Omar Allam

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Education

Queen's University, Kingston, ON — Expected May 2027
Bachelor of Applied Science, Electrical Engineering
Dean's Scholar Standing
Relevant Coursework: Control Systems, Machine Learning & Computer Vision, Embedded Systems, Data Structures, Electronics

Experience

Aptera Motors — San Diego, CA
Engineering Intern – Rotational Program — Jun 2025 – Sep 2025

- Programmed bare-metal MCUs in embedded C to bring up data loggers across 5+ EV subsystems, also developed Linux utilities for data handling and integration testing.
- Performed HIL and road validation with live telemetry and logged/traced telemetry faults.
- Assisted across teams like design, powertrain, autonomy, and closed loop field testing.

Engineering Design Teams Experience

aQuatonomous Design Team — Kingston, ON
Co-Captain — May 2025 – Present

- Ran a team of 50+ members developing an Autonomous Surface Vehicle; my specialty was GNC, autonomous planning, perception, and system integration.
- Stewarded $30 K + in sponsor funds and reallocated resources across mechanical, electrical, and software teams to keep the project on schedule.
- Developed a Jetson Orin Nano + ROS 2 Humble system which optimized the autonomy stack to cut missed control cycles by 40%, and improved real-time responsiveness.

Electrical & Perception Systems Member — Jul 2024 – May 2025

- Designed a sensor fused model consisting of LiDAR + cameras + IMU to run nav algorithms with a drift of $< 1\,\text{m}$ in a 20m run.
- Integrated a YOLO buoy detection OpenCV pipeline tuned to 70%+ accuracy and pushed false positives down 25%.
- Spearheaded electrical team to run multivoltage power PCBs for the stack and configured a MAVLink message system running at 20 Hz for reliable real-time data exchange between systems.

Queen's Formula SAE Electric — Kingston, ON
Electrical Division Member — Sep 2024 – May 2025

- Tested 50+ bench profiles on HV accumulator and LV shutdown circuitry then validated against competition safety checks.
- Fixed CAN bus communication between BMS and display this in turn reduced frame errors by 15%.
- Assembled and fault-tested IMD and E-Stop hardware, confirming proper trip behavior under simulated track faults.

Engineering Projects

Autonomous Rover — Personal Project — Jun 2025 – Present

- Designed and built a Jetson Orin Nano–based rover with ROS 2 for autonomous navigation, control loops, and onboard obstacle avoidance.
- Implemented and tuned custom PID controllers, reducing control loop latency by 25% and improving path tracking stability.
- Developed a perception pipeline using OpenCV and PyTorch to train and deploy neural networks for object recognition and navigation.

AC–DC Battery Charger — Team Lead — Jan 2025 – Mar 2025

- Created a converter design with MOSFET switching; $10\,\text{V}$ at $5\,\text{A}$, with 93% efficiency, and a $\pm 0.3\,\text{V}$ ripple across repeated runs.
- Tested 30+ hours under load to map efficiency and thermal behavior the results successfully matched simulation within tolerance.

Technical Skills

- **Languages:** English, Arabic
- **Skills:** Programming: Python, C, C++, MATLAB/Simulink. Embedded Systems: Jetson, RTOS, Bare-metal MCUs, CAN Bus, HIL Testing. Software/Tools: Altium Designer, Git, Linux. Perception & ML: OpenCV, PyTorch,SQL. Hardware: PCB Design, Soldering, 3D Printing. Other: Microsoft Office Suite.