**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

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| **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.