

# Mostafa Abla

mostafa.m.abla@gmail.com • [mostafaabla.com](http://mostafaabla.com)

## SUMMARY

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Senior AI Engineer with 10 years of experience in software development and data science within Germany's tech industry, including progressive leadership responsibilities. Skilled in implementing and deploying end-to-end machine learning solutions to solve complex business challenges and improve performance. Proficient in Generative AI, MLOps and cloud services, with a strong track record of driving cross-functional collaboration.

## EXPERIENCE

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### Quest One, Hamburg, Germany

Nov 2022 – July 2025

#### Machine Learning Engineer

- Implemented a Fingerprint Evaluation Model to automatically evaluate the performance of different designs of customer hydrogen stacks.
- Developed a chatbot leveraging Large Language Models and RAG to efficiently answer employee questions using company documents, enhancing knowledge accessibility and operational efficiency.
- Led the collection and processing of customer Machine Data and played a key role in migrating customer Machine Data to the new Azure Cloud Solution, enhancing data accessibility and scalability.
- Coordinated the “Data Intelligence and Software” group of 6 members, implementing efficient task scheduling, enhancing cross-team coordination, resulting in improved team productivity.

### KUKA Robotics, Augsburg, Germany

Oct 2017 – Oct 2022

#### Software Developer

- Led a software team to deliver 2 key autonomous mobile robot projects for the companies Continental and Heller.
- Executed end-to-end client communication, from requirements gathering and software architecture design to factory acceptance tests, achieving over 90% client satisfaction.
- Built mobile robots applications in Java for over 6 completed projects for customers in Germany, Taiwan and Denmark.
- Managed the release process for new software and updates, ensuring high-quality standards for each release, resulting in a reduction of bugs in new releases by over 60%.

### Bertrandt Group, Munich, Germany

Oct 2016 – Sep 2017

#### Software Developer

- Developed software for the parking module of BMW's 7th-generation driving assistance system using an agile approach in Simulink and C.
- Performed comprehensive testing, including test case creation, code coverage optimization (exceeding 98%), and static code analysis, ensuring the reliability and safety of the parking module.

### German University in Cairo, Cairo, Egypt

Sep 2012 – Aug 2013

#### Lab Instructor

- Designed and instructed PLC programming labs and mentored 3 bachelor's projects.

## EDUCATION

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### Hamburg University of Technology, Hamburg, Germany

Sep 2013 – Nov 2016

Master of Science; Mechatronics

### German University in Cairo, Cairo, Egypt

Oct 2007 – Jul 2012

Bachelor of Science in Engineering; Major in Mechatronics

## **SKILLS**

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- **Generative AI:** LLMs, RAG, Agentic AI, LangChain, LangGraph, LlamaIndex, Ollama
- **LLM Evaluation and Vector Search:** LangSmith, Chatbot Evaluation, FAISS, Chroma
- **Machine Learning & Deep Learning:** PyTorch, TensorFlow; NLP, Computer Vision
- **Cloud & Data:** AWS, Azure, Databricks, SQL
- **MLOps & Pipelines:** MLflow, ETL, Docker, Azure ML, AWS SageMaker Pipelines, CI/CD
- **Programming Languages:** Python, Java, R, C/C++
- **Tools & Platforms:** Power BI, Azure DevOps, Gradio, Git, JIRA, Data Visualization
- **Software Engineering & Methodologies:** Agile (SCRUM), Software Architecture

## **PROJECTS**

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Interactive apps and code repositories are available at: [mostafaabla.com](http://mostafaabla.com)

### **Car Advisor Chatbot – LLM Agent:**

- Built a chatbot that recommends new cars based on user preferences and budget.
- Web-scraped and preprocessed car specifications and pricing data to build a custom SQLite database covering 500+ new cars in the Egyptian market.
- Implemented an LLM agent using LangChain and LangGraph with tool calling to query the database and combine retrieved facts with the model's knowledge for accurate, personalized recommendations.

### **RAG Research Papers Chatbot:**

- Developed a research assistant chatbot using a Retrieval-Augmented Generation (RAG) pipeline to answer complex questions over a curated corpus of RAG research papers.
- Designed and implemented a vector database and retrieval layer using Chroma, including document chunking, embedding generation, and retriever configuration to improve answer relevance.
- Implemented a chatbot evaluation framework using LLM-as-a-Judge, LangSmith, and MLflow, enabling systematic response quality evaluation and hyperparameter tuning.

## **TRAINING & CERTIFICATIONS**

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- **RAG for Generative AI Applications Specialization (4 courses)** – Coursera, 2025  
RAG application development, Vector Databases, LangChain, LlamaIndex, FAISS
- **Deep Learning Specialization (5 courses)** – Coursera, 2020  
Neural Networks, CNNs, RNNs, Sequence Models, LSTM, Hyperparameter Tuning, Transfer Learning
- **Statistics with Python Specialization (3 courses)** – Coursera, 2021  
Statistical Modeling, Hypothesis Testing, Inferential Statistics, Statsmodels

## **LANGUAGES**

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- **Arabic:** Native
- **English:** Fluent
- **German:** Fluent

## **VOLUNTEERING**

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- Performed translation services for refugees during job interviews and government appointments in Germany (1 year).
- Volunteer teacher in an adult literacy program in Egypt (6 months).