ADAM ABDALLA

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EDUCATION

University of Toronto Sept. 2024 – Apr. 2028

Bachelor's, Computer Engineering, Minor in Engineering Business and AI *Toronto, ON*

- **GPA:** 3.8 | Presidents Scholar Recipient (15k + 5k).
- **Coursework:** Calculus I, Calculus II, Computer Fundamentals, Linear Algebra, Electric Circuits, MATLAB.
- **Extracurriculars:** University of Toronto Machine Intelligence Team, Supply Chain & Intelligence Management Teams.

EXPERIENCE

Software Engineering Intern May 2025 – Sept. 2025

FI Solutions *Toronto, ON*

- Developed a full-stack Data Maturity Assessment web app **(Next.js + SQL)** that replaced manual spreadsheet audits, cutting report-turnaround time from days to under **10 minutes** per client.
- Engineered an **ACID-safe REST API** with transaction-safe inserts, achieving **100%** data integrity for **500+** pilot surveys.

Software Engineer Sept. 2024 – May 2025

University of Toronto Robotics Association *Toronto, ON*

- Developed decision-making code in **Python**, enabling attacking and defending behaviors in autonomous soccer-playing robots.
- Containerized **ROS-based** localization systems using **Docker**, cutting team-wide deployment and debugging times by **40%**.
- Fine-tuned **YOLOv5 Computer Vision** Model in **Python**, using custom datasets to accurately identify objects, achieving a **20%** performance boost compared to initial models.
- Optimized localization using **Particle Filtering** and **Monte Carlo Localization**, reducing positional errors by **15%**.

PROJECTS

Self-Hosted Local LLM Dev Platform | *FastAPI, Transformers, Qdrant, Docker*

- Re-engineered **OpenAI's** chat **API** for offline use on **consumer hardware** (Ryzen 7 2700 / GTX 1660), streaming **25 tok/s** from **quantised 7B Llama model** and eliminating **all external-API cost**.
- Developed a **JSON-Schema** based **function-calling** engine that validates **LLM** outputs, executes **Python** tools, and loops results back to the model, achieving **100%** successful calls in **1,000+** automated tests.
- Enabled **RAG (retrieval-augmented generation)** by integrating an embeddings endpoint **(Jina AI base)** + **Qdrant** vector search, delivering a **92%** factual accuracy on a **500-question** custom KB benchmark.

Gen-AI Website Cloner | *Next.js / TypeScript, FastAPI, Vercel + Render*

- Engineered a **GenAI pipeline** that recreates any public website in <**15s**, streaming DOM/CSS to a **200 K-token LLM** and eliminating **95%** of manual front-end rebuild effort.
- Built a dual-mode scraper (**HTTP** + **stealth Playwright**) that bypasses CAPTCHAs and **JS obfuscation**, achieving **98% successful captures** across **50 test sites**.
- Implemented a modular **LLM orchestration layer** with **Claude 4 Sonnet**, enabling prompt chaining to extract clean semantic structure from noisy **DOMs** and generalize layouts across diverse website architectures.
- Architected a lightweight deployment pipeline with a **serverless frontend** on **Vercel** and containerized backend on **Render**, cutting cold-start latency by **35%** and reducing deployment overhead to under **1 minute**.

Semantic Similarity Engine | *Python, Semantic Descriptors, Cosine Similarity*

- Engineered an **NLP** pipeline to tokenize and normalize **1M+** words from classic literature, generating **300K+** co-occurrence-based semantic descriptors.
- Leveraged **cosine similarity** over generated descriptors to classify synonym pairs, achieving **72%** accuracy on **TOEFL-style** benchmarks using corpora like "War and Peace" and "Swann's Way".

Interactive 2D Game with AI and Hardware Integration | *Unity, ESP32, OpenAI API, WebSockets*

- Developed a classroom-simulator game using **Unity (C#)** to help socially anxious users rehearse conversation in a safe setting.
- Programmed **ESP32** in **C + WebSockets** to drive a light switch, providing real-time physical feedback mirroring game events.
- Fine-tuned **OpenAI GPT-3.5 model** on **10K** custom dialogue pairs and streamed outputs through bespoke **ElevenLabs** voice profiles, producing context-aware speech in under **200ms**.

CERTIFICATIONS & SKILLS

Languages: Python, C/C++, Java, JavaScript/TypeScript, C#, SQL, Bash
Tools & Skills: FastAPI, React/Next.js, Node.js, PyTorch & scikit-learn, Docker, Terraform, Git, Linux/Unix, Qdrant, CI/CD
Certifications: AWS Certified Cloud Practitioner, Microsoft Certified: Azure Fundamentals (AZ-900)