Federico Saitta

Manchester, UK — +44 7493 070194 — federico.saitta@outlook.com
github.com/FedericoSaitta — linkedin.com/in/federico-saitta

Professional Summary

Final-year MPhys Physics student specializing in machine learning and high-performance computing. Built production MLOps pipelines for CERN that improved model accuracy from 50% to 85% R^2 over baseline methods. Developed neural networks achieving 5000x computational speedup on time-series prediction tasks. Experienced in PyTorch, C++, SQL, and distributed systems. Eager to apply technical expertise to build scalable, data-driven solutions in industry.

Education

The University of Manchester September 2022 – Expected June 2026
MPhys Physics *On track for First Class Honours (Current Avg. 86%)*

Relevant Modules: Data Analysis, Statistical and Numerical Methods, Machine Learning and Optimization.

Skills

Programming and Data Science: Python, SQL, Pandas, NumPy, SciPy, Matplotlib, Seaborn
Machine Learning: PyTorch, TensorFlow, Scikit-learn, Optuna
Programming and Systems: C/C++, Parallel Programming, Unix/Linux, Git
Tools and Platforms: Jupyter, Docker, MLOps Pipelines, HPC Clusters, CI/CD pipelines
Languages: English (fluent), Italian (fluent), Spanish (conversational)

Experience

Master's Project
September 2025 – Present

- Performed Monte Carlo simulations to generate 20GB of synthetic training data for time-series prediction. Developed a PyTorch end-to-end pipeline for data generation and ingestion, model training, benchmarking and tuning (Optuna).
- Designed SQL database schema to store and query results from 5000+ ML experiments, enabling systematic comparison of model architectures and hyperparameter configurations across multiple performance metrics (R^2, MAE, training time).
- Developed deep neural networks (15K+ parameters) that reduced computational time from 48 hours to <30 seconds while achieving $R^2 > 0.98$, demonstrating 5000x speedup for iterative what-if analysis.
- Delivered technical presentations to cross-functional audiences of 15+ researchers, translating complex ML model behavior and performance trade-offs into actionable insights for domain experts.

Data Science Research Intern | *University of Manchester Particle Physics Group*
June – August 2025

- Processed and analysed 100GB+ of particle physics data using multithreaded C++ on CERN HPC clusters and reduced data filtering time by 30%.
- Built automated MLOps pipeline (Python, TensorFlow, PyTorch) for data ingestion, training, and performance tracking, cutting manual workflow time from 3 days to 4 hours and ensuring full reproducibility.
- Designed and trained deep learning models (DNNs and Transformers with 25K–1.6M parameters) for particle mass regression, improving R^2 from 50% to 85%.
- Authored 30-page technical report and presented findings to 25+ faculty and peers, translating complex ML concepts for mixed audiences.

Chess Engine
June – October 2024

- Developed a competitive chess engine in C++ (ELO 2759, top 230 on global leaderboard) with a 5K-line codebase.
- Optimised search/evaluation algorithms using gradient descent and code profiling, gaining 1000+ ELO and enabling 15 move lookahead in 1 second.
- Implemented CI/CD pipeline with unit/integration testing for cross-platform deployment (Windows/Linux), releasing multiple production versions with automated build and deployment workflows.

Leadership and Volunteer Experience

University of Manchester Volleyball Club | *Volunteer Coach* Sept 2022 – Present

- Designed and implemented a data-driven player evaluation system for 300+ applicants using Google Sheets and Python, automating team assignments and communications and reducing manual processing by 80%.
- Coach 20+ players twice weekly and organise tournaments, demonstrating leadership and communication skills with diverse groups.