

Owen Martens

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SKILLS

Programming languages: Matlab, C language

Mechanical Skills: SolidWorks, Engineering Drawing, Project Design, Circuit Analysis

Math Skills: Probability, Statistics, Data analysis, Advanced Calculus, Set Theory

Interpersonal Skills: Professional Communication, Group Work, Time Management, Leadership

EDUCATION

Queen's University, Kingston Ontario

2022-2026

*Bachelor of Engineering and Mathematics, 3.46, Principal's Scholarship (2022), Dean's Scholar
Relevant course work: Engineering Graphics, Machine Design, Solid Mechanics, Fluid Mechanics,
Thermodynamics, Dynamics and Vibrations, Electronics and Circuit Design, Probability, Complex Analysis,
Algorithmic Structures, Real Analysis, Mathematics of Engineering Systems, Material Laboratory,
Mechanical Laboratory, Engineering Laboratory*

RELEVANT EXPERIENCE

Appalachian Land Management, Mars PA

05 - 08, 2024

Forest Technician

- Worked in a team from two months on various projects including using chainsaws to cut down plants, spraying plants with chemicals, and cutting into trees with the purpose of removing invasive species and overgrowth of undesirable plants to allow space for native plants to thrive.
- Promoted to team lead after two months where I was responsible for leading a team of 3-5 people through day-to-day tasks, including designing planning weeklong projects, tracking and reporting on inventory, delegating individual assignments, enforcing safety requirements, and overseeing project progress and quality of execution. During my time as team lead every weekly target was met, there were no safety compliance issues, and inventory levels remained consistent.

Queen's University Engineering Department

**09, 2024 - 04,
2025**

First Year Engineering Calculus, Linear Algebra, and Economics Teaching Assistant

- Prepare and deliver a weekly one hour tutorial to first year students meant to enhance their understanding of course material.
- Grade assignments, tests and the final exam based on grading rubric given by the instructor. Give feedback for every individual's answers to help the students learn from their mistakes and enhance their comprehension of the topic.

Lab Intern

- Read academic journals, publishing, and articles on the various properties, pros, cons, and applications of different types of concrete to gain an understanding on the adaptability of concrete and how a project can be optimized by selecting the right type of concrete.
- Constructed a written report describing my key findings including how plastic polymers can be used to enhance concrete's resistance major cracks by stretching across microcracks, as well as how self-healing concrete is able to fill in microcracks when exposed to water such as rain
- Delivered an in-person presentation to Dr. Wei Xiong, head of the Metallurgy lab at University of Pittsburgh, as well as various members of his lab and teachers from my high school on how a self-healing concrete mixture containing plastic polymers would be ideal for initial infrastructure on Mars, as it would be extremely resistant to large cracks forming, and had the capacity to repair microcracks that formed without human intervention.

PROJECTS & EXTRACURRICULAR

Drone Pollution Cleanup Project**01 - 05, 2024**

- Designed an autonomous drone system using a series of drones and Lloyd's algorithm meant to track and clean pollution from the ocean as part of a group project
- Developed a multi body drone system using Lloyd's Algorithm to optimize the area a set of twelve drones could cover. This was done by using Lloyd's Algorithm to organize the drones to be able to sort themselves to cover the area without outside intervention or communication with the other drones.
- Since buying drones to deploy in the Pacific Ocean was outside of the budget for this project, MATLAB was used to code a model of the project that demonstrated how the drones would move to cover the entire area based on Lloyd's Algorithm, included in this code was diagrams of how the drones moved in relation to one another throughout the time period of the project.
- Many written reports were delivered as apart of the project, additionally the final model was presented in person to members of the Queen's Math Department, course coordinators, and fellow project groups. These reports outlined not only the specifics of the MATLAB code and application of Lloyd's Algorithm, but also included research into the type of drone that would be best to use, the political challenges that this project would face trying to implement drones off the coast of Cuba, and the level of financial investment that would be required to execute the project particularly in comparison to other methods of removing trash out of the ocean.

Rollercoaster Drop Project**01 – 05, 2023**

- Designed a rollercoaster that included a drop modelled as a brachistochrone curve to optimize the time from top of the curve to the end point as a part of a group project
- My individual role in this project included researching the mathematical theory behind the brachistochrone curve and designing a full rollercoaster to include a drop in the shape of the brachistochrone curve
- I also worked with our group to build a functional model of our coaster using popsicle sticks, wire and a marble representing the coaster car. This process required many rounds of testing and iteration, but in the end a working model was developed, which was then presented to course coordinators and fellow project groups.