



Marco Hanna

AI & Data Engineer

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LinkedIn Portfolio GitHub

PROFESSIONAL SUMMARY

AI Engineer and Data Analytics Graduate building end-to-end AI systems. Expertise in deep learning (LLMs, PyTorch) and data engineering (ETL, automation). Currently scaling cloud-native architectures using GCP and AWS.

EDUCATION

Master of Science in Data Analytics

University of Hildesheim

Oct 2022 – June 2025

Hildesheim, Germany

Bachelor of Engineering in Electrical Communication

October University for Modern Sciences and Arts

Sep 2016 – Jul 2021

Giza, Egypt

PROFESSIONAL EXPERIENCE

AI Software Engineer

Nov 2023 – Mar 2025

Halocline GmbH & Co. KG

Osnabrück, Germany

- **LLM Engineering:** Spearheaded a multi-stage research project (IDYKIMO) investigating LLM applications for industrial layout design using ChatGPT for data compilation and fine-tuning custom Llama models.
- **Generative AI:** Engineered prompt structures for 2D/3D layouts in JSON for automated industrial planning.
- **Computer Vision:** Benchmarked 3D point cloud segmentation models (Softgroup, Mask3D) for workspace objects.
- **Systems Engineering:** Led transition to Linux to optimize infrastructure for complex dual-segmentation point cloud models.
- **AI Research:** Benchmarked Whisper/wav2vec2 for voice-automated VR interaction structuring voice-command structuring

Data Engineer

Mar 2023 – Sep 2023

Robert Bosch Corporate Research

Hildesheim, Germany

- **Data Pipelines:** Supported the deep learning team by bridging the gap between offline labeling tools and online annotation/data management pipelines.
- **ETL & Conversion:** Developed Python scripts to convert complex data (JSON, XML) for deep learning applications.
- **Performance Optimization:** Optimized an existing Image Inference pipeline in C++, significantly improving runtime efficiency by precomputing components offline.

PROJECTS

- **DocuSense AI.** Developed a full-stack RAG platform using FastAPI, React, and Docker that leverages Docling, ChromaDB, and Groq (Llama-3.3) for high-speed document parsing and semantic search. [GitHub](#)
- **Cloud-Native Sales Analytics.** Engineered a platform migrating on-premise data to Aiven Cloud MySQL via Python ETL; delivered a Streamlit dashboard for real-time KPI reporting. [GitHub](#)
- **Master's Thesis: Leveraging LLMs for Industrial Layouts.** Fine-tuned Llama-3 using QLoRA for spatial reasoning; built a modular evaluation framework with metrics (NOC, ODC) to validate layout accuracy. [GitHub](#)
- **Bachelor Thesis: Plant Wheat Detection Using AI.** Built a CV pipeline using Raspberry Pi and CNNs (Fast R-CNN) for automated crop monitoring and growth stage classification. [GitHub](#)

TECHNICAL SKILLS

- **AI & Machine Learning:** LLMs (Llama, GPT, RAG, Prompt Engineering, QLoRA), Deep Learning (PyTorch, CNNs, GANs), Document Intelligence (Docling, OCR).
- **Data & Cloud:** Pipeline Automation (ETL/ELT/Airflow), Data Processing (Pandas, NumPy, JSON, XML), Database Management (SQL/MySQL, NoSQL/MongoDB, Data Warehousing, ChromaDB Vector Store), AWS (SageMaker, Glue, EC2, S3, RDS, Lambda), GCP (Vertex AI, BigQuery, Cloud Storage).
- **Tools & Dev:** Python, C++, JavaScript (React/Vite), HTML/CSS, SQL, Bash, Linux, Git, Streamlit, Docker, Kubernetes, CI/CD (GitHub Actions).
- **Professional Competencies:** Research & Benchmarking, Problem Solving, Cross-functional Communication, Project Planning, Agile Innovation.

CERTIFICATIONS

Data Engineering on AWS – Foundations <i>AWS Training</i>	Dec 2025
Fundamentals of Analytics on AWS (Part 1 & 2) <i>AWS Training</i>	Dec 2025
AWS Technical Essentials <i>AWS Training</i>	Dec 2025
Google Data Analytics Specialization <i>Google</i>	Aug 2021
Generative Adversarial Networks (GANs) <i>DeepLearning.AI</i>	Feb 2021
Deep Learning Specialization <i>DeepLearning.AI</i>	Aug 2020
TensorFlow Developer Specialization <i>DeepLearning.AI</i>	Aug 2020
Machine Learning <i>Stanford Online</i>	July 2020
Exploratory Data Analysis for Machine Learning <i>IBM</i>	July 2020

LANGUAGES

Arabic: Native

English: Advanced

German: Elementary (A2)