Maverick Hoziel

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Profile

- Background in **optical IM/DD data transmission** systems and photonics-based communication links
- Strong foundation in **Digital Signal Processing (DSP)**, including frequency-domain analysis and digital filter design
- Experience in control-signal integration, **avionics architecture**, and safety-critical logic for electric propulsion systems
- Skilled in **MATLAB/Simulink**, Python, circuit simulation, CAN bus systems
- McGill **Varsity Lacrosse** two time Team **Captain** and Varsity Council Representative
- Proficient with **LTSpice**, **AutoCAD**, **Power BI**, and Git; bilingual in **French** and **English**

Education

McGill University – Montréal, QC **August 2022 – December 2026**

Bachelors of Engineering in ***Electrical Engineering - Internship Program***

Minor in ***Aerospace Engineering***

- **Notable Coursework:** Capstone Project with **Plant Group**, Digital Signal Processing, Electromagnetic Wave Propagation

Professional Experience

Électricité Kingston **May 2023 – August 2025**

Electrical Engineer Intern *Terrebonne, QC*

- **Developed and presented an AI-based internal tool to the board of directors, streamlining operations**
- **Directed end-to-end project execution, ensuring on-time delivery and cost efficiency that maximized profitability**

Projects

Optical Communication Capstone | *70+ Gbps IM/DD LN/TFLN MZM* **September 2025 – May 2026**

- Designed, built, and tested a complete **76 Gbps IM/DD lithium niobate (LN) Mach-Zehnder modulator transmission system** over 2 km and 5 km fiber links, integrating RF driver electronics and validating performance through DCA eye-diagram analysis.
- Analyzed DCA eye diagrams to quantify jitter, extinction ratio, eye opening, and signal degradation, comparing C-band and O-band transmission.
- Simulated **thin-film lithium niobate (TFLN)** photonic devices including waveguide crossings; extracted insertion loss, crosstalk, and reflection metrics.
- Compared electro-optic material behavior between bulk LN and TFLN, focusing on modulation efficiency (V_π), bandwidth potential, and reduced power consumption.
- Performed experimental work in the **Plant Group photonics laboratory**, operating BPG/BERT systems, RF drivers, and optical measurement equipment including DCA.
- Applied high-speed IM/DD link design to short-reach (2–10 km) data-center optical interconnects for GPU communication, addressing high-bandwidth requirements driven by AI workloads through lower-power, lower-complexity IMDD architectures.

AA-1C Yankee Electric Propulsion Conversion | *Avionics Architecture*, *Power BI* **December 2025**

- Redesigned the aircraft's electrical and avionics architecture for electric propulsion, defining system interfaces and control signal paths between cockpit controls, inverter, contactor module, BMS, and avionics loads.
- Integrated CAN communication between the BMS, inverter, and cockpit displays to manage system status and safety related signals.

Fly-By-Wire Bombing Mission Simulator | *FBW Control Logic*, *Python* **December 2025**

- Built a real-time aircraft simulation with PD-based FBW stabilization, inertial feedback, and surface-actuator control.
- Implemented aircraft dynamics, bomb physics, missile tracking, flare countermeasures, and full HUD visualization.

Leadership

Captain, McGill Redbirds Men's Lacrosse Team **2024 – Present**

- **Elected for a second season as team captain; led team culture and represented athletes on the Varsity Council.**

Recipient, Evans Huber Memorial Award – Most Dedicated Player **2023 – Present**

- **First McGill lacrosse player to receive the award three consecutive years**.