Aigne McGeady-Bruce

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EDUCATION

University of Toronto — Toronto, ON

BASc in Mechanical Engineering, *Specializing in Mechatronics and Sustainable Energy* — Graduated: April 2024

- *Academics*: 3.84 cumulative GPA, Dean's Honor List in all semesters.
- *Teamwork*: Group projects including a CoreXY 3D printer, cyclist anti-door collision system, and interactive audio visualizer.
- *Extracurricular*: Participated in intramural hockey for years 1, 2, and 4.

WORK EXPERIENCE

Husky Technologies — Bolton, ON

Development Designer, PET Molds — May 2022 – August 2023

- Worked on a design team specializing in the development of new PET injection mold product lines.
- Handled a variety of technical tasks including creating concepts for new product configurations, modeling and drafting for modified or new components, ensuring structural integrity through hand calculations and FEA, ensuring system cohesion by investigating dimensions and tolerances of individual components, and reviewing and giving feedback on my coworker's designs.
- Maintained focus on the needs of the supply chain, customer, and all the other departments within the company.
- Conducted frequent reviews with suppliers, internal manufacturing, assembly, internal customer representatives, and other engineering teams. Developed proficiency in communicating the results of my work to coworkers.

Kaj Gyr, Independent Inventor — Nelson, BC

Engineering Design Assistant — May 2021 – August 2021

- Acted as a design assistant providing technical advice on design concepts and creating prototypes.
- Fabricated, tested, and refined designs for three projects: a mountain bike pedal, a trekking pole handle, and a sport wrist strap.
- Modeled and 3D printed over 10 unique prototype iterations using a combination of standard 3D printing materials as well as flexible and carbon fiber reinforced materials.
- Held regular meetings with my employer to review design concepts, discuss priorities, and review my progress.

PROJECTS

Cyclist Anti-Dooring System (University Capstone Project) — September 2023 -Present

- Worked with a team of three other students to develop a cyclist anti-dooring system for our client, MPP Chris Glover.
- Utilized a computer vision model, trained with Edge Impulse software, to detect potential cyclist collisions with parked car doors.
- Successfully developed a prototype that prevents collisions by actuating the child lock when a collision is detected.
- Gained hands-on experience of control flow with multiple microcontrollers, actuators, and sensors.

Custom Split Ergonomic Keyboard (Personal Project) — April 2024 -Present

- Designed and fabricated a split mechanical keyboard which uses a custom layout programmed using QMK.
- Developed a novel hot-swappable interface for both key switches and microcontrollers.

Gesture Glove (Personal Project) — October 2021-Present

- Designing and building an HID glove that reads hand gestures via linear potentiometers and a 9-axis inertial measurement unit.
- Mechanical design is complete and includes 3D printed and silicone molded parts. Electrical systems have been coded and successfully tested in isolation. Final assembly, coding, debugging, and optimization is currently underway.

3D Printer Extruder (School and Personal Project) — May 2021 – August 2021

- Conceptualized a 3D printer dual extrusion system that better manages the tradeoff between quality and speed.
- Independently refined the design, using a clutch to actuate two extruders with one input motor.
- Created a functional proof of concept prototype using Arduino and primarily 3D printed parts, informing more thorough design and testing.

SKILLS AND INTERESTS

- Significant experience with CAD modeling primarily in SolidWorks and NX. Certified SolidWorks Associate (December 8, 2020).
- Considerable experience with Geometric Dimensioning and Tolerancing as well as tolerance analysis of dynamic systems.
- Considerable Experience with 3D printing on Fused Deposition Modeling (FDM) machines. Possess a high level of knowledge regarding components, operation, troubleshooting, and design for 3D printing on FDM machines.
- C/C++/Arduino. Strong understanding of register manipulation, communication protocols, memory management, and optimization.
- Proficient in Excel. Comfortable working with complex sheets, queries, VBA scripts, and creating data visualizations.
- Some experience with Linux, Bash scripting, MATLAB, and G-code.
- Interests: science, technology, robotics, 3D printing, industrial design sketching, philosophy, hockey, weight training, jiu jitsu.