Maverick Hoziel

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Profile

- Experience in control-signal integration, **avionics architecture**, and safety-critical logic for electric propulsion systems
- Background in optical **IM/DD** data transmission systems and photonics-based communication links
- Competence in **digital signal processing (DSP)**, frequency-domain analysis, and digital filtering
- 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 – April 2026**

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

Minor in ***Aerospace Engineering***

- **Notable Coursework:** Aircraft Design (long-range 8,000 NM business jet), Aerospace Certification Processes

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

AA-1C Yankee Electric Propulsion Conversion | ***Power BI****, Avionics Architecture* **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.
- Established logic-enable conditions, HV contactor sequencing, and DC to DC power paths while replacing Lycoming-dependent circuits with electric system equivalents.

Optical Communications Capstone | ***TFLN, IM/DD,*** High-*Speed Photonics* **September 2025 – May 2026**

- Designing and evaluating a 20+ Gbps IM/DD optical link using a TFLN modulator, analyzing waveguide crossing performance at O-band wavelengths, including insertion loss, crosstalk, and reflections.
- Modeling and experimentally characterizing Mach–Zehnder modulation in the C-band, deriving transfer functions and SNR while analyzing eye diagrams and jitter to assess signal integrity at data rates up to 70 Gbps.

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.

Circuit Simulation Engine | ***MATLAB, SPICE Netlist,*** *Numerical Methods* **September 2025 – December 2025**

- Developed a MATLAB program that reads SPICE netlists, builds MNA matrices, and performs operating-point, transient, Harmonic Balance, and nonlinear circuit analysis.
- Implemented Newton–Raphson and Backward Euler methods and verified simulation results against LTspice.

Missile–Target Engagement Simulator | *Python,* ***Aircraft Flight Kinematics*** **December 2025**

- Developed a 3D aerospace simulation with missile–aircraft engagements, radar detection, aircraft flight kinematics, evasive maneuvers, altitude dynamics, flare countermeasures, bomb hit probability, and scoring logic.

AI Model | *AI, Python, Computer Vision, Template Matching* **June 2024 – August 2025**

- Led testing and refinement of a partner-developed AI model, identifying bugs, proposing enhancements, and aligning functionality with company needs. Presented the improved system to the board, and it is now actively used in operations.

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**.