Mostafa Abla

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SUMMARY

Senior AI Engineer with 10 years of experience in software development and AI within Germany's tech industry, combining hands-on technical leadership with cross-functional collaboration. Skilled in designing and deploying end-to-end AI solutions — including Generative AI (LLMs, RAG) and predictive models — to solve complex business challenges. Proficient across modeling, MLOps, and cloud infrastructure (Azure, AWS).

EXPERIENCE

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

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

• **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

Interactive apps and code repositories are available at: 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

- **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

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

VOLUNTEERING

- 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).