Omar Shafie

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Education

Bachelor of Engineering, Mechatronics Engineering and Management CO-OP Sept 2023 – Present
McMaster University, GPA: 3.8/4.0, Hamilton, ON *Dean's Honour List*

Experience

Field Engineering Assistant May 2025 – Aug 2025
Key Supplies Power Generation

- Shadowed a senior engineer (hydrogen systems specialist) during troubleshooting, commissioning, and maintenance of hydrogen generators.
- Assisted with physical installations (assembly and wiring), developing practical problem-solving skills on site.
- Coordinated with clients at various job sites to complete **pre-site installation checklists** and perform **safety assessments** before project initiation.
- Gained hands-on exposure to **high-voltage equipment** and followed strict safety procedures under supervision.
- Observed industry best practices for renewable energy operations in real field conditions.

Finance Manager & Client Strategist May 2023 – Present
Media Phoenix (Startup Media Agency)

- Joined from the company's founding and supported its growth through diverse client projects and shifting priorities.
- Created and maintained **invoices, budgets, and financial records** for tax and company reporting.
- Consulted on **business strategy** decisions and worked 1-on-1 with clients on marketing campaigns.
- Contributed to building and maintaining the company's **website**, applying technical and creative problem-solving skills.

Projects

Pacemaker Embedded System (In Progress) Sept 2025 – Present

- Designing an embedded **pacemaker system** on FRDM-K64F with pacemaker shield for a **safety-critical, real-time medical application**.
- Developing a detailed **MATLAB Simulink stateflow model** to simulate and verify pacing modes (AOO, VOO, AAI, VVI) with programmable parameters.
- Created a full **Python-based Device Controller–Monitor (DCM)** application — designing both **front-end GUI** and **back-end logic** to handle user authentication, parameter configuration, and live communication with the device.
- Applying **model-driven development (MDD)** and **hardware abstraction** principles; implementing verification tests and documentation aligned with safety-critical software standards.

RFID Sequence Puzzle Safe (STM32 + Arduino) Feb 2025 – Apr 2025

- Built a puzzle safe requiring a **correct RFID tag sequence** using **four RFID scanners**; validated order and state progression.
- Integrated a **speaker** with distinct sounds for *win*, *lose*, *correct*, and *idle* states to guide users.
- Controlled a **solenoid lock** with a Motor Driver IC to unlock upon successful sequence completion; ensured reliable actuation through iterative testing.
- Implemented a **dual-microcontroller architecture**: the **STM32** handled the main control logic, while the **Arduino** managed the RFID scanners using **UART communication**; coordinated both systems for seamless operation.
- Completed extensive wiring, integration, and bench testing; delivered a fully working **physical prototype**.

Skills & Interests

Technical: Python, C, C++, MATLAB, Simulink, Multisim, Arduino, STM32, SolidWorks, Autodesk Inventor, ARM Cortex

Professional: Word, Budgeting, Excel, PowerPoint

Interests: Hydrogen Power, Embedded Systems, Control Systems, Robotics, Tennis, Antique Collecting, Football