Jonathan Di Giorgio

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Education

University of Waterloo — Waterloo, ON

*BASc in Mechanical Engineering, Mechatronics Option (**96.0%** CGPA)* — *Sept 2022 – Apr 2027 (Expected)*

- **3x** First in Class Engineering Scholarship, President's Scholarship of Distinction, **6x** Dean's Honours / Distinction
- **Coursework:** Robot Manipulators, Autonomous Mobile Robots, Control Systems, Dynamics of Machines

Experience

Neuralink *(Detail limited by NDA)* — South San Francisco & Fremont, CA

Mechanical Engineering Intern - Robotics (return internship) — *May 2026 – Nov 2026*

- Designed, built and validated a robotic cell for surgical needle cartridges: **25**× capacity (∼**100 to 2,500**/month), **8-min** cycle, **99%+** yield, **8–12 hr** unattended runs, ∼**1 FTE** of technician time saved
- Integrated a **UR robot arm**, **hexapod** and **ACS** steppers under a custom **Python** sequencer (**RTDE**)
- Designed custom **gripper fingers** and transfer mechanisms moving cartridges between stations
- Designed a femtosecond laser milling fixture in **SOLIDWORKS** enabling **sub-micron** needle positioning
- Owned **50+** CNC, lathe, 3D-printed and **injection-molded** parts end-to-end via **GD&T** and vendor **DFM**
- Owned and wired all cell electrical, including a laser-safe enclosure with **interlock** and safety shutter

Mechanical Engineering Intern - Brain Interfaces — *May 2025 – Dec 2025*

- Designed and scaled a fleet of **10+** neural-implant Accelerated Lifetime Testers (**5**–**10**× aging) whose data supported an **FDA submission** and cut implant design iteration time by **4 months**
- Designed a cyclic-tension **fatigue tester** for neural threads using **SOLIDWORKS**, **DFMA** and **GD&T**
- Owned a closed-loop fluid system holding **pH**, **conductivity** and **temperature** within **0.1%** across **10+** testers
- Designed **4 PCBAs** (**KiCad**) and **ESP32 C++/FreeRTOS** firmware for motor control and sensor logging

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

Mechanical Design Engineering Intern — *Aug 2024 – Dec 2024*

- Designed **sheet-metal stamped** and **high-pressure die-cast** service parts for Cybertruck and Robotaxi, all released, using **CATIA**, **tolerance stack-ups** and **GD&T**; projected to save **$10M**/year in repair costs
- Designed an adjustable Cybertruck fender bracket that cut install time by **10%** and eliminated panel gaps
- Released **10 GD&T drawings** (Tesla **Advanced GD&T** certified); drove supplier **DFM** and formability

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

Mechanical Engineering Intern — *Jan 2024 – Apr 2024*

- Ran **LS-DYNA** blade-off containment analyses (**8** models) producing data for **FAA engine certification**
- Led a **42%** weight-saving study replacing an aluminum part with **composite**, using **ANSYS ACP**

Projects

Axon V2: 6-DOF Robotic Arm (co-designed) | *Onshape, Python, Steppers, 3D Printing* — 2026

- Co-designed a 6-DOF arm with belt + **cycloidal** (up to **58.5:1**), **planetary** and bevel-gear **differential** joints, reaching a **3 kg** payload, **690 mm** reach and ∼**1 mm** repeatability for under **$300**
- Sized NEMA 14/17/23 steppers via **torque calculations**; wrote **inverse kinematics** streamed to an MCU
- Designed a compliant **fin-ray gripper** on a parallel 4-bar linkage for grasping irregular objects

Axon V1: 2-DOF Differential Wrist | *Onshape, Arduino, C++*

- Built a differential wrist (**1.3 Nm**, near-zero backlash, under **$50**) with synchronized stepper control and homing

Technical Skills

Robotics & Controls: URScript, Python (RTDE, GUIs), inverse kinematics, stepper/servo control, C/C++
Mechanical Design: SOLIDWORKS (CSWA), Onshape, CATIA V5/3DX, gearboxes (cycloidal, planetary, differential)
Manufacturing: GD&T (Tesla Advanced), tolerance stack-ups, DFM/DFMA, CNC, injection molding, 3D printing
Electronics & Analysis: KiCad, ESP32, FreeRTOS, I2C, MATLAB, ANSYS, COMSOL, LS-DYNA