

JULIA DYCK

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SUMMARY Third year Mechatronics and Robotics engineering student at Queen's University. Seeking a 12-16 month internship to improve engineering skills and explore real-life engineering applications.

TECHNICAL SKILLS **Design and Modeling Tools:** SOLIDWORKS, TinkerCad, MATLAB, Microsoft Office

Programming: Python, C, C++

Soft Skills: Problem-solving, Teamwork, Organization, Communication, Enthusiasm

EXPERIENCE

NSERC URSA Summer 2023, Queen's, University: *Undergraduate Student Research Position* May 2023 – Aug 2023

- Worked alongside Dr. Ryan Grant and his team at CAESAR laboratory to conduct research on extreme-scale systems for the world's largest supercomputers and clouds (NVIDIA, Ubuntu)
- Ran simulations using computer clusters, such as Narval and Beluga, to test the performance of parallel processing in various circumstances. Simulations were ran on various benchmark testing applications including HPCG (Ubuntu, Compute Canada)

Donwood Manor Care Home, Winnipeg, MB: *Therapeutic Recreational & Office Assistant* May 2018 – Aug 2018

- Organized and led large group events while ensuring safety and following COVID guidelines (Organization, Communication)
- Worked collaboratively with Human Resources to organize confidential files and ensure protection of privacy (Professionalism, Organization)

EDUCATION **BASc, Mechatronics & Robotics Engineering**

Graduating May 2025

Queen's University, Kingston, ON

4.0 GPA

Scholarships & Awards: Schulich Leader Scholarship, Dean's Scholarship Award, NSERC URSA Summer 2023 Award

Relevant coursework: Robotics Design, Computer Architecture

PROJECTS & TEAMS

Autonomous Mobile Robot

September 2022 – December 2022

Programmed an autonomous front-end loader to pick up and deliver as many parts as possible in a set time frame, using Arduino

- Programmed various algorithms for line following, obstacle avoidance, motor control, and bucket kinematics.
- Completion of this project required knowledge on operation principles of several sensors and motors, lift and curl mechanisms, and simulation of movements using Linkage. Code debugging and trial and error tuning were extremely useful for this project.

Queen's VEX Robotics, *Electronics and Hardware Specialist Team Member*

September 2022-May 2023

Collaborated with team to construct a robot

- Worked with team to construct specific parts of the robot including flywheel, chassis, and intaking systems
- Modelled components of robot in SolidWorks and worked with team to design circuitry in Quartus
- Ranked 9th in the world and received the judges award at the Ohio State Championships. Qualified for the VEX World Championships scheduled for this April in Dallas, Texas

Mobile carbon dioxide detector robot

January 2023-May 2023

Collaborated with team of 3 to design a LiDAR robot capable of navigation and localization

- Implemented localization and navigation to create a topical map of the CO2 levels in the robot's environment (ROS, LiDAR, VSCode, GitHub)
- Developed a website to read CO2 sensor levels and control the robot's movement (Raspberry Pi, ROS, React)
- Developed professional reports and completed a full financial analysis for this product in the market (Microsoft Word & Excel)

SLD2 video game

May 2023-Present

Collaborated with team of 3 to design a video game

- Created functions to determine the state of game and player, such as collision-checking, key presses, updating camera position, etc. (C++, VSCode, GitHub)

Portable Parking Sensor

January 2023-April 2023

Collaborated with a team of 5 to create a Minimum Viable Product of an Arduino-based parking sensor

- Operated TinkerCad and SolidWorks to model and layout the product's circuit and exterior casing for hardware components
- Conducted a thorough financial and cash flow analysis in Microsoft Excel to predict the product's behaviour within the market for the first 15 years of production
- Troubleshooted code and tested product to ensure the device's ultrasonic sensor detected the object's proximity effectively

Vertical Farm Scale Model, Structural Specialist

September 2021-December 2021

Collaborated with a team of 5 to design and construct a scale-sized vertical farm and elevator

- Assisted in hardware construction for the scale-sized elevator. Modified and developed code in Arduino to control the DC motor
- Created mathematical models using Microsoft Excel to predict the behaviour of the structure, elevator, and other subsystems
- Designed and evaluated decision matrices to determine energy courses, location, materials, etc. Conducted a financial analysis

OTHER WORK EXPERIENCE

MBCI, Winnipeg, MB: Tutor (10 hours/week)

September 2020 – May 2021

- Tutored high school students in pre calculus

ACTIVITIES

Engineering Society of Queen's University (EngSoc)

September 2021 – May 2023

Multiple leadership roles, including Faculty Board Representative & Merchant

- Organized events, attended faculty meetings, collaborated to design and sell merchandise for the Engineering class of 2025.