

# Abdelrahman Abouroumia

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🌐 [romia.dev](https://romia.dev) — Portfolio & Projects

## Experience

### AI Engineer & Co-Founder

May 2025 – Present

[Zaylon AI](https://zaylon.ai)

[zaylon.ai](https://zaylon.ai)

- Built multi-agent **LangGraph** supervisor routing to Sales, Support, Checkout agents with 10 AI tools.
- Integrated **6 platforms** (Shopify, Salla, WooCommerce, Odoo, YouCan, Zoho) for catalog sync and orders.
- Developed hybrid search (**RRF**) and visual search via **GPT-4o** on WhatsApp, Instagram, Messenger.
- Engineered **DialectBridge** tri-lingual NLP for English, Egyptian Arabic, and Franco-Arabic.
- Built merchant dashboard: real-time inbox, analytics, **RFM segmentation**, A/B testing (**Next.js**).

### Software Integration Engineering Intern

Jul 2025

*Ejada*

- Built RESTful API endpoints for core banking using **Spring Boot** with query optimization and **Redis** caching.
- Configured **Apache Kafka** producers/consumers for async transaction processing, decoupling services.
- Implemented API security (OAuth2, rate limiting) with **WSO2 API Manager** in a BFF architecture.

### AI Coding Expert (Freelance)

Sep 2024 – Feb 2026

*Scale AI & Turing*

- Contribute to **RLHF data pipelines**, evaluating and improving LLM-generated coding solutions in Python.
- Develop quality rubrics and prompting strategies for backend logic evaluation workflows.

### Automotive Cybersecurity Intern

Aug 2024 – Oct 2024

*Swift-ACT*

- Created a threat analysis catalog documenting attack vectors on CAN bus and ECU systems for a security knowledge base.
- Conducted fuzz testing on Automotive Emergency Braking (AEB) components; documented vulnerabilities with test cases.

## Selected Projects

### AI-Powered Collaborative Workspace (Graduation Project)

Ongoing

- Building a **FastAPI** microservices backend with a context-aware AI assistant for an organizational collaboration platform.
- Implementing a multi-source **RAG pipeline** with **PostgreSQL/pgvector** for grounded answers from organizational data.

### Virtual Banking Microservices

[GitHub](#)

- Architected event-driven microservices with **Spring Boot** and **Kafka** for banking operations with OAuth2 security.
- Integrated an AI agent microservice combining Spring Boot with **LangChain**-powered conversational AI for assistance.

### ContextIQ: Production RAG System

[Demo](#) [GitHub](#)

RAG API with **FastAPI** supporting 11+ file formats, TF-IDF embeddings with **ChromaDB** vector search and smart caching.

### Multimodal Emotion Recognition

[Demo](#) [GitHub](#)

Cross-modal attention model using **HuBERT** audio and **EfficientNet** visual encoders with bidirectional fusion (8 classes).

### VoicePrint: AI Text Humanizer

[Demo](#) [GitHub](#)

NLP system learning writing style from text samples using **Sentence-BERT** embeddings and stylometric analysis.

**Other Deployed:** [Connect4 AI Agent](#) (minimax, alpha-beta pruning) · [CSP Sudoku Solver](#) (backtracking, AC-3, MRV)

## Education

### Alexandria University, Faculty of Engineering

B.Sc. in Computer & Communications Engineering (AI Concentration)

Expected Jul 2026

Cumulative GPA: 3.73 / 4.0

## Technical Skills

**AI/ML:** PyTorch, LangChain, LangGraph, Transformers, RAG, Vector DBs (ChromaDB, pgvector), Prompt Engineering, NLP

**Backend:** Spring Boot (Java), FastAPI (Python), Microservices, Event-Driven Systems (Kafka), REST APIs, PostgreSQL, Redis

**DevOps & Tools:** Docker, Git, GitHub Actions, AWS, Google Cloud, Linux, Bash, Hugging Face, Postman

**Programming:** Python, Java, SQL, JavaScript/TypeScript, C/C++

## Certifications

- [Google AI Agents Intensive Capstone](#) – Kaggle, 2025
- [Meta Back-end Developer Specialization](#) – Coursera · [AWS Cloud & ML Foundations](#) – AWS Academy

## Competitions & Hackathons

- [MTC-AIC3 BCI Challenge](#) – Egypt National AI Competition · [ECPC](#) – 3x participant
- [Hepsiburada Address Resolution Hackathon](#) – TEKNOFEST 2025: NLP-based address parsing

**Spoken Languages:** English (Fluent) · Arabic (Native) · German (A2) · Spanish (Conversational)