Lavanya Bharani

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EDUCATION

Data Science – Master of Science (currently enrolled) **Expected Graduation: Aug 2025**
Tufts University *Medford, Massachusetts*

- Courses: Algorithms, Database Systems, Privacy and Security, Probability, ML, AI
- Project: Implementation of Local Differential Privacy on NSDUH 2022 Database (Python, PostgreSQL)

Biomedical Engineering – Bachelor of Science, 4.00/4.00 GPA ***Graduated: May 2020***
University of Alabama at Birmingham Birmingham, Alabama

- Global and Community Leadership Honors Program, High Distinguished Honors, Summa Cum Laude
- Honors in Biomedical Engineering

PROFESSIONAL EXPERIENCE

Medtronic Woburn, Massachusetts
***R&D Engineer**, New Product Development* *Jan '22 – Present*
Design, development, analysis, and troubleshooting for new product development of mechanical and electro-mechanical components, sub-assemblies, and systems to meet customer and business requirements.

- GYN Health – next-gen hysteroscopy system; Robotic-Assisted Surgery – wristed instruments
- EUMDR remediation engineering lead for hysteroscopy system

- Define clinical / user needs, design inputs & functional outputs, product design and development with cross-functional teams (Clinical, Quality, Marketing, and Regulatory)
- Develop mechanical design solutions using SolidWorks and CREO, lead biocompatibility testing efforts.
- Interface with internal and external suppliers, manufacturers, and customers
  - Develop test method validations, process development, design for manufacturing.
- Design studies to investigate current pain-points with DMAIC and Root-Cause Analysis
  - Document experimental results in reports; perform statistical analysis on data using MiniTab and Excel.
- Mentor college interns for technical and professional development, lead intern program – 3-4 interns per year
- Promoted from R&D Engineer I to R&D Engineer II within 11 months of joining Medtronic

Smith and Nephew Andover, Massachusetts
***Design Quality Engineer**, New Product Development* *Oct '20 – Jan '22*

- Led development of User Needs and Design Inputs based on VOC collected from clinical and R&D teams.
- Lauded for exceptional and on-time execution of project deliverables and completion of specific programs, including:
  - Test protocol development and management of prototype builds for V&V and formative evaluations.
  - Risk management documentation (DFMEA, UFMEA, Hazard Analysis) throughout development process.
- Planned and organized design reviews with cross-functional teams for design, testing, and documentation as per QMS.
- Collaborated with Clinical, R&D, Marketing, and RA for idea generation, product design and development per QMS and FDA/EUDMR design controls.

University of Tennessee – Health Science Center Memphis, Tennessee
***Research Intern,** Department of Biomedical Engineering and Orthopedic Surgery* *May '19 – Aug '19*

- Led design and data analysis efforts for Orthopedic Biorobotics and Rehabilitation Laboratory projects for spinal disc implants, an ankle-foot orthosis, and Nitinol staples.

Le Bonheur and Methodist Hospitals Memphis, Tennessee
Summer Intern *May '18 – Aug '18*

- Collaborated with surgeons and technicians in clinical/OR settings to learn about the application of medical devices.
- Identified current pain-points in the medical devices surgeons/nurses/technicians are using in fields of endocrinology, interventional radiology, urology, cardiology, general surgery, otolaryngology, and medical imaging.

Human Technology Prosthetics and Orthotics, LLC. Southaven, Mississippi
Summer Intern *May '18 – Aug '18*

- Worked with prosthetists and orthotists to observe the creation and functionality of various prosthetics and orthotics and adapted the devices for patient specific anatomy.
    - Devices used: laminated and 3D printed prostheses, myoelectric hand, biosensors.

University of Alabama at Birmingham Birmingham, Alabama
Teaching Assistant for Engineering Graphics, *Department of Mechanical Engineering* *Aug '17 – Dec '18*

- Taught 40-60 students per semester SolidWorks and AutoCAD 2D and 3D modeling, engineering drawing concepts for parts and assemblies, maintenance of design history files, drawing from orthographic to isometric (and vice versa).

University of Alabama at Birmingham Birmingham, Alabama
Researcher*, Department of Biochemistry and Molecular Genetics* *Aug '16 – May '20*

Developed and analyzed *in vitro* experiments to assess model gene and drug therapies for nonsense mutations with CF:

- Analyzed and documented experimental bioluminescence data with biostatistics- eliminated outliers and obtained standard curves and comparison graphs with PRISM software.
- Conducted biological experiments in wet lab and cell culture hood settings.

PUBLICATION

Du, M.; Liu, K.; Chen, L.; **Bharani, L.**; Keeling, K.M.; Rowe, S.M.; Bedwell, D., *Development and Characterization of Luciferase-Base Reporters to Monitor Translation Termination at Premature Termination Codons Versus Normal Termination Codon*, p. 254, 2018 Cystic Fibrosis Conference, Pediatric Pulmonology.

COURSEWORK AND ENGINEERING PROJECTS

BME Capstone – Designed and analyzed a 3D printed chromatic retinoscope for examining differences in chromatic aberration in developing eyes.
BME Honors Thesis - Thesis on ovarian cancer mechanotransduction in a 3D microenvironment, experimental design and biostatistical analysis on 3D FlexCell tension experiments

Biocomputing - Matlab and C++ to perform various methods of signal processing of biological signals.
Biostatistics - Matlab to design an accurate cell counter for over 1000 images and perform biostatistical analysis.
Biomechanics - Matlab to analyze/compile data and perform Wiechert modeling from tensile and fatigue mechanical testing of chicken femur cartilage tissue.
Biomaterials/Tissue Engineering - Authored NIH-style research proposals for a novel microneedle patch to treat symptoms of Parkinson's disease and 3D bioprinted alveoli for patients with Cystic Fibrosis.
Bioinstrumentation - LabView to collect circuitry data for projects such as an EKG monitor and Arduino to develop Flexcell biosensor controlled robotic hand.

LEADERSHIP, INVOLVEMENT, & AWARDS

Excellence in Collaboration Award – Smith & Nephew *2021*

- Exceptional efforts in meeting project timelines through collaboration with cross-functional team for timely launch of LENSApp (surgical tower application).

Tau Beta Pi, National Engineering Honors Society (Social Chair), Alpha Gamma Chapter *2019 – Present*
Global and Community Leadership – Leadership Council *2016 - 2020*
Biomedical Engineering Society and Society of Women Engineers *2016 - Present*