

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 - **GREENSIGHT AGRONOMICS** **BOSTON, MA**
Dec. 2022 **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 - **JOHNSON & JOHNSON** **REDWOOD CITY, CA (REMOTE)**
July 2022, **Software Robotics and Controls Intern**

Dec. 2022 - *Developed and refactored instrument simulation models for the Monarch surgical robot in C++ and Python*

- Present
- 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 - **JOHNSON & JOHNSON** **SANTA CLARA, CA**
Sep. 2021 **Mechanical Engineering Intern**

Designed, programmed, and deployed actuator test fixtures for the Ottawa 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 - **DOLLAR-PER-FOOT COMPETITION, AEROSPACE NU** **BOSTON, MA**
Present *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 - **PROJECT LEAD, PHOTONVISION, FIRST ROBOTICS** **BOSTON, MA**
Present *Lead team of 13 developers in 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 - **AEROSPACE NU (AIAA) – AVIONICS LEAD & CHIEF SAFETY OFFICER** **BOSTON, MA**
Present *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 - **TECHNICAL CAPTAIN & PROGRAMMING LEAD, FIRST ROBOTICS TEAM 5940** **SAN JOSE, CA**
June 2020 *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)