Leonardo Tassinari

Machine Learning & Scientific Computing

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Profile

Software engineer and Artificial Intelligence M.Sc. graduate with honours. My experience spans machine learning model development and evaluation, natural language processing and computer vision, alongside parallel scientific computing and industrial software engineering. This includes research on mixture-of-experts language models, geophysical software development at INGV, and manufacturing and IoT applications at Cluster Reply.

Education

M.Sc. in Artificial Intelligence – 110/110 with honours 2024–2026

University of Bologna

Thesis: Guiding the Chain of Thought of Mixture-of-Experts LLMs via Routing Intervention for Efficient Reasoning.

- Coursework covered machine learning and data mining, deep learning, natural language processing, image processing and computer vision, supported by mathematical and statistical methods, numerical and combinatorial optimisation, knowledge representation and probabilistic reasoning.
- Thesis research examined language-model behaviour through GPU-based experiments, representation probing and controlled routing interventions, using held-out evaluation and statistical comparisons across three models and six mathematical benchmarks.

B.Sc. in Computer Science and Engineering – 110/110 with honours 2022–2024

University of Bologna

- Coursework covered programming and object-oriented design, algorithms and data structures, software engineering, databases, computer architecture, operating systems and computer networks, supported by calculus, algebra, discrete mathematics, probability, numerical methods and operations research.
- Thesis work at INGV focused on high-performance computing (HPC) for geophysical modelling: porting software from Fortran 77 to C++, implementing hybrid MPI/OpenMP parallelisation and evaluating scaling through Slurm on the institute's HPC cluster.

Aeronautical Diploma, I.T.Aer. Baracca, Forlì 2014–2019

Studies included meteorology, air navigation and aircraft systems.

Professional Experience

Software Developer Sep 2024–Present

Cluster Reply, Bologna / Remote

- Develop full-stack microservices integrating manufacturing systems and IoT devices, using C#, Angular and TypeScript in a collaborative consulting team.
- Contribute to large software projects using modular design; write automated tests and review colleagues' code to support maintainable, consistent changes across services.
- Manage and train junior developers, coordinating their contributions to the team's software projects.
- Work with Kubernetes, Docker and Linux; translate requirements across application and device boundaries into maintainable software.

Student Air Traffic Controller Mar 2021–Mar 2022
EUROCONTROL, Maastricht, Netherlands
Completed the selective training cycle at ENAC, Toulouse, and obtained an air traffic controller licence. Studies covered meteorology, air navigation, aviation law, aircraft performance, communication procedures and human factors. Developed precise communication and disciplined decision-making in a safety-critical environment. Valued collaboration with colleagues from different national and cultural backgrounds within a European intergovernmental organisation.

Relevant Skills

Machine Learning & AI: Practical experience designing, implementing and training machine learning models using PyTorch, TensorFlow and scikit-learn. Projects include CNNs for pressure estimation from sensor signals, recurrent and transformer-based text classifiers, and fine-tuning pretrained vision models. Experience with data augmentation and regularisation, and with evaluating architecture and training choices through ablation studies, baseline comparisons, held-out testing and error analysis.

Programming & Data: Python, C/C++, C#, Java, TypeScript, JavaScript, SQL and Bash; NumPy, pandas, Matplotlib and Seaborn; data preparation, feature engineering, augmentation, visualisation, relational databases and model persistence.

Software Development & Infrastructure: Modular and object-oriented software, microservices, REST APIs and MQTT; Git, automated testing, pytest, GitHub Actions, GitLab CI/CD and release packaging; Linux administration, Docker, Docker Compose, Kubernetes and Grafana; reproducible environments with Poetry and locked dependencies.

Scientific & High-Performance Computing: Slurm, MPI, OpenMP and CUDA; parallel programming with shared and distributed memory, GPU-based experimentation, quantised LLM inference and GPU memory management; performance benchmarking.

Languages & Additional Information

Languages	Italian (native), English (professional working proficiency), Spanish (basic), German (basic)
About me	Blood donor since 2019; passionate about sports, aviation, meteorology, technology, electronics, photography and music

I authorise the processing of my personal data contained in this CV in accordance with Regulation (EU) 2016/679 (GDPR) and Italian Legislative Decree 196/2003, as amended by Legislative Decree 101/2018.