

# Ayman Fouad

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## EDUCATION

### McMaster University

B.A.Sc. Computer Science, Honours Co-op

Hamilton, ON

Expected Graduation - May 2026

## EXPERIENCE

### Software Developer Intern

SEH Computer Systems INC.

Jan 2024 – May 2025

Tavistock, ON

- Drove the implementation of TitanDocs, a C#/.NET based cloud document system on **Azure Blob Storage**. Designed and re-architected the legacy **SQL** relational database structure, optimizing data mapping and indexing schema via **Entity Framework**, reducing retrieval delays by **15%** while preserving data integrity.
- Engineered a high-throughput upload pipeline, utilizing **C# multi-threading** with semaphore control for concurrent I/O, accelerating uploads by **40%** and shrinking the overall migration window.
- Developed an interactive **WinForms** application for real-time migration control, integrating stateful tracking, diagnostic views, and intelligent guardrails to resume partial uploads. This reduced manual recovery efforts by **80%** and data loss risk by **99%** via accurate record reconciliation.
- Built the MVP frontend using **Blazor** and **Telerik UI**, integrating an iTextSharp-based PDF viewer. Enabled rapid search, secure storage view, and dynamic rendering of diverse document formats using **REST APIs**.

### Software Developer

StudentBase Hamilton INC.

Jan 2023 – Aug 2023

Hamilton, ON

- Architected and deployed a full-stack **Next.js** rental application on **AWS**, leveraging PostGIS (**PostgreSQL**) for advanced geospatial queries and **S3** for scalable storage. This initiative generated **\$10,000+** in revenue within 5 months by streamlining lease management and tenant interactions.
- Engineered a high-performance **Node.js/Express.js** backend with **Prisma ORM**, implementing **server-side multi-criteria** property filtering for optimized query performance. Additionally, integrated an **AWS Cognito** auth system and an automated application workflow, improving per-lease efficiency by **16+** hours.
- Developed a performant **Next.js** frontend using **Redux Toolkit** for centralized state management, **Tailwind CSS**, **Shadcn UI**, and **Mapbox GL** for dynamic property visualization, delivering a seamless user experience.

## PROJECTS

### DataHouse AI | Python, FastAPI, Next.js, OpenAI, LlamaIndex, Docker, Qdrant, Redis, AWS S3

- Engineered a production-grade **RAG** system (**FastAPI/Next.js**) with an asynchronous ingestion pipeline that uploads documents to **AWS S3**, then processes, embeds, and upserts them to **Qdrant (vector DB)**. Achieved **80%** lookup latency reduction via **Redis caching** and optimized data flow.
- Developed a multi-stage hybrid search strategy (**multi-query, semantic + re-ranking**) on Qdrant, boosting answer precision by **25%**. Implemented frontend streaming with **AI-SDK** and TailwindCSS/Shadcn UI. Integrated **Ingest** for full-stack observability, ensuring robust performance and continuous improvement.

### MediaStream Converter | Python, Flask, RabbitMQ, MongoDB (GridFS), MySQL, Docker, Kubernetes

- Architected a **scalable microservice** platform on **Kubernetes** for video-to-MP3 conversion, integrating an API Gateway, and an asynchronous **RabbitMQ** processing pipeline to handle high throughput. The system reduced conversion latency by **60%** and managed large video files with **99.9% uptime** through resilient GridFS storage.

### Atlas - Web Research Agent | Python, LangChain, LangGraph, FastAPI, Firecrawl SDK, OpenAI

- Built a multi-stage AI agent on **FastAPI** to automate technical research, leveraging dynamic **parallel agent** spawning for **40%** faster concurrent task execution. Designed the agentic workflow via **LangChain/LangGraph** for structured execution of web research (**Firecrawl SDK**), information extraction, and data analysis.

## TECHNICAL SKILLS

**Languages:** Python, C#, Java, JavaScript, TypeScript, SQL

**Frameworks:** FastAPI, Next.js, React, Node.js, Express.js, Blazor, .NET, LangChain, LangGraph, Entity Framework

**Databases & AI/ML:** AWS (EC2, RDS, S3, Cognito), Azure (Blob Storage), Docker, Kubernetes, Qdrant, Redis, Prisma, PostgreSQL, MySQL, RAG, LLMs, Multi-Agent Systems, Chunking, Embeddings, Vectorization, Git, CI/CD