Jonathan DiGiorgio

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Education

University of Waterloo — Waterloo, ON

*BASc in Mechanical Engineering with Mechatronics option (**96%** CGPA)* — *Sept 2022 – April 2027*

- **2x** First in Class Engineering Scholarship, **4x** Dean's Honours List

Experience

Mechanical Design Engineering Intern — Aug 2024 – Dec 2024

Tesla (Detail limited by NDA) — *Fremont, CA*

- Designed new **sheet-metal stamped** and **high-pressure die-casted** parts for Cybertruck and RoboTaxi using **CATIA**, **DFM**, **Tolerance Stackup Analysis**, and **GD&T**, and projected to save customers **$10M** annually
- Created and conducted **design validations** and **functional investigations** using custom **3D Printed** parts
- Collaborated directly with part **suppliers** to optimize designs for **DFM**, **formability** and **cost-savings**
- Analyzed **CAE** crash simulations to optimize structural designs and ensure passing of FMVSS legal requirements
- Drafted and released **10 GD&T** drawings, utilizing my Tesla training and certification in **advanced GD&T**
- Conducted research on **aluminum** and **adhesive bond thickness** properties to support design and development
- Collaborated with various cross-functional teams and managing multiple high-priority projects simultaneously
- Developed **4** repair procedures along with fastening strategy for structural components relating to Model Y

Mechanical Engineering Intern — Jan 2024 – May 2024

Pratt & Whitney (Detail limited by NDA) — *Missisauga, ON*

- Contributed to various **R&D** projects, working within a multi-disciplinary team to optimize flight performance
- Conducted **FEA** on jet engine subassemblies using the **ANSYS Suite**, **LS-DYNA** and **Altair HyperWorks**
- Utilized **CATIA** and **SpaceClaim** to conduct iterative optimization to **CAD** models according to **FEA** results
- Led a **42%** weight-saving project, using **ACP** to analyze a part's replacement from aluminum to **composite**

Mechanical Team Lead - Chassis and Propulsion — May 2024 – Present

The Boring Company Competition - WatDig — *Waterloo, ON*

- Leading a team of 4 on the research and design of a tunnel boring machine to compete in NaBC 2025 in Texas
- Designed a **motorized** & **hydraulic** articulation system in **OnShape**, to steer and support **3kNm** of torque
- Performed **hand calculations** to determine required steering force, and obtain **hydraulic** actuator specifications

Mechanical Engineer Team Member — Sept 2023 – Present

Waterloo Aerial Robotics Group — *Waterloo, ON*

- Designed a drone arm clamping mechanism, reducing arm play by **56%**, resulting in reduced vibrations utililzed **DFM** principles for **3D Printing**, **water jet cutting**, and **tapping**
- Designed **PCB** housings in **Solidworks**, including safety considerations and thermal board ventilation

Quality Assurance Engineering Intern — May 2023 – Aug 2023

S&C Electric Canada — *Etobicoke, ON*

- Inspected high-voltage interrupt switches and subassemblies with **GD&T** drawings, using calipers, gauge calibrations/R&Rs, audits, hipot testing, and hardness testing, leading to **0** defective returns
- Developed a **Python** script to automate inspection data/image collection that was implemented department-wide, increasing inspection efficiency by **43%** and collecting photographic evidence for use in customer quality disputes

Projects

Autonomous Chess Robot | *Solidworks, AutoCAD, RobotC, Python* — Jan 2023 – Apr 2023

- Used **Python** for move detection (**OpenCV**), move computation, and robot communication (**PyAutoGUI**)
- Utilized **RobotC**, motors, servos and sensors to facilitate a 3-axis gantry, resulting in a **>95%** succesful move rate
- Utilized **Solidworks**, **AutoCAD**, **3D printing** and **laser cutting** to create housings, racks, guides and more

Technical Skills

Engineering Software: 3DExperience, CATIA V5/V6, Solidworks CAD/FEA/PDM (CSWA), ANSYS Workbench, LS-DYNA (PrePost), Altair Hyperworks, OnShape, Enovia VPM, AutoCad, ACP, PLC, Excel, Jira
Engineering Processes: CAD, GD&T, Drafting, FEA, Stamping, Casting, 3D Printing, Rapid Prototyping
Programming: Ladder Logic, Python (PyAutoGUI, OpenCV), C/C++, MATLAB , HTML, CSS, Github, VS Code