Arijit Dutta

9616 Dapper Town Row 908-642-2277 arijit27dutta@gmail.com
Laurel, MD 20723 https://arijitdutta.org/

Education

A. James Clark School of Engineering, University of Maryland — August 2022 - Present
M.S. Bioengineering — GPA: 3.87

Swanson School of Engineering, University of Pittsburgh — August 2018 - May 2022
B.S. Bioengineering — Minor: Chemistry — GPA: 3.64

Skills

- Mammalian cell culturing and histological tissue staining (Hematoxylin & Eosin, Masson's Trichrome, PAS and Immunofluorescence), Western Blotting, Polymerase Chain Reaction, Flow Cytometry, ELISA, Nuclear Magnetic Resonance spectroscopy
- Programming skills in MATLAB, Python, C; Webmaster skills in HTML and JavaScript
- Fluent in all aspects of Microsoft Office (Word, PowerPoint, Excel, and Publisher)
- JMP Statistical Software, 3D Slicer, Blender, Fusion 360, MeshLab, ImageJ, and QuPath
- Experience with the FDA quality system regulation (QSR) with emphasis on the Design Controls (21 CFR 820.30) consisting of ethnography and human factors analysis, formulation of technical specifications, risk analyses including fault tree analysis (FTA) and failure mode and effects analysis (FMEA), verification and validation (V&V) planning, test protocol formulation and execution, and test report preparation

Experience

Graduate Research Assistant — August 2022 – Present
University of Maryland, College Park, Maryland

- Investigating the impact of utilizing focused ultrasound on neuronal network activation in Dr. Wolfgang Losert's Lab
  - Cultured and differentiated human neural progenitor cells and tracked calcium activity of neural networks after stimulation via acoustic forcing

Research Intern at the McGowan Institute for Regenerative Medicine — January 2019 – April 2022
University of Pittsburgh, Pittsburgh, Pennsylvania

- Investigated how the body's immune response to biomaterial implants is affected by age and microenvironment
  - Stained and imaged mouse tissue slides with Masson's Trichrome, Hematoxylin & Eosin, and Immunofluorescence and then used ImageJ software for data collection
- Investigated how angiogenesis is affected by the body's immune response to biomaterial implants
  - Cultured HUVEC cells and assisted conducting and analyzing a tubule formation assay
- Investigated potential therapeutic treatment for dry eye with contact lenses
  - Stained, imaged, and analyzed tissue samples from rabbit cornea with testing lenses

Undergraduate Teaching Assistant — January 2021 – May 2022
University of Pittsburgh, Pittsburgh, Pennsylvania

- Served as a teaching assistant for the following courses:
  - Introductory Cell Biology II (Spring 2022): Will lead recitation sessions to review lecture and grade students' assignments
  - Introductory Cell Biology I (Fall 2021): Led recitation sessions to review lecture material and graded students' assignments
  - Intramural Internship (Spring 2021): Organized presentation schedules, provided feedback on students' assignments, and graded these assignments
  - Statistics (Spring 2021): Assisted students on laboratory assignments during laboratory classes

NSF REU Research Intern at Wake Forest University — June 2021 – August 2021
Clinical Image Analysis Lab, Winston-Salem, North Carolina

- Investigated the use of deep learning models on pathological image processing of cancer
  - Implemented a Swin Transformer model on colorectal images to automatically determine whether a sample image contains cancer cells through semantic segmentation
- Research findings presented at 2021 Biomedical Engineering Society Conference and 2022 SPIE Medical Imaging Conference

Research Intern at the Translational Research Laboratory in Urogynecology June 2020 – October 2021
University of Pittsburgh, Pittsburgh, Pennsylvania

- Investigated the impact of anatomical factors associated with recurring Pelvic Organ Prolapse
    - Performed anatomical segmentation of MRIs to generate and analyze 3D models of pelvic features using 3D Slicer Blender, and MeshLab
- Research findings presented at the 2020 Carnegie Mellon Forum on Bioengineering and the 2021 American Urogynecologic Society Conference

NSF REU Research Intern at the New Jersey Institute of Technology May 2019 – August 2019
Advanced Energy Systems and Microdevices Laboratory, Newark, New Jersey

- Further developed microchip used for the detection of cancer and other illnesses
    - Fabricated silicone micro-channels for parameter testing of a blood filtration system
    - Assisted in the creation of MATLAB code to automatically calculate flowrate of fluid into channels

Presentations/Publications

- Bowen, S., **Dutta, A**., Rytel, K., Abramowitch, S., Rogers, R., & Moalli, P. (2021) 3D Quantitative Analysis of Normal Clitoral Anatomy in Nulliparous Women on MRI. *International Urogynecology Journal*.
- Tavolara, T. (presenter), **Dutta**, **A**., et al, "Automatic Generation of the Ground Truth for Tumor Budding Using H&E Stained Slides", SPIE Medical Imaging Conference, San Diego, CA, February 20-24, 2022.
- **Dutta**, **A**., Tavolara, T., Niazi, M. "Image Segmentation in Colorectal Cancer Using Transformers", Biomedical Engineering Society Conference, Orlando, FL, October 6-9, 2021.
- Bowen, S.(presenter), **Dutta, A**., Rytel, K., Abramowitch, S., & Moalli, P. "3D Quantitative Analysis of Clitoral Anatomy Improves Understanding of Clitoral Anatomy in Nulliparous Women". American Urogynecologic Society PFD Week 2021, October 12-16, 2021. Phoenix, AZ.
- Bowen, S., **Dutta, A.**, Rytel, K., Abramowitch, S., & Moalli, P. (2021). 3D Quantitative Analysis of Clitoral Anatomy Improves Understanding of Clitoral Anatomy in Nulliparous Women. *Female Pelvic Medicine & Reconstructive Surgery, 27* (10S), S32. doi: 10.1097/SPV.0000000000001103.
- **Dutta**, **A**., Bowen, S., Rytel, K., Abramowitch, S., Moalli, P. "3D Analysis of the Impact of Pelvic Organ Prolapse Repair Surgery on Vaginal Anatomy", Carnegie Mellon University Forum on Biomedical Engineering, Virtual, September 18-19, 2020

Awards/Honors

- Best Session Paper: Swanson School of Engineering First-Year Engineering Conference (April 2019)
- Second Place: Research Competition Presentation, NSF REU program (August 2019)
- Term Honor List (Fall 2018), Dean's Honor List (Spring 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022)