

REMUS HARRIS

Roslindale, MA, 02131 | TEL: 617-420-6556 | remus@bu.edu | www.remusharris.com

EXPERIENCE

Boston University Rocket Propulsion Group | Boston University

August 2021 - Current

- Led development of a web-based graphical user interface for controlling our hardware over network, which has become the standard client-side software used to control/monitor all our DAQ and control systems
- Designed a long-range video and telemetry system for a liquid bipropellant rocket with an expected apogee of 30,000 ft, allowing the team to view vital rocket statistics during and after flight
- Developed a flight computer for data collection and parachute deployment of a supersonic 600 lbf solid-motor rocket, enabling the team's first successful flight and recovery in 6 years
- Designed the team's power distribution box, providing a universal interface and central hub for powering and controlling all the team's electronics, ground support hardware, and cameras/telemetry systems
- Created a battery management system, which facilitates a seamless transfer between ground power and a flight battery, while protecting against brownouts, surges, reverse current, and potential disconnections

Firmware Engineering Summer Internship | Rockwell Automation

May 2024 - August 2024

- Optimized a legacy SQL database, improving query times by more than 50x, bringing the average query time from 5-10 seconds to 5-20 milliseconds
- Added networking functionality to a DWARF file viewer tool, allowing for real-time streaming and monitoring of internal hardware values
- Implemented graphing and logging features for motor data, allowing for better visualization and data analysis
- Removed the need for a complex dependency tree, allowing the application to be run with only standard windows dependencies
- Migrated legacy projects from Qt4 to Qt5, leveraging new features for enhanced user interface and software functionality
- Authored multiple detailed technical guides detailing porting strategies for Qt projects, facilitating smooth project transitions for future developers

PROJECTS

Design and Construction of a [Human-Carrying Drone](#) | Independent Project

June 2020 - June 2021

- Designed and constructed a modular heavy-lift human-carrying drone, capable of 30 minutes of unmanned flight and 12-15 minutes of manned flight
- Achieved ~68.5 lbs of thrust per arm with a coaxial configuration of 16 high-torque 8318 MAD motors, each connected to 34x10.5" folding propellers, leading to a combined thrust of ~548 lbs
- Engineered a custom power system with 16 LiPo batteries arranged into four 2S2P blocks, providing 44.4V to each pair of arms for balanced power distribution
- Adapted an agricultural drone flight computer, creatively solving limited PWM output by wiring electronic speed controllers in parallel for synchronized control
- Constructed the frame using aluminum square tubing, repurposed materials, and a modular design that allowed for reconfiguration of 4 or 8 arms for varied flight modes
- Independently acquired all technical knowledge and skills necessary for project completion, enhancing self-sufficiency and resourcefulness in engineering

EDUCATION

Boston University | Boston, MA

Expected Graduation May 2025

B.A. in Computer Science - GPA: 3.71

Relevant Coursework:

Computer Systems with a focus on Linux, Assembly, and C
Computer Science Fundamentals 1 and 2 using Python and Java

Database Systems and Optimization using SQL and MongoDB
Full Stack Web App Development

SKILLS

Programming Languages: Python, C, C++, Java, HTML, CSS, JavaScript, SQL

Other: Windows, Linux, Docker, VMware/VirtualBox, Qt, Git, KiCad, Altium, STM32 Toolchain/Dev Tools, Embedded Systems, Multithreaded Systems, Real-Time Control, PCB Design, STM32, I2C/SPI/UART, ISR, Pixhawk, ArduPilot, Server Management/Administration, Networking, API, Agile Design, CI/CD, Azure, Jekyll, MySQL, MongoDB, NextJS, Django, Flask