https://courses.edx.org/certificates/795a75a056fe4915a6d5791d502373b2>
* **Using Python for Research** (HarvardX: PH526x) – Sept-Oct 2019

*A list of peer-reviewed publications and scientific presentations are available upon request.*