Mohamed Abdelhamid

Munich, Germany | +49 152 3169 6069 | M.Abdelhamid@campus.lmu.de | GitHub | LinkedIn

Summary

M.Sc. Data Science student at LMU Munich and Machine Learning Engineer with hands-on experience building, evaluating, and deploying AI systems in industrial and freelance settings. Experienced in Python, PyTorch, Transformers, computer vision, document AI, RAG evaluation, time-series foundation models, and production ML infrastructure. Strong practical background in model training, error analysis, evaluation pipelines, and deployment with Docker, FastAPI, Airflow, MLflow, ONNX, TensorRT, and Triton.

Experience

Linde plc Apr 2025 – Present
Machine Learning Engineer, Working Student *Munich, Germany*

- Built evaluation pipelines for real-world industrial AI systems, focusing on model quality, robustness, failure modes, and reproducible comparison across model variants.
- Implemented an end-to-end multimodal document-intelligence pipeline that converts PDFs, images, PPTX, DOCX, XLSX, HTML, and other formats into structured Markdown using GLM-OCR and Gemma 4 for visual content transcription.
- Improved satellite object detection accuracy from 84.5% to 92.0% mAP@50 by replacing a YOLOv8 baseline with RF-DETR Large and training on aerial imagery using 4 A100 GPUs.
- Automated training, evaluation, and deployment with Airflow and MLflow; productionized inference with ONNX, TensorRT, and Triton.

Upwork 2023 – 2025
Machine Learning Engineer *Remote*

- Served as the sole ML engineer for MknoonAI, a healthcare AI startup, owning the full ML lifecycle from dataset curation and PyTorch modeling to deployment and web integration.
- Developed medical-imaging models including a chest X-ray classifier with 95.5% F1 and a dual-view mammography model with 85% F1 and tumor-localization support; achieved Top Rated status with 100% job success rate.

Education

Ludwig Maximilian University of Munich Expected Apr 2027
M.Sc. Data Science, Elite Graduate Program *Munich, Germany*

- Recipient of the **Konrad Zuse School of Excellence in Reliable AI Scholarship**.

Innopolis University Jul 2024
B.Sc. Computer Science, GPA: 4.8 / 5.00 *Innopolis, Russia*

Selected Projects

Foundation Models for Industrial Time-Series Forecasting *LMU / **BASF SE***

- Evaluated six Time Series Foundation Models, including TimesFM, Chronos-2, MOMENT, Lag-Llama, Toto, and Moirai, against AutoARIMA, AutoSARIMA, and AutoSARIMAX baselines on 1,118 monthly industrial time series from BASF SE.
- Compared univariate and multivariate forecasting under zero-shot and supervised fine-tuning settings using rolling-origin evaluation and RMSSE at a three-month forecast horizon.
- Analyzed when foundation models outperform classical statistical baselines by relating forecasting errors to trend strength, seasonality strength, spectral entropy, sparsity, and coefficient of variation.
- Produced practitioner-oriented conclusions on when foundation models offer a competitive advantage over classical models for industrial demand forecasting.

Golf Swing Analysis System *Computer Vision / Backend AI*

- Built an end-to-end video analysis pipeline that detects golf swing events and generates structured biomechanical feedback from user-uploaded swing videos.
- Combined MediaPipe, YOLOv8, OpenCV, and LSTM-based sequence modeling to extract pose features, detect swing phases, and analyze movement patterns.
- Deployed the system as a Dockerized FastAPI service on Google Cloud Run and integrated it with an iOS application for real-world usage.

Research, Publications, and Open Source

Publication: B. Rasheed, M. Abdelhamid, A. Khan, I. Menezes, and A. M. Khatak, "Exploring the Impact of Conceptual Bottlenecks on Adversarial Robustness of Deep Neural Networks," *IEEE Access*, 2024.

Open Source: Contributed to the Ivy open-source library by adding `log1p` support to the PyTorch frontend in a merged pull request.

Skills

Programming / Data: Python, C++, pandas, NumPy, scikit-learn
ML / AI: PyTorch, Transformers, OpenCV, RF-DETR, YOLO, GLM-OCR, Gemma, LangChain, RAG, OCR, VLMs, foundation models, model evaluation, error analysis
Infrastructure: Docker, Airflow, MLflow, FastAPI, Linux, Git, GCP, AWS, ONNX, TensorRT, Triton, Multi-GPU Training