Amgad El Gamal

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Education

McGill University | **BEng** in **Software Engineering Co-op** | Expected: 2026

Technical Skills

Programming Languages: Python, Java, HTML, CSS, JavaScript, VHDL, KQL
Relevant Courses: Digital Logic, Discrete Structures, Data Structures and Algorithms, Object-Oriented-Design (OOD)
Software: PyCharm, Eclipse, Thonny, IntelliJ, LTspice, Quartus, Visual Studio Code, Git, ElasticSearch
Spoken Languages: English, French and Arabic

Internships & Work Experience

Ambient Intelligence Lab (AMI-Lab) | Université de Sherbrooke **May 2023 - Present**
Machine Learning & Data Analyst Intern

- Advanced a 4-year medication deprescription research, culminating in a pivotal scholarly article.
- Analyzed 300M+ JSON and CSV datasets using Python's Pandas & NumPy alongside MATLAB, deriving crucial medication-activity metrics.
- Spearheaded data extraction from ElasticSearch, optimizing complex queries with Kibana Query Language (KQL).
- Engineered a real-time algorithm via signal processing to decode fiber optic sensor bed mat data. Additionally, employed linear regression modeling in Python to analyze heart rate time-series data, visualizing trends and capturing key statistical parameters.
- Deployed LSTM-based predictive models within TensorFlow and Keras frameworks, streamlining physical activity pattern recognition via hyperparameter optimization.

McGill Rocket Team | McGill University **September 2022 – Present**
Software Development Team

- Collaborated with colleagues to design and implement flight control software using **Python**, incorporating **PID controllers** and **sensor fusion algorithms** to ensure accurate and stable rocket guidance during the launch phase.

Engineering Projects & Hackathons

McHacks 2023 **February 2023**
"Jouan" – Diet-Based Restaurant Locator Chabot

- Built an interactive chatbot to identify user dietary preferences and locate nearby suitable restaurants.
- Used **Python** and **Google Maps API** for backend development and restaurant data retrieval.
- Frontend constructed with **JavaScript**, **CSS**, and **HTML5** for a user-friendly interface, with **Tkinter** powering the GUI for smooth user-bot interactions.

MAIS Hacks 2022 | Award Winner **October 2022**
"Shazoom" – Song lyric recognition web app

- Designed a speech-recognition UI that identifies user-sung songs and retrieves top matches.
- Employed **Python** and **Flask** for backend development, **HTML5** for content structuring, and **JavaScript** for dynamic frontend interactions.
- Integrated several speech-recognition APIs to cross-verify lyrical inputs, boosting song identification accuracy.

Highlander Engineering Project 2022 **June 2022**
"Cloudnerd" – ML-based Weather Forecasting Application

- Crafted a **React** and **TypeScript** web app that interprets cloud patterns for weather forecasting.
- Integrated a **TensorFlow** machine learning model trained on extensive climatological data.
- Deployed **Firebase** for backend services, ensuring secure, real-time UI updates.
- Demonstrated strong performance, with an impressive **84% accuracy rate** in weather prediction, underscoring the model's proficiency in analyzing complex meteorological patterns.

Block Game (Java) **April 2023**

- Utilized Quad-Trees, ArrayList Data Structure, and Recursive Algorithms for efficient backend development of the Block Game.
- Applied Object-Oriented Design (OOD) principles and built a robust scoring system.
- Conducted Algorithm Complexity Analysis to ensure optimized game performance.

Grayscale PGM Image Processor (Python) **September 2022**

- Built a Python program to perform operations (flipping, cropping, inverting, compressing, decompressing) on PGM images.
- Leveraged File IO for efficient image reading and writing operations.