

Elia Alghazal

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EDUCATION

American University of Science & Technology (AUST)

Zahle, Lebanon

B.S. Computer Science, High Distinction | GPA : 3.80+ | Data Science Emphasis : 4.00 / 4.00

Oct 2023 – Jul 2026

- Distinguished List (Fall 2023, Spring 2024, Fall 2024); Honor's List (Spring 2025); TOEFL iBT 99 / 120 (2025); CCNA Switching, Routing & Wireless Essentials (Cisco, 2025)

EXPERIENCE

Co-Founder & Lead Engineer

Zahle, Lebanon

KGH Solutions

2025 – Present

- Co-founded technology consultancy delivering AI and IoT systems to enterprise clients
- Architected and deployed CrashLens: production IoT/AI crash detection ecosystem with role-based dashboards for drivers, first responders, and insurance providers; live at crashlens.org
- Designed multi-agent AI architecture for enterprise intelligence consulting engagements

Backend Development Intern

Zahle, Lebanon

SmartCode SAL

2025

- Built production REST APIs in Spring Boot with DTO mapping (ModelMapper), layered service architecture, and JPA/Hibernate persistence (PostgreSQL, MySQL)
- Integrated SOAP (WSDL parsing, JAXB mapping) and REST (WebClient, async non-blocking) third-party providers; implemented @ControllerAdvice global error handling
- Tuned HikariCP connection pool to resolve latency spikes; ran Apache JMeter tests to 2,000 concurrent users (0.20% error rate, 2-hour endurance)

RESEARCH & PUBLICATIONS

SHARP-RAG: Self-Correcting Hierarchical Agentic RAG for Multi-Hop QA | Preprint, Zenodo

Jun 2026

- Designed four-agent LangGraph pipeline (Planner, Retriever, Critic, Synthesizer) with structured JSON self-correction loop and adaptive top-k retrieval ($k = 3 \rightarrow 5 \rightarrow 7$)
- Evaluated on HotpotQA fullwiki ($n = 20$); identified critique model calibration as the determining variable in agentic RAG performance

CrashLens: Smart Crash Detection and Emergency Response via IoT and AI | IEEE, Under Review

2026

- Edge AI pipeline (Raspberry Pi 5, IMU, GPS, 4G, YOLO) for automatic crash detection; routes evidence packages to stakeholders within 30 seconds of impact
- Co-authors: G. Khayat, W. Ishak, B. Farhat, M. Allaw; Advised by Dr. C. Boustany, AUST

PROJECTS

CrashLens | Python, Raspberry Pi 5, Spring Boot, React Native, PostgreSQL, YOLO | crashlens.org

2025

- End-to-end IoT/AI system: edge crash detection, 4G evidence upload, license plate extraction, and role-based dashboards for three distinct user groups

SHARP-RAG | Python, LangGraph, Groq API (Llama-3.3-70B), ChromaDB, HuggingFace | Preprint

2026

- Critic-gated self-correcting RAG: structured JSON verdicts gate synthesis or trigger targeted re-retrieval; adaptive corpus expansion across retry passes

EmotionAI | Python, PyTorch, OpenCV, CNN

2025

- Real-time facial emotion recognition at sub-40ms CPU inference via lightweight CNN with frame skipping (8 fps effective throughput, 66% compute reduction)

Web Bluetooth Medical Dashboard | JavaScript, Web Bluetooth API, React, Chart.js

2025

- Zero-install browser-native BLE dashboard streaming live physiological data via GATT notifications; circular buffer sustains performance over indefinite sessions

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, TypeScript, Kotlin, Swift, C++, SQL

Frameworks & Backend: Spring Boot, JPA/Hibernate, REST/SOAP APIs, Spring WebClient, LangGraph, React, Flutter

AI & Data: PyTorch, scikit-learn, HuggingFace Transformers, LangChain, ChromaDB, pandas, NumPy, OpenCV

Databases & DevOps: PostgreSQL, MySQL, Firebase, Supabase | Docker, Git, Apache JMeter, Linux/UNIX

IoT & Hardware: Raspberry Pi 5, GPS/IMU sensors, 4G modules, BLE, Camera integration

CERTIFICATIONS & AWARDS

Certificate of Proficiency in English C2 (Univ. of Michigan, 2023) | DELF B2 French (République française, 2022) | IT Specialist Python (Certiport, 2024)

1st Place, AUST Coding Expo — Student Management System (2024) | 2nd Place, AUST Coding Expo — Library Management System (2024)