

Andrew C. Goering

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EDUCATION

Northeastern University | Boston, MA – 2019 - Present

- Candidate for Bachelor of Science in Mechanical Engineering. Graduating May 2024.
- GPA: 4.0
- Minors: Robotics, Mathematics.

TECHNICAL SKILLS

Applications: SolidWorks, Ansys Fluent, Onshape, KiCAD, PrusaSlicer, Arduino IDE, Eclipse IDE. Some experience with Mathematica, Maple, Autodesk AutoCAD, Inventor, HSM Works and Fusion 360.

Programming: MATLAB, Python, ROS, Java, some experience with C++ and HTML/CSS.

Manufacturing: FDM and SLA 3D printing, laser cutting, soldering, manual mill, lathe, water-jet cutter, pre-preg lay-ups, PCB design.

Marine Operations: Experience deploying and testing autonomous underwater and surface vehicles from small boats up to 60 ft. Skilled dinghy sailor.

WORK AND RESEARCH EXPERIENCE

Woods Hole Oceanographic Institution - Mechanical Engineering Co-Op | Woods Hole, MA – July 2023 - Present

- Performed mechanical design and analysis of updated modular hull and internal components for a 100 meter-rated REMUS autonomous underwater vehicle (AUV), as part of the Phoenix initiative.
- Derived mathematical model and completed mechanical design and testing for the pressure compensator system for the oil-filled thruster on a 3000 meter-rated REMUS AUV, accounting for the behavior of air bubbles. Designed and performed structural analysis on mission-critical internal components.
- Supported marine operations, testing, and maintenance for 100 and 600 meter-rated AUVs to ensure safe, timely, and successful deployments for naval and scientific applications.

Multiphase Transport Lab at Northeastern University - Undergraduate Researcher | Boston, MA – 2022 - Present

- As a founding member of the viscous fingering instability group, conducted a literature review and identified promising areas of research.
- Designed and validated a low-cost radial Hele-Shaw cell apparatus for viscous fingering instability experiments.
- Ran more than 100 experiments to characterize the influence of a novel gelation reaction and a shear-thinning Carreau-Yasuda fluid on the fingering instability. Analyzed data using linear stability analysis to ascertain the driving physics for diverse finger morphologies.

Verve Motion - R&D Co-Op | Cambridge, MA – July - December 2022

- Designed and tested an experimental robotic exoskeleton to optimize for comfort and assistive moment about the hips and lumbar spine.

- Developed and administered high temperature load cell noise and drift experiments and automated statistical analysis of the results.

Mesodyne - R&D Co-Op | Somerville, MA – May 2021 - January 2022

- Designed and manufactured vacuum packages and designed burner control systems for light-cell energy conversion device prototypes.
- Designed data acquisition PCBs and wrote logging software to conduct experiments for characterizing photovoltaic cells.

Sparking Transistors - Sole Proprietor | Marlborough, MA – 2019 - 2022

- Manufactured 3D printed artistic and engineering parts, including ophthalmology equipment for M&S Technologies.

PROJECTS AND VOLUNTEER WORK

Senior Design Project: Uncrewed Sailing Vessel – Spring 2023 - Present

- Performed a literature review and trade study of oceanographic data collection systems and analyzed climate data in order to set design requirements for a small, low-cost, long-range uncrewed surface vehicle. Currently designing a self-trimming rigid wing vehicle.

Aerospace Club at Northeastern University – 2019 - Present

- Designed and tested parachute deployment and reefing mechanisms to achieve safe, controlled descent of a liquid bipropellant rocket.
- As Lab Manager, provided lab safety and equipment training on a daily basis and maintained machines and equipment.
- Developed Marman clamp mechanism for rocket separation and documented mathematical methods used to evaluate the loading of the constituent components. Tested prototypes in-flight and performed FEA to minimize mass and volume.
- Developed rocket stability model to predict heading oscillation growth rate based on coefficients of lift, drag and moment derived from CFD simulations for varying angles of attack.
- Designed and implemented an instrumented nose cone assembly with load cells and pitot tube for drag data acquisition on a test vehicle.
- Built a car-mounted parachute testing apparatus and used it to evaluate the performance and drag coefficients of reefed parachutes.
- Constructed and successfully flew a 7' rocket for mechatronic systems testing and National Association of Rocketry Level 2 Certification.

Face Shield Manufacturing – Spring 2020

- Organized a group of 10 students to 3D print nearly 1000 face shield frames for use at healthcare facilities across the Northeast during the onset of the COVID-19 pandemic.

The Clubhouse Makerspace – 2019

- Worked with Roxbury, MA youth on self-directed artistic, musical, and engineering projects as part of a college mentoring program.

CONFERENCE PRESENTATIONS

American Physical Society - Division of Fluid Dynamics | Washington, DC – November 2023

- Presentation: "Diverse Fingering Morphologies Driven by Shear-Thinning Effects."

RISE at Northeastern | Boston, MA – March 2023

- Poster: "Viscous Fingering Instability with Interfacial Gel Formation."

AWARDS

- James W. Healy Full Tuition Scholarship, Northeastern University - 2022-2024
- Dean's Scholarship, Northeastern University - 2019-2022
- Eagle Scout - 2016