Matthew Morley

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Education

2020-Present **NORTHEASTERN UNIVERSITY** **BOSTON, MA**

Candidate for Bachelor of Science in Mechanical Engineering (Graduation June 2024)
National Fluid Power Association Robotics Challenge Scholarship Winner (2020)
GPA 3.86 / 4.0 – *Dean's List all semesters*

Skills

Fabrication: *Comfortable on mills (manual, CNC), lathes, 3D printers, hand/hot air soldering, hand tools*
Software: *SOLIDWORKS, Git, Linux, KiCad, HSMWorks, Agile PLM, Slic3r/Cura, Jira, Docker, ROS*
Languages: *C++, C, Python, Java, Vue/JS, Kotlin, MatLab*

Experience

July 2022 - Dec. 2022 **GREENSIGHT AGRONOMICS** **BOSTON, MA**

Robotics & Engineering Intern

Performed new drone avionics bringup and debugging, designed PCBs, and wrote embedded software

- Gained FAA Part 107 remote pilot license, and performed drone flight testing
- Characterized LiDAR and radar sensor performance for autonomous drone flight using ROS
- Debugged and reworked existing circuit board design and layout in KiCad to fix Ethernet networking
- Developed robust LoRa radio driver for drone swarm communication over MAVLink in C++

Oct. 2021 - July 2022, Dec. 2023 - Present **JOHNSON & JOHNSON** **REDWOOD CITY, CA (REMOTE)**

Software Robotics and Controls Intern

Developed and refactored instrument simulation models for the Monarch surgical robot in C++ and Python

- Identified correlations in procedure data logs to accurately simulate surgical system behavior
- Refactored simulation code to remove logic from release builds, improving procedure safety
- Models enabled verification of procedure workflow and increased unit-test coverage

June 2021 - Sep. 2021 **JOHNSON & JOHNSON** **SANTA CLARA, CA**

Mechanical Engineering Intern

Designed, programmed, and deployed actuator test fixtures for the Ottava surgical robot

- Enabled verification of robotic joints to safety-critical performance metrics on the manufacturing line
- Released fixtures in Agile PLM via ECO, simplifying actuator assembly
- Generated drawings in SOLIDWORKS with GD&T, interfaced with vendors to order machined parts

Projects

Sep. 2020 - Present **DOLLAR-PER-FOOT COMPETITION, AEROSPACE NU** **BOSTON, MA**

As Avionics Lead, developed flight-critical embedded software and radio telemetry protocol for high-power rockets, launched test flights of custom avionics, and supported cold flow and hot fire tests of our liquid rocket engine. In a small team, designed and flew supersonic high-power rockets to over 15,000 feet to earn NAR Level 2 certification

June 2020 - Present **PROJECT LEAD, PHOTONVISION, FIRST ROBOTICS** **BOSTON, MA**

Lead team of 13 developers n creating vision tracking software solution for FIRST Robotics Competition, with over 10,000 downloads. Integrated fiducial pose reconstruction, camera GPU acceleration with OpenGL, and CI workflows

Leadership

Sep. 2020 - Present **AEROSPACE NU (AIAA) – AVIONICS LEAD & CHIEF SAFETY OFFICER** **BOSTON, MA**

Lead team of 20 in design, fabrication, and programming of custom avionics control systems for high-powered amateur rockets and liquid rocket engines. As Chief Safety Officer during 2021 school year, led design safety committee reviewing club rockets, and coordinated with school admin for on-campus tests

Jan. 2019 - June 2020 **TECHNICAL CAPTAIN & PROGRAMMING LEAD, FIRST ROBOTICS TEAM 5940** **SAN JOSE, CA**

Led a team of over 50 students in the design, fabrication, and programming of large competitive robots

Interests

Sailing, crochet, model airplanes, building 3D printers, HAM technician (KM6GNL)