Joseph M. Morgan

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EDUCATION

North Carolina State University (NC State) - GPA: 3.6/4.0 - Raleigh, NC — Expected Spring 2027

BS in Aerospace Engineering

Relevant Coursework: Aerodynamics, Aerospace Structures, Vibrations, Thermodynamics, Dynamics, Statics

North Carolina School of Science and Mathematics (NCSSM) - GPA: 4.8/4.0 - Durham, NC — Spring 2023

TECHNICAL SKILLS

Software & Programming: XFOIL, SolidWorks, Fusion 360, Blender, Arduino, Java, MATLAB, Python, Git

Hardware & Instruments: Sensors (Load Cells, Torque, Encoders), National Instruments DAQ, Custom Circuitry

Fabrication: Fiberglass, Sheet Metal Parts, 12V Electrical Systems, Soldering (Through-Hole), Basic Machining

EXPERIENCE

Undergraduate Research Assistant (Electronics Lead) – **NC State**, Raleigh, NC — Summer 2025 - Present

Engineering Mechanics and Space Systems Lab (EMSSL)

- Designs and implements data collection and control systems using various sensors and custom circuitry
- Developed and executed experimental test protocols of novel marine energy converter prototype

MATLAB (CSC 113) Undergraduate Teaching Aid - NC State, Raleigh, NC — Fall 2024 - Present

- Instructs 20-30 students in weekly lab sections on MATLAB programming and problem-solving
- Develops project auto-grader program to minimize grade return times and increase team efficiency

Head Sailing Instructor - East Coast Sailboats, Southern Shores, NC — Summer 2017 - Summer 2024

- Collaborated with assistant instructors to teach beginner to intermediate sailing skills to children ages 7-17
- Managed risks on and around water to ensure safety of students and instructors

PROJECTS

Novel Marine Energy Generator System Characterization – EMSSL — Summer 2025 - Present

- Designed and constructed modular dynamometer using SolidWorks and Arduino to characterize and select a DC motor for use as a generator in experimental assembly
- Implemented suite of sensors and data collection interfaces including load cells, torque sensors, linear and rotary encoders, Arduino, and National Instruments DAQ
- Developed MATLAB App Designer GUI to collect and report experimental data from multiple collection devices

Onboard Compressed Air System for Off-Road Vehicle — Summer 2024

- Designed and fabricated custom mounting solution for 12V air compressor and air distribution manifold
- Diagrammed and implemented 12V electrical system supporting compressor power, active cooling, and safety

Sailboat Restoration — Summer 2024

- Completed fiberglass repairs on 22ft boat to ensure solid base for replacement and upgraded deck hardware
- Replaced 12V electrical system including devices, wiring, and power distribution components

ACTIVITIES, LEADERSHIP, AND ACCOMPLISHMENTS

NC State Sailing Club Team "SailPack", Raleigh, NC — Fall 2023 - Present

- Competes against other collegiate club and varsity sailing teams in fleet racing and team racing events
- Studies wind and water physics to understand the best routes and tactics on the racecourse in variable conditions

Eagle Scout - Boy Scouts Troop 117, Kitty Hawk, NC — Fall 2022

- Awarded Eagle Scout rank after completing community-service Eagle Scout project consisting of over 60 hours of planning and work and managing 6 volunteers