

# Zaid Anagreh

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## EDUCATION

### Bachelor of Engineering, Mechatronic Engineering

Toronto Metropolitan University | Toronto, ON

### Bachelor of Arts, Human Rights & Equity Studies

York University | Toronto, ON

September 2024 - Current

September 2019 - April 2023

## SKILLS

**Engineering & CAD:** SolidWorks, Onshape, AutoCAD (Fusion 360, Inventor), CATIA (Beginner)

**Programming & Web/App Development:** C++, C, Python (Intermediate), MATLAB (Intermediate), JavaScript (ES6+ Intermediate), React (Foundations), React Native (In Progress), HTML5, CSS3, REST API Integration & State Management (React Context), Responsive UI/UX & Component-Based Architecture

**PCB & Hardware:** KiCad, Fritzing, 3D Printing (End-to-End Prototyping, Calibration, Troubleshooting)

**Technical Competencies:** Prototype Development, Technical Documentation, Design Optimization, Project Management, Problem-Solving, Wireless Communication Systems, Systems Organization

## PROJECTS

### Custom Ground Station for Rocket Telemetry – PCB & RF System

Feb 2025 - Present

- Designed custom PCB integrating ESP32, RFM69HCW RF module, microSD, OLED, RGB indicators, and power regulation
- Selected and validated components for 3.7V Li-ion powered system
- Implemented 5V regulation using PowerBoost 1000C for stable microcontroller operation
- Designed I2C display interface and status indication system
- Began development of embedded firmware for bidirectional rocket communication
- Preparing for PCB assembly and system integration testing

### Autonomous Fire-Extinguishing Robot

Oct 2025 - Present

- Designed and 3D-printed the robot chassis, component mounts, and a custom hose nozzle in Onshape for a flush, integrated assembly.
- Integrated sensor-motor control using an Arduino Uno, an L298N H-Bridge, and four DC motors, soldering motor pairs for directional control.
- Programmed the system to process input from three KY-026 flame sensors, directing a servo-mounted water pump toward the fire source for autonomous detection and extinguishing.
- Prototyped and tested the full mechatronic system, ensuring reliable sensor actuation, movement, and pump operation.

### Embedded Power Data Logger for Rocket Payload

Nov 2025 - Present

- Developed an embedded data acquisition system using an ESP32 and an INA260 sensor to log voltage, current, and power from a NVIDIA Jetson payload in real-time.
- Designed the PCB interface with screw terminals and a microSD module for robust data capture and storage; wrote firmware in C++ to manage sensor polling and file I/O.
- Engineered a custom 3D-printed enclosure and a soldered battery pack to create a portable, self-contained diagnostic tool.
- Implemented a custom OLED display interface featuring live data visualization and club branding.

## PROFESSIONAL EXPERIENCE

### Team Member/Merchandise Stocker

July 2022 - May 2023

Tim Hortons | Richmond Hill, ON

- Implemented systematic approaches to inventory management and supply organization.
- Coordinated with delivery personnel to efficiently process and organize incoming shipments.
- Utilized problem-solving skills to optimize workspace organization and product accessibility.
- Managed time-sensitive tasks in a fast-paced environment while maintaining quality standards.

### Co-op Student

September 2016 - June 2017

Dentistry In Aurora | Aurora, ON

- Utilized specialized software to manage patient data and appointments.
- Organized and digitized medical documentation for efficient retrieval.
- Implemented filing systems that improved operational efficiency.

### Volunteer & Design Teams

### METRocketry | Payload Systems – Avionics Assistant

Sept 2024 – Present

Toronto Metropolitan University | Toronto, ON

- Avionics: Developing computer vision for autonomous payload targeting; training and testing a YOLOv8 model on aerial imagery for in-flight object detection.
- Avionics: Engineered a portable ESP32-based data logger with an INA260 sensor and microSD storage to capture and analyze power metrics from the rocket's NVIDIA Jetson subsystem.
- Structures: Designed, optimized and printed a lightweight 3D-printed recovery board mount in SolidWorks to securely house GPS, radio, and flight electronics within the payload bay.

### Pharmacy Assistant (Volunteer)

October 2018 - March 2019

Medical Tree | Kingston, ON

- Operated pharmacy software to maintain accurate patient records and medication information.
- Implemented systematic approach to inventory management, including expiration monitoring.
- Applied precision and attention to detail in medication counting and order processing.