

Aiden Robinson

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EDUCATION

- McMaster University** Hamilton, ON
 - Mechatronics Engineering and Management IV ; GPA: 3.8/4* 2021 - 2027
 - Courses: Predictive Control, Real Time Systems, Embedded Systems, Control Systems Operating Systems, Data Structures/Algorithms*

SKILLS SUMMARY

- Languages:** Python, C/C++, MATLAB/Simulink, Go, SQL
- Embedded & Robotics:** STM32, Arduino, ROS2, Isaac Lab, OpenCV, CAN, RTOS, Linux
- AI/ML:** TensorFlow, PyTorch, Reinforcement Learning (OpenAI Gym), Computer Vision (OpenCV, YOLO)
- Cloud & Tools:** Docker, Kubernetes, Google Cloud Platform, Azure, Git, MySQL, Liquibase, Altium Designer

EXPERIENCE

- Tesla** Palo Alto, CA
 - Software Engineer Intern- Dynamics Modeling and Simulation* Jan 2026 - May 2026
 - (Incoming): High performance computing on physics engine simulations. Tech: **C++, Python**
- TELUS** Toronto, ON
 - Software Engineer Intern- Energy Management* May 2023 - Aug 2024
 - Data Center Energy Optimization RL Model:** Implemented a reinforcement learning model for the HVAC on a modular central office, projected to reduce annual energy consumption by 13%. Tech: **GCP, Python, OpenAI Gym**
 - Network Equipment Predictive Maintenance :** Designed and tested system for IoT data on chillers to be pulled into the cloud and run a classification model to identify inefficient equipment, projected to save \$50,000/year. Tech: **Google Cloud, Python, TensorFlow, SNMP, MQTT, IoT**
 - Unsupervised Learning Analysis:** Applied unsupervised learning techniques on large battery health dataset. Found \$170k/year in savings by reducing maintenance plan scheduling. Tech: **BigQuery, Python**
 - Real-Time AI Systems:** Migrated a multimodal chatbot from a low-code environment to a Kubernetes cluster on GCP, building API endpoints and backend pipelines for robust AI integration. Tech: **Python, Flask, Docker, Kubernetes**
- Korrelate** Toronto, ON
 - Software Engineer II Intern- Internal Tooling* May 2025 - August 2025
 - Backend Architecture:** Designed and implemented the backend for an autonomous CRM system in **Python, SQLAlchemy, and MySQL**, automating email ingestion/classification and saving 10 hours/week of manual effort.
 - Data Engineering:** Built ingestion and storage systems with real-time change detection and deduplication, improving data reliability and enabling downstream analytics/automation.
 - Deployment and Infrastructure:** Containerized and deployed services using **Docker, NGINX, and Azure OAuth**, ensuring secure, modular, and production-ready operation across company infrastructure.
- McMaster Formula SAE Electric Racecar** Hamilton, ON
 - Firmware and Electric Subteam Member* November 2021- Present
 - Wireless CAN Update:** Designed system to remotely CAN flash firmware from RPi to ECU's. Skills: **STM32**
 - Automatic Sensor Calibration:** Firmware to calibrate sensors for steering wheel and pedals Skills: **C++,STM32**
 - High Voltage Controller Respin:** Redesigned the high voltage safety system and PCB for the car. Responsible for schematic design, part sourcing, PCB routing, manufacturing, and testing. Skills: **Altium Designer, Soldering**
 - Relay Economizer Board:** Designed an energy saving board that reduces the hold phase current for relay contacts across the car. Skills: **Altium Designer, Soldering**
- McMaster Artificial Intelligence Society** Hamilton, ON
 - President* Oct 2023 - Present
 - Responsibilities:** Overseeing 50+ students across 5 technical, logistic, and financial domains

PROJECTS

- Kalman Filtered IMU Sensor Fusion:** Developed a real-time sensor fusion system with a custom Kalman filter for stable roll, pitch, and yaw estimation, streamed to ROS2 for 3D visualization in RVIZ. Containerized the full stack for plug-and-play deployment and reproducibility. Tech: **Arduino, ROS2, Python, Docker, Kalman Filter**
- PID Ball Balancing Robot:** Built a LEGO-based ball balancing robot with Arduino, servo motors, and ultrasonic sensing, tuning PID gains (K_p , K_i , K_d) to achieve stable and precise real-time ball positioning. Tech: **Arduino, PID Control**
- Radio Signal Explorer:** Built a Docker-based system for capturing, demodulating, and decoding digital radio signals with RTL-SDR, supporting multiple modulation/decoding modes for structured RF signal analysis.Tech: **Docker, Shell**
- Embedded Pacemaker:** Created a HIL and SIL pacemaker with interactive frontend to represent dynamic pacing modes of a pacemaker using accelerometer data. Tech: **STM32, Simulink, Python**
- IoT Locker Service (Deltahacks 2024 Winner):** Mobile app can lock/open a locker for food delivery. IoT data is passed to Raspberry Pi through a real time database to control servo motor. Tech: **Firebase, Python, C++, Flutter**
- Segment Display Recognition Neural Network:** Built a feed-forward neural network in C++ from scratch with backpropagation to recognize digits from 7-segment brightness inputs, robust to noise and missing segments . Tech: **C++**