Muhammad Hassan Saleem

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SUMMARY

As an AI Engineer with a strong foundation in mechanical engineering, I specialize in building intelligent solutions that combine machine learning, LLMs, computer vision, CAD automation, and data engineering. At MAindTec GmbH, I contribute to developing AI-powered SaaS and cloud-based ETL pipelines that automate and optimize industrial workflows, reduce operational costs, and enable large-scale digital transformation. My goal is to fuse traditional engineering expertise with modern AI and data practices to create scalable, efficient, and sustainable solutions for manufacturing and industrial domains.

EXPERIENCE

Founding Engineer - AI and Data Solutions   Jan 2025 – Present

MAindTec GmbH — Ingolstadt

- Supported deployment of a production-grade **multimodal RAG-based document query system** using Docker, Azure, Llama Index, Lang Chain, Milvus, and GitHub CI/CD automation.
- Designed and implemented **ETL pipelines in Google BigQuery and Cloud Storage** to process large-scale CAD metadata and manufacturing datasets, optimizing queries with partitioning and clustering for cost-efficient analytics.
- Built SQL workflows in **Microsoft Azure** transforming raw CAD and BOM data into analytics-ready tables for customer dashboards.
- Integrated SaaS platform data from multiple customers, ensuring correctness via validation queries and **data quality checks with Azure Databricks.**
- Built specialized **LLM- and LVM-based AI agents** for metadata extraction, geometry analysis, manufacturing process planning, and cost estimation from 3D CAD models.
- Developed an **AI system to automate 2D mechanical drawings interpretation** by labeling customer datasets with Label Studio and fine-tuning YOLOv8 with LVM agents for extracting 2d/3d views, dimensions, BOM, and metadata.
- Designed an **AI-powered design review pipeline** for 2D mechanical technical drawings using **Llama Index and Mistral** to detect errors, missing dimensions, incorrect annotations, and incomplete manufacturing information—helping customers prevent production issues.
- Designed a **chat-based AI system for mechanical drawings using Docling, LVM, and LLM agents** to extract and query dimensions, BOM, annotations, and geometry from PDFs.

Working Student – Research Scientist   Jul 2023 - May 2024

Fraunhofer IPA, Stuttgart

- Conducted research in computer-aided production planning and developed software functions for automated work plan generation.
- Automated generation of **CAD parts** datasets for machine learning training.
- Built ML models for CAD feature prediction with **80% accuracy,** enhancing manufacturing efficiency.
- Conducted master's thesis benchmarking **7 CAPP systems** and developed an evaluation tool.
- Designed **27+ complex** 3D mechanical CAD models using SolidWorks.

Junior ML & Data Engineer   May 2022 - Apr 2023

Cyberify, Multan

- Built SQL pipelines on MySQL to process **10K+ retail transactions daily** for customer analytics.
- Supported ML-Ops and data pipelines, reducing model deployment time by **~30%.**
- Contributed to **2 multimodal AI projects**, combining text and image data.
- Trained and fine-tuned **10+ ML models** with TensorFlow, Keras, and PyTorch.

Python Developer   Dec 2021 – Apr 2022

Cyberify, Multan

- Developed and maintained Python scripts for data processing and automation.
- Worked with NumPy, Pandas, and Matplotlib for data analysis and visualization tasks.
- Assisted in creating small tools to support business operations and improve productivity.
- Contributed to data-driven reports that supported decision-making processes.

Trainee Test Engineer   Jul 2021 – Nov 2021

Changan Automobile, Multan

- Checked and validated automotive CAD models for accuracy and manufacturability.
- Performed dimensional analysis and quality checks on mechanical components.

EDUCATION

Master of Engineering (M.Eng.) - Artificial Intelligence for Smart Sensors and Actuators
Deggendorf Institute of Technology, Deggendorf
Mar 2022 - Apr 2024

Projects:

- Turtle Bot Automatic Parking System using LIDAR and ROS.
- Speech Command Recognition System using Pytorch.
- Car detection System

Bachelor of Science (B.S.) - Mechanical Engineering
Ghulam Ishaq Khan Institute of Science and Technology, Topi
Sep 2017 - Jun 2021

Projects:

- Development of Four-wheel steering mechanism

SKILLS

Proficient: Python, Machine Learning, SQL, LLMs, Microsoft Azure (DataBricks, Synapse Analytics, Data Factory, Azure ML), Google Cloud Platform (BigQuery, Dataform, Cloud Storage, Vertex AI), PyTorch, Terraform, Fast API, Git, Docker, Computer Vision, Apache Spark, Hadoop, Airflow, Kafka, dbt, CI/CD Pipelines, PTC Creo,

Familiar: Multimodal Generative AI, Amazon Web Services (AWS: S3, Redshift, Glue, EC2, SageMaker), SolidWorks

LANGUAGES

German – Intermediate

English – Fluent

LICENSES & CERTIFICATIONS

Specialization In Machine Learning – 2024
Deep Learning.AI

Databricks Fundamental Accreditation- 2025

DataBricks Academy