

Andrew Stirling

andrew.stirling2@mail.mcgill.ca | +1 (587)227-6995

<https://www.linkedin.com/in/andrew-stirling-9974161b4/> | <https://github.com/andrewipstirling>

EDUCATION

B.Eng, Mechanical Engineering, Minor Computer Science

Expected May 2024

McGill University, Montréal, Canada

- CGPA: 3.78/4.0
- Honors & Awards: Antje Graupe-Pryor Award (2022/2023), Dean's List (2019/2020), Alexander Rutherford Scholarship (2019/2020)
- Extracurriculars: McGill Men's Volleyball, McGill Robotics Club, McGill Tutor, and TA

SKILLS

Programming: Python (Numpy, Scipy, Control, JAX), C/C++, Java, MATLAB, OCAML, VBA, LaTeX

Software: Gazebo, MuJoCo, Solid Works, ABAQUS, MasterCAM, Excel, MS PowerBI, CURA

Operating Systems: Windows, Linux, ROS

Machinery: CNC Milling, CNC Turning, 3D Printing

Languages: English (Fluent), French (Advanced)

Certifications: Lean Six Sigma (Yellow Belt)

INDUSTRY EXPERIENCE

Robotics Research Intern

June 2023 – August 2023

University of Applied Sciences and Technology, Berlin, Germany

- Developed a gravity-compensated, PD controller for a quadruped robot capable of walking forwards, backwards along with stand-up and lie-down procedures.
- Assisted in the development and successful implementation of an Iterative Learning Controller (ILC), capable of tracking commanded velocities within 5% relative error.
- Conducted extensive testing of diverse control strategies utilizing MuJoCo and validated outcomes through physical testing on the Unitree Go1 Robot, utilizing a ROS2 (Robot Operating System) package tailored for low-level control.
- Co-authored paper detailing control framework for submission to the European Control Conference (ECC).

Mechanical Engineering Intern

May 2021 – September 2021

Bauer Hockey, Montreal, Canada

- Developed an updated database to consolidate all weight and center of gravity information.
- Performed and automated data analysis on millions of lines of Bauer production data using PowerBI to receive real-time updates on KPIs, quality control trends and other relevant information.
- Deployed an improved interface for data collection and entry of helmet safety data, using MATLAB.
- Enhanced the custom stick traceability database for professional players, helping keep track of valuable equipment and retain top-level talent for Bauer.
- Communicated on an English and French basis within team meetings.

TECHNICAL EXPERIENCE

Capstone Project: Multi-Camera Setup for Image-Guided Neurosurgery

September 2023 – Present

C++, Python, OpenCV, Gazebo

- Designed fixture to mount multiple cameras on a surgical headlight.
- Implemented surgical tool tracking using detection of ArUco markers in OpenCV.
- Simulated multiple tracking and data fusion methods in Gazebo.

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COMP 514: Applied Robotics

September 2023 – December 2023

C++, ROS1, Gazebo

- Implemented both dynamic and kinematic control packages for the Kinova Kortex Robotic arm allowing user to control the end-effector position.
- Completed a path-planning algorithm that provides trajectory for the AscTec Firefly UAV to follow given a final position and time-requirement.
- Created a potential field planner allowing the Clearpath Husky robot to reach a specified position within a given time frame, using ROS service calls.

McGill Robotics Team Member

September 2021 – June 2022

Solidworks, ROS, Gazebo

- Member of Mars Rover Mechanical and Software Sub-Teams.
- Aided the development of a suspension simulation in Gazebo using ROS.
- Designed and constructed a testing base for the robotic arm.

Data Visualization Tool of COVID-19 in Canada

November 2021

Bash, C, Python

- Constructed a Bash script that outputs the number of deaths, positive cases, and tests within an input date span.
- Script pulled data from the Government of Canada's .csv file updated monthly from their website.
- Trained a custom auto-regressive model able to predict next day case counts.

Automation Tool for Fantasy Basketball Roster

January 2021

Python, Selenium

- Python script that sets my Fantasy Basketball Roster for the week based on if a player has a game on a certain day.
- In the future, I wish to implement a method that adds the best, non-rostered player to my team using data from the Yahoo! Fantasy API.