Adham Elshabrawy

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Education

Queen's University Kingston, ON
Mechatronics & Robotics Automation Engineering *Sep. 2023 – May 2027*
Related Coursework: Control Systems, Embedded Systems, Electronics II, Sensors & Actuators

IBM Certificate
Machine Learning with Python *Apr. 2024 – June 2024*

Professional Experience

Mechatronics Design Intern May 2025 – Aug. 2025
FYELABS *Hamilton, ON*

- **Led a team of 5** to automate a food dispenser, defining client requirements and aligning with firmware, PCB, and mechanical teams.
- Designed and implemented embedded control logic in **C/C++** for a system integrating **8+ motors**, and **10+ sensors**, reducing operation time by **60%**
- Spearheaded the automation of a contact lens manufacturing process for an innovative glaucoma treatment, designing the full control sequence and achieving **97%** dispensing accuracy.

Mechatronics Design Intern May 2024 – Aug. 2024
FYELABS *Hamilton, ON*

- Integrated a GPS module, accelerometer, and gyroscope with a Raspberry Pi Pico and **Raspberry Pi 4**, transmitting data over serial to enable real-time speed and position tracking with **95% accuracy.**
- Designed an airtight battery enclosure in **SolidWorks**, ensuring zero air ingress/egress and protecting next-generation battery materials from environmental exposure.
- Assisted in the circuit design of an industrial automated machine for synthesizing a new plastic material, and validated the PCB using an **oscilloscope** and a **logic analyzer** to ensure precise and reliable operation.

Extracurricular Experience

Director of Autonomy June 2025 – Present
Queen's Autodrive Team *Kingston, ON*

- Leading **25+ students** across **5 subteams** in state estimation, path planning, and control development within the Autonomy division, to advance a Level-4 autonomous vehicle.
- Manage project execution with **Jira** and **Git**, delivering milestones on schedule.
- Implement algorithms in **C++** and **Python** such as **D* Lite**, **Kalman/Particle filters**, and **Model Predictive Controller (MPC)** improving system accuracy and performance.

Projects

Autonomous Delivery Robot | *Python, C++, ROS2, Linux* May 2025 – Present

- Built an autonomous delivery robot with **Raspberry Pi 4** and to transport medication in hospitals.
- Achieved **93%** path accuracy with a custom SLAM node and **D* Lite** path planning.
- Applied sensor fusion for localization and obstacle detection; tested in a real pharmacy environment.

AI-Powered Clothing Recommender | *Python, SQL, OpenCV, AWS, Git* July 2025 – Present

- Developed a web app recommending outfits from a **MySQL** database of **100+** wardrobe images using **Python** and **OpenCV.**
- Implemented multithreading and cloud hosting on **AWS** for scalable, responsive recommendations.

S&P 500 Stock Predictor | *Python, Git* July 2024 – Aug. 2024

- Built a machine learning model in **scikit-learn** using historical S&P 500 data.
- Applied classification algorithms and data preprocessing with **NumPy** and **pandas**, achieving **60%** accuracy in predicting stock movements.

Technical Skills

Languages: Python, C/C++, SQL, HTML/CSS, MATLAB, VHDL, Verilog, NIOS II Assembly, ARM64 Assembly.
Software Tools: Docker, SolidWorks, Altium Designer, Fusion 360, LTSpice, SimuLink.
Libraries: pandas, NumPy, Matplotlib, OpenCV, scikit-learn, PyTorch, TensorFlow.
Productivity Tools: Word, Excel, PowerPoint, Jira, Git.