Alicia Breanne Dagle

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EDUCATION

Graduate:

Columbia University, New York, NY
Master of Science in Mechanical Engineering, GPA: 3.70/4.00 — Expected Dec 2019
Master of Philosophy in Mechanical Engineering — Expected May 2021
Doctor of Philosophy in Mechanical Engineering — Expected May 2023

Relevant Coursework: Data Science; Deep Learning in Biomedical Engineering; Biostatistics; Intro to Robotics; Anatomy for Physicists & Engineers; Principles of Magnetic Resonance Imaging; Biomedical Imaging; Biophotonics; Computer Aided Design; Modern Control Systems; Advanced Fluid Mechanics; Advanced Thermodynamics

Undergraduate:

Columbia University, New York, NY
Bachelor of Science in Mechanical Engineering, GPA: 3.57/4.00 — May 2018
Combined Plan Program with **Clark University,** Worcester, MA
Bachelor of Arts in Physics, GPA: 3.94/4.00 — May 2018

Relevant Coursework: ; Mechanics of Solids; Heat Transfer; Electronics; Electricity & Magnetism; Classical Mechanics; Oscillations, Waves & Optics; Intro Chemistry I-II; Computer Simulations Lab; Honors Tutorial in Mechanical Engineering (Research in Robotics Rehabilitation Lab); Biomedical Ethics.

PROFESSIONAL EXPERIENCE

Siemens Healthineers – **Business Programs Intern** (Point of Care Division) — June 2017 – August 2017

- Assisted Sustaining Engineering R&D team to improve and support continued success of current products.
- Pursued design changes including design-to-cost savings, updated CAD drawings, managed project schedules, communicated and coordinated with business partners on-site and overseas, including manufacturing and vendors.
- Managed multiple projects, released documents for review and implementation.
- Performed quality investigations using LabView to measure pressures in RAPIDPoint 405/500 measurement cartridges.

Clark University – **Teaching Assistant** (Honors Calculus) — 2014 – 2016

- Led review sessions, graded homework on an ongoing basis, provided students with detailed feedback.

RESEARCH EXPERIENCE

Living Materials Lab (Columbia University, Dr. Karen Kasza) — August 2018 – Present

- Investigating role of mechanical forces during embryonic development in model organism, Drosphila Melanogaster.
- Employing optogentic tools to apply external force, imaging with conofocal microscopy, processing using cell segmentation and particle image velocimetry.
- Analyzing cell position changes, rearrangements, and velocities using Tissue Analyzer, Segga, and PIV Lab.

Biomedical Optics REU (Wellman Center for Photomedicine, Dr. Seok-Hyun Yun) — June 2016 –August 2016

- Operated laser and Brillouin microscopy equipment, cultured cells, performed MATLAB analysis.
- Investigated the Brillouin stiffness measurements of cells under varying osmotic compression conditions.
- Successfully visualized intracellular components by mapping Brillouin shift.

Condensed Matter Research (Clark University, Dr. Michael Boyer) — January 2015 – May 2016

- Examined the surface properties of cuprous oxide nanocubes to further understand their catalytic behavior.
- Employed atomic force microscopy (AFM), scanning tunneling microscopy (STM), and scanning electron microscopy (SEM) to determine band-gap and visualize surface features.

Computational Sensing & Medical Robotics REU (Johns Hopkins University, Dr. Muyinatu Bell) — June 2015 – August 2015

- Researched energy safety limitations and feasibility of implementing photoacoustic imaging to visualize the internal carotid artery during endonasal transsphenoidal surgery for pituitary tumor resection.
- Constructed phantom for testing, collected photoacoustic data, performed MATLAB analysis, determined the energy required for vessel visualization, and compared the required energy to fluence safety limits.
- Coauthored a publication, submitted an abstract and presented poster.

Bioengineering REU (Worcester Polytechnic Institute, Dr. Qi Wen) — June 2014 – August 2014

- Researched the effect of vimentin on cellular traction force, spreading area, and stiffness.
- Cultured cells, prepared polyacrylamide gels with fluorescent beads, captured images with a fluorescent microscope, and performed traction force microscopy (TFM) with a 3-D finite element model utilizing MATLAB and ANSYS. Applied atomic force microscopy to examine and plot stiffness of cells, submitted abstract and presented poster.

AWARDS, PUBLICATIONS, & PRESENTATIONS

National Research Foundation Gradruate Research Fellowship (NSF GRFP)	2019
Pi Tau Sigma (International Mechanical Engineering Honors Society) nomination	2018
Coauthored publication (Bell et al. 2016, *Proceedings of SPIE Photonics West*)	2016
1st Place Presentation Award for Computational Sensing & Medical Robotics REU	2015
Presentation at Council of Undergraduate Research (CUR) Symposium (*Arlington, VA*)	2015
Presentation at Biomedical Engineering Society (BMES) Conference (*San Antonio, TX)*	2014

COMPUTER/LAB SKILLS

Computer: Microsoft Office, SolidWorks, MATLAB, LaTeX, LabView, Java, and R.
Lab: Finite element analysis, photoacoustic imaging, ultrasound, Brillouin Microscopy, TFM, AFM, STM, and SEM.

ACTIVITIES & VOLUNTEER EXPERIENCE

Active: Competitive ballroom dance; MyNYC Mentor Program; ENG mentor for high school students.
Past: Competitive gymnastics; YouthLEAD interfaith organization; Best Buddies; Unified Sports; BMES volunteer.