

GIUSEPPE GERARDO BIFULCO

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PROFESSIONAL SUMMARY

Advanced Machine Learning Engineer with 3+ years of end-to-end ML ownership across computer vision, computational chemistry, and optimization — from dataset engineering and model training to automated pipelines, production deployment, and peer-reviewed research. Team leader. Scientific co-author. Engineer who ships systems that work outside the notebook.

WORK EXPERIENCE

NTT Data Italia S.p.A

Jan 2023 – Present

Machine Learning Engineer → Advanced Machine Learning Engineer (Jul 2025)

Computer Vision System

- Built and validated annotated datasets for object detection and classification (CVAT)
- Trained and benchmarked YOLO-based models; evaluated alternative detection and classification architectures
- Designed Airflow pipelines for automated model retraining with DVC-based versioning of models and datasets
- Monitored retraining performance via MLflow; quantized and optimized models to MLModel format for iOS deployment
- Applied TDD practices with pytest throughout the development pipeline

ML Research — CO₂ Catalysis

- Led a team of 2 ML engineers through the full ML lifecycle: data collection, model training, validation, and reporting
- Developed regression models for molecular property prediction and generative models for candidate molecule synthesis
- Applied software architecture best practices and design patterns across the full system design
- Co-authored a scientific paper currently in submission, in collaboration with two Italian universities

Multi-Objective Optimization & KPI Engine

- Designed and architected a multi-objective optimization system with real-time KPI computation, applying SOLID principles and design patterns
- Built FastAPI microservices interfacing with a data lake via spatial queries (PostGIS, Python)
- Actively contributed to technology stack selection and adoption of new tools within the team

TECHNICAL SKILLS

Languages	Python (advanced), C, Java
ML & Deep Learning	scikit-learn, PyTorch, TensorFlow, YOLO, regression models, generative models
MLOps & Pipelines	MLflow, DVC, Airflow, model quantization & optimization
Architecture & Testing	FastAPI, microservices, design patterns, TDD, pytest
Data & Storage	pandas, NumPy, PostGIS, SQL
DevOps / Cloud	Git, Docker, Azure
Annotation	CVAT

EDUCATION

MSc Computer Engineering — AI Curriculum

2020 – 2022

Università degli Studi di Salerno · 110/110 *cum laude*

BSc Computer Engineering

2017 – 2020

Università degli Studi di Salerno · 110/110 *cum laude*

Nominated among the best graduates of the 2017–2022 cohort

PUBLICATIONS

Paper in submission — Molecular property prediction for CO₂ catalysis research · In collaboration with two Italian universities · 2025