

# Madeline Rice

maderice@seas.upenn.edu | 612-991-2831 | Portfolio: www.madelinerice.weebly.com

## EDUCATION

---

**University of Pennsylvania, School of Engineering and Applied Science-** Philadelphia, PA

MSE in **Robotics**; GPA: 3.80/4.00

December 2020

- Relevant coursework: Introduction to Robotics, Feedback Control, Design of Mechatronic Systems, Machine Perception, Product Design, Design for Manufacturability

BSE in **Mechanical Engineering and Applied Mechanics**; Minor: **Engineering Entrepreneurship**; GPA: 3.62/4.00

May 2020

- Relevant coursework: Heat/Mass Transfer, Vibrations of Mechanical Systems, Fluid Mechanics, Mechanics of Solids, Thermodynamics, Dynamics, Statics & Strength of Materials, Engineering Entrepreneurship

## EMPLOYMENT

---

**Millennium Engineering and Integration Company-** Arlington, VA

May 2020 – August 2020

*STEM Intern*

- Supporting flight tests by writing test plans and reports, updating user and safety manuals, developing schedules, and constructing UAVs to be used in the tests
- Developing a collision avoidance algorithm for a swarm of UAVs

**Ricoh Americas Corporation-** Boulder, CO

May 2019 – August 2019

*Global Engineering Support Intern*

- Designed and prototyped an integrated control hub to reduce operating costs and energy consumption of Ricoh continuous form inkjet printers. Presented final prototype to Ricoh executives
- Performed mechanical design, circuit design, and validation efforts necessary to build a complete customer-facing product
- Rewrote field documentation for printer uniformity calibration tool

**University of Pennsylvania Modular Robotics Laboratory-** Philadelphia PA

June 2017 – March 2020

*Research Assistant*

- Designed, prototyped, and iterated on mechanical components for self-reconfigurable truss robot with search-and-rescue applications to improve hardware reliability. Collaborated with a team of undergraduate and graduate students
- Designed and prototyped tension cable mechanism capable of generating 20-lb force and fitting within a 4-in diameter footprint
- Prepared hardware demonstrations and visual simulations to be presented by graduate students at conferences

## PROJECTS

---

**Maritime Autonomous Rescue Vehicle**

Fall 2019 – Spring 2020

- Worked with a team of four other mechanical engineering students to design and prototype an autonomous surface vehicle for senior design capstone requirement and NASA Microgravity University competition. Vehicle was designed to assist in open water search and rescue efforts.
- Project awarded the Francis G. Tatnall Prize for an outstanding senior design project showing ingenuity, proficiency, and usefulness from the University of Pennsylvania Department of Mechanical Engineering and Applied Mechanics
- Spearheaded mechanical design, CAD, manufacturing, and assembly efforts, and performed testing and validation

**Mechatronics**

Fall 2018

- Designed a WiFi-controlled robot with the ability to attack other robots with a melee weapon, detect hits from other robots, sense light frequencies, and move using a differential drive system
- Designed, coded, and soldered electrical components for a WiFi-controlled model car to complete an obstacle course
- Designed and wrote code for a remote manipulator device controlled by potentiometers and gearbox motors

**Mechanical design**

2017-2018

- Designed and built a three-foot-tall Lenz-type vertical axis wind turbine based on aerodynamic analysis and small-scale wind tunnel tests
- Utilized manual/CNC milling and turning equipment to fabricate a gamma-type stirling engine capable of reaching 1284 RPM

## SKILLS

---

**Mechanical:** CAD (Solidworks), Laser cutting, 3D printing, Machining, Engineering drawings, GD&T, Design for manufacturability, FEA

**Electrical:** Microcontroller programming, Circuit design, PCB design, Soldering

**Programming Languages:** MATLAB, OCaml, Java, C, Python

## INTERESTS AND HOBBIES

---

Skiing, Hiking, Reading, Traveling, Cooking