

Mahdi El Zein

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EDUCATION

American University of Beirut, Beirut | *Sep2020-Aug 2023*
Bachelor degree in Computer Science

EXPERIENCE

Lead AI Engineer | Confidential Startup | *Mar2025 – Present*

- Developed and trained a custom **computer vision** model for robust object detection and segmentation in a dynamic, real-world environment.
- Engineered a sensor fusion system integrating **LiDAR** and **mmWave radar**, implementing a point cloud filtering algorithm that improved detection accuracy by 25%.
- Built a high-fidelity **simulation environment** with **AirSim** and **ArduPilot** to accelerate the prototyping and validation of complex AI algorithms.
- Programmed embedded systems for real-time, multi-sensor data acquisition and on-device processing.

Freelance AI Automation Consultant | Self-Employed | *Jul2025 – Present*

- Intelligent WhatsApp Customer Support Automation: Architected and deployed an end-to-end, AI-powered chatbot for an e-commerce client using **n8n**, **OpenAI** (GPT-4o), and **Supabase**.
 - Engineered a full **Retrieval-Augmented Generation (RAG)** pipeline with a vector database (**pgvector**) to provide accurate, context-aware answers from a knowledge base.
 - Implemented persistent **conversational memory** and a sophisticated agent-handover system to manage multi-turn dialogues and prevent bot interference with human support.
- Automated **Shipment Tracking** & Notification System: Developed a proactive **n8n** workflow to automate ocean freight tracking. The system polled a third-party shipping **API**, parsed **XML** data, updated a Google Sheets datastore, and dispatched personalized, templated WhatsApp status updates to clients, eliminating the need for manual tracking.

Machine Learning Engineer | Mobile Arts | *Mar 2024-Feb 2025*

- Analyzed **Google Ads** data to identify challenges and opportunities for ad automation.
- Collaborated with advertising Subject Matter Experts (SMEs) to translate technical requirements into ML model specifications.
- Built data preprocessing flows and ML models in **AWS SageMaker**, leveraging Python frameworks like **scikit-learn** and **PyTorch**.
- Utilized **Amazon S3** for scalable storage of datasets and model artifacts.
- Deployed real-time inference model on AWS, and architected **CI/CD** pipeline for **MLOps**.

SKILLS

AI & Machine Learning: Computer Vision, RAG Pipelines, Scikit-learn, PyTorch

Automation & Databases: n8n, Zapier, Supabase, PostgreSQL (pgvector), REST APIs, SQL, NoSQL(MongoDB)

Programming & Tools: Python (Pandas), JavaScript, Git, AirSim, ArduPilot

Cloud & MLOps: AWS SageMaker, Amazon S3, CI/CD, Amazon RedShift

LANGUAGES

Arabic: Native | **English:** (professional) | **French:** (Limited)

CERTIFICATIONS

AWS Certified AI Practitioner | AWS Certified Machine Learning Engineer – Associate