Douglas Summerlin
Mechanical Engineer

dsumm1001@gmail.com ▪ 240-205-3707 ▪ Boston Metro Area ▪ LinkedIn

EDUCATION

University of Maryland, Clark School of Engineering College Park, MD

M.Eng., Robotics Engineering, May 2025 GPA: 3.84

B.S., Mechanical Engineering, May 2020 GPA: 3.59

WORK EXPERIENCE

NextStep Robotics

Lead Product Engineer JAN 2025 - AUG 2025

- Lead product launch of the company's lower-limb exoskeletal robotic medical device, designed to assist ankle movement of hemiparetic stroke patients in rehabilitative physical therapy.
- Directed device manufacturing under ISO13485 standards, conducting incoming material inspection, inventory management, production scheduling, equipment calibration and maintenance, quality control testing, and comprehensive production documentation and recordkeeping.
- Implemented a product data management system to establish robust revision control, version tracking, and specifications documentation of over 300 device hardware components.

Product Engineer JAN 2022 - JAN 2025

- Directed design verification activities for medical devices to ensure compliance with IEC60601 design standards, documenting findings and opportunities for improvement in comprehensive reports.
- Designed an overshoe contact sensor (patent-pending) and leveraged a custom Python-based gait data analysis application to assess foot contact detection accuracy and performance in impaired patients.
- Authored SOPs and work instructions for device manufacturing and quality control processes and implemented documents within an ERP system to facilitate scalable production.
- Collaborated with suppliers to optimize part designs and ensure compliant manufacturing processes, reducing scrap and rework quantities while simultaneously driving down part costs.

Device Engineering Intern JUN 2021 - DEC 2021

- Designed and built four benchtop testing rigs to obtain kinetic and kinematic measurements of robotic actuators, leveraging microcontrollers and integrated sensors to ensure product safety and reliability.
- Used CAD tools including SolidWorks and Onshape to rapidly design, prototype and iterate upon fixtures, jigs, rigs and tooling by utilizing 3D printing technology and CNC machining.

University of Maryland AUG-DEC 2023 & 2024

Assistant Lecturer, Graduate Teaching Assistant

- Delivered weekly lectures on rehabilitative robotics and human-robot interaction, incorporating hands-on demonstrations of assistive robotic hardware to enrich student learning experiences.
- Supported presiding professors by grading and organizing assignments, lab reports, course projects, and exams to ensure timely feedback and efficient course administration.

PROJECT EXPERIENCE

Myoelectric Gesture Classification using a Hybrid Neural Network OCT 2024 - DEC 2024

- Developed a hybrid neural network in PyTorch, combining convolutional and fully connected layers to classify six hand gestures at three different force levels for embedded prosthetic control.
- Improved classification accuracy by optimizing network architecture and hyperparameters, achieving 90% accuracy in pure pose classification and 80% in kinetic pose classification.

DART Autonomous Mobile Robot JAN 2024 - MAY 2024

- Designed and fabricated a mobile autonomous robot controlled by a Raspberry Pi, featuring an IMU, camera module, and gripper mechanism for completing a pick-and-place task in a cluttered environment.
- Implemented PID feedback control for motor actuation, computer vision algorithms for payload detection and identification, and an empirical model for distance estimation and locomotion planning.

SKILLS

Programming: Python , C/ C++, MATLAB, Simulink, ROS, Linux OS (Ubuntu), Excel, Pytorch, Tensorflow
Tools/Technologies: Solidworks, Fusion 360, Onshape, Autodesk Inventor, 3D Printing, Microcontrollers