Monica **Burgers**

BASc. Mechanical Engineering, MEng. Aerospace Engineering

About me

Independent and self-motivated graduate with a wide variety of professional experience. I'm interested in robotics and their application to improving everyday life.

Eligible for PEng designation. Available to begin work in October 2023.

Personal

Nationality: Canadian
Languages: English

Technical Skills

Python • C • ROS • Gazebo • MATLAB/Simulink • HTML/CSS

Solidworks • AutoCAD • ANSYS • Configura CET • Studio 5000 • Microsoft Office

Professional Skills

Detail-Oriented
Strong Communicator
Problem-Solver
Self-Manager
Active Listener
Team Player

Interests

Robotics
Metalworking
Computer Security
Reading
Baking
Travelling

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Experience

2022-Present

UofT Institute for Aerospace Studies, MEng - Emphasis in Robotics

Courses:

- Fundamentals of UAVs | Mobile Robotics and Perception | Computer Vision | Motion Planning | Computer Security | Data Analytics and Machine Learning | New Product Innovation | Emotional Intelligence and its Application to Leadership

Projects:

- Used Python and OpenCV in computer vision applications such as drone geo-referencing, visual odometry, and panoramic stitching.
- Used ROS/Gazebo and MATLAB/Simulink to design and simulate multiple autonomous systems, including a Boeing-747 flight controller and computer vision feature detectors for a drone.
- Won 1st place in autonomous drone obstacle course racing competition.
- Implemented various path planning and SLAM algorithms on Turtlebot3.
- Implemented an improvement on the Ant Colony Algorithm, using RRT* and Potential Field methods.

2019-2022

Dematic - Mechanical/Controls Engineering Analyst

- Lead the controls system design and implementation for Canadian Amazon distribution centers built in 2022.
- Designed sensor layouts and control cabinets needed to power and operate conveyor systems according to customer requirements.
- Programmed logic controllers to read sensor inputs and set all device outputs accordingly.
- Designed custom mechanical components for structural support of conveyors.
- Executed project design, installation, and commissioning in collaboration with customers and third parties.
- Software ambassador, responsible for testing custom Dematic features for Configura CAD software before its release, and training fellow employees on its use.

2017-2018

teaBOT - Operations & Mechatronics Intern

- Automated a tea dispensing test rig using Raspberry Pi and Pololu microcontroller.
- Developed documentation scheme for all test rig data, automated analysis of the data, and wrote manuals for all equipment used.
- Used Google Scripts to automate the management of tea inventory and send alerts via Slack and Asana.
- Responsible for in-house production of electrical parts for new machines; included soldering, making cables, and assembling/wiring the robot.
- Responsible for all organization and tracking of tea for Canadian kiosk locations.

2015-2016

Dana Canada Corp. - Computer Aided Engineering Intern

- Designed and conducted thermal experiments to improve the useful life of the traction batteries in the Ford Focus and the Tesla-S electric cars.
- Developed an Artificial Neural Network for prediction and optimization of next generation heat exchangers. The results were used to set up the manufacturing of a new flow turbulizer.

Extra-Curriculars

2015-2019 Blue Sky Solar Racing: *involved in aerodynamic design, manufacturing, and attended World Solar Challenge 2018 in Australia.*

Volunteering

2020-Present PEO Etobicoke Chapter: *organize yearly Engineering Idol competition, and maintain the chapter's website.*

References

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