

Casper Muter

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EDUCATION

Boston University. Boston, MA

September 2023 - August 2024

Master of Science in Robotics and Autonomous Systems.

University of Hartford. West Hartford, CT

September 2019 - May 2023

Bachelor of Science in Electromechanical Engineering Technology (Magna Cum Laude).

EXPERIENCE

Mechanical Engineer II

Biotex Inc

February 2025 - Present

- Drive development of sensor integrated medical devices through prototyping, system integration, and testing.
- Design electromechanical assemblies, housings, and tight tolerance components in CAD.
- Apply DFM for machined, molded, and 3D printed parts and create manufacturing drawings using GD&T.
- Plan and execute benchtop, ex vivo, and preclinical studies, analyze results to guide design iterations.
- Design, assemble, and program electromechanical imaging, sound, and vibration test fixtures with integrated sensors.
- Integrate mechanical and electrical components for a helmet mounted human presence detection system.
- Facilitate design reviews and client meetings, supporting technical decision making throughout device development.

Graduate Research Assistant

Material Robotics Laboratory at Boston University

September 2023 - May 2024

- Acquired hands on experience fabricating a soft robotic sleeve for colonoscopy procedures, learning key design constraints and functional tradeoffs.
- Collaborated with clinicians at Brigham and Women's Hospital to conduct NASA Task Load Index assessments, optimized device design based on usability and ergonomic feedback.
- Utilized fabrication methods including laser cutting, UV curing, and uniform polymer coating to support soft robotic device development.

Soft Robotics Engineer Intern

Morphable Biorobotics Laboratory at Boston University

May 2024 - August 2024

- Designed and fabricated stacked balloon actuators for a soft robotic octopus used by the navy.
- Developed and tested advanced soft robotic tentacles with customized fiber reinforcements for increased force output and flexibility in underwater manipulation.
- Conducted performance evaluations using a Universal Robot UR5 collaborative robot to simulate operational challenges.

PROJECTS

Oncomagnetics Wearable System

- Designed wearable device components and subassemblies using surface modeling for complex geometry, created manufacturing drawings, and developed custom assembly fixtures for repeatable press fit operations.

Smart Laryngeal Mask Airway (LMA)

- Led mechanical prototyping, sensor selection and design, system integration, and iterative testing for a sensor enabled laryngeal mask airway (LMA).

Soft Robotic Sleeve for Safer Colonoscopy Procedures

- Developed and evaluated prototypes for a soft robotic sleeve, advancing silicone molding techniques and lab fabrication methods while conducting force and curvature testing using an Instron machine and MATLAB.

Cable Driven Soft Glove for Hand Therapy

- Engineered a soft robotic glove with a team using Dragon-Skin elastomer and cable-driven servo motors for targeted hand therapy, incorporating sensor-based progress tracking for rehabilitative precision.

PUBLICATIONS

Soft Robots for Colonoscopy: Monitoring Forces, Increasing Safety, and Reducing Discomfort. Npj Robotics, 2025

Soft, Fiber-Reinforced Bellow Actuators. IEEE Robotics and Automation Letters, 2025

KNOWLEDGE AND SKILLS

Hardware: Mechanical design, rapid prototyping, CAD and DFM for machined, molded and 3D printed parts, GD&T, soft robotic fabrication, sensor and actuator integration, and circuit assembly and troubleshooting.

Software: Siemens NX, SolidWorks, MATLAB, Python, C++, OrCAD PSpice, CLICK, LabVIEW, and ROS.

Languages: English (Fluent), Polish (Fluent).