# Marco Hanna
## AI & Data Engineer

 Hildesheim, Germany     +49 176 2973 7645      marcoayman1999@gmail.com

 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**                                                         Oct 2022 – June 2025
*University of Hildesheim*                                                                      *Hildesheim, Germany*
**Bachelor of Engineering in Electrical Communication**                                          Sep 2016 – Jul 2021
*October University for Modern Sciences and Arts*                                                         *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

- **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).
- **Data & Cloud:** Pipeline Automation (ETL/ELT/Airflow), Data Processing (Pandas, NumPy, JSON, XML), Database Management (SQL/MySQL, NoSQL/MongoDB, Data Warehousing), AWS (SageMaker, Glue, EC2, S3, RDS, Lambda), GCP (Vertex AI, BigQuery, Cloud Storage).
- **Tools & Dev:** Python, C++, Java, 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** | *AWS Training*                                                  Dec 2025
**Fundamentals of Analytics on AWS (Part 1 & 2)** | *AWS Training*                                          Dec 2025
**AWS Technical Essentials** | *AWS Training*                                                               Dec 2025
**Google Data Analytics Specialization** | *Google*                                                        Aug 2021
**Generative Adversarial Networks (GANs)** | *DeepLearning.AI*                                              Feb 2021
**Deep Learning Specialization** | *DeepLearning.AI*                                                        Aug 2020
**TensorFlow Developer Specialization** | *DeepLearning.AI*                                                 Aug 2020
**Machine Learning** | *Stanford Online*                                                                   July 2020
**Exploratory Data Analysis for Machine Learning** | *IBM*                                                 July 2020

## LANGUAGES

**Arabic:** Native          **English:** Advanced          **German:** Elementary (A2)