

Hatem Elmougy

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EDUCATION

University of South Florida

Tampa, FL

Bachelor of Science in Computer Science

Aug. 2026

- Relevant Coursework: Data Structures & Algorithms, Analysis of Algorithms, Operating Systems, Software Engineering, Software System Development, Secure Coding, Trustworthy Infrastructures

EXPERIENCE

Software Engineering Intern

Oct. 2024 – Nov. 2025

SPRK VENTURES INC. | TypeScript, Python, Next.js, FastAPI, MongoDB, Redis, AWS

Remote

- Worked across a **15,000+ LOC** full-stack codebase, building features for **10+ integrated services** including Redis-based rate limiting and WebSocket pub/sub that handled **500+ requests/hour** under production load.
- Built the AI study assistant pipeline integrating **OpenAI Agents SDK** with **Groq** (Llama 4 Scout) and **RAG**-based context retrieval via Celery background workers, cutting quiz and flashcard generation latency by roughly **70%**.
- Developed a **Canvas LMS** integration with automated syllabus parsing that ingested **100+ course assignments** automatically, eliminating most manual task entry for students.

Mobile Developer Intern

May 2025 – Sep. 2025

Tampa-based fintech stealth startup | React Native, TypeScript, Firebase, Gemini AI

Tampa, FL

- Built a cross-platform microfinance app with **15+ screens** in React Native and TypeScript, implementing a loan marketplace with multi-lender funding flows for **500+ active users**.
- Added a conversational loan filtering feature using **Gemini APIs**; users describe what they need in natural language and the system surfaces matching products, significantly reducing the steps to find a suitable loan.
- Implemented **Firebase Auth** with role-based access control, collaborating with the team on a security review before the production launch.

PROJECTS

Obscura | *Next.js, FastAPI, Supabase, Anthropic Claude, PaddleOCR*

Mar. 2026

- Built an AI study platform where users upload PDFs or diagrams; a hybrid **PaddleOCR + Claude** pipeline detects text regions with pixel-precise bounding boxes and generates high-yield Q&A flashcards and fill-in-the-blank labelling exercises.
- Implemented **spaced repetition** study sessions, a public content library with forking and starring, and shareable set links backed by **Supabase Postgres** with row-level security.

Cybersecurity Compliance Accelerator | *Senior Project* | *Python, Docker, Local LLM, RAG*

Jan. 2026

- Built for a client engagement at Cyberethos LLC: a containerized AI system that cross-maps major cybersecurity frameworks (**ISA/IEC 62443, NIST CSF, ISO/SAE 21434, UNECE R155/R156**) to surface overlapping controls and quantify compliance reuse.
- Ran a local open-source LLM with **RAG**, vector embeddings, similarity scoring, and a compliance knowledge graph, producing **audit-ready control mappings** and **Workiva-compatible exports**.
- Packaged entirely in Docker with no cloud dependencies, meeting the client's requirement for **air-gapped operation** in a regulated environment.

Briefly | *Hackathon Winner* | *Flask, Next.js, TypeScript, Snowflake, Gemini AI*

Nov. 2025

- Built a full-stack AI legal case management app using **RAG** and vector embeddings over **Snowflake**; semantic search substantially cut document lookup time compared to keyword search in the live demo.
- Implemented a **multi-agent pipeline** using Gemini AI to draft research summaries, schedule tasks, and generate client communications — presented as a working demo to hackathon judges.

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, Java, C/C++, SQL, Bash

Frameworks & Tools: Next.js, React, React Native, FastAPI, Flask, Node.js, Docker, AWS, Git, WebSocket

Databases & Cloud: PostgreSQL, MongoDB, Redis, Supabase, Snowflake, Firebase

AI/ML: Anthropic Claude, OpenAI Agents SDK, Gemini AI, LangChain, RAG, Vector Embeddings, Groq