



MINERVA

Winter School

February 2026

Objectives

MINERVA is a distributed, European-wide HPC-enabled AI application support service

It brings together expertise from EuroHPC Hosting Entities and partners representing major European stakeholders in AI.

MINERVA acts as a central hub for cutting-edge European competences in large-scale ML/AI research and development.

It started in January 2025, and the project's duration is 36 months.



Co-funded by
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Partners



CINECA



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



INSTITUT DU
DÉVELOPPEMENT ET DES
RESSOURCES EN
INFORMATIQUE
SCIENTIFIQUE



Tübingen AI Center



*Barcelona
Supercomputing
Center*
Centro Nacional de Supercomputación

What MINERVA Aims To Achieve

What
we do

- Offer a rich service portfolio covering several levels and types of support.
- Interact with AI communities to identify needs and update the MINERVA service portfolio.
- Increase competences of AI communities on AI n HPC.
- Ensure models are developed according to ethical and responsible AI regulations.

- **Support:** Operating an EU-wide support centre.
- **Knowledge transfer:** Publishing best practice guides and guidelines.
- **Benchmarking:** Evaluating model performance on supercomputers.
- **Data Access:** Providing information on access to public datasets.
- **Training Programs:** Providing "AI on HPC" training program.
- **Community Hub:** Supporting large-scale open-source ML/AI research and development on HPC.

How we
do it

The MINERVA Support

To deliver support that is both structured and flexible, MINERVA recognises that users may need help on different topics and in different ways. We organise our services along those two key principles:

Service Levels (L1-L5)

These define the thematic areas where support is offered, reflecting the kinds of challenges AI users typically face, from porting workflows to HPC (L1), scaling models and workflows (L2), to pre-training (L3) and fine-tuning foundation models (L4), as well as complying with ethical and regulatory requirements (L5).

Support Types (T1-T4)

These describe how the support is delivered – from quick technical help (T1) to long-term engineering collaborations (T4).

👉 *Unlike the Levels, these Support Types are an internal coordination tool to help allocate resources and tailor support formats to user needs.*

Who can access MINERVA support

MINERVA services are open to all actors in the European AI ecosystem – regardless of technical background or experience with HPC. If you're working with AI and face technical, scaling, or regulatory challenges, MINERVA is here to help.

We welcome requests from:

- **Academic researchers** (PhD students, postdocs, principal investigators)
- **Public sector teams** applying AI in areas like health, climate, education, or policy
- **Start-ups and SMEs*** developing AI-driven products or services
- **Larger companies*** with advanced or specialized AI use cases
- **AI engineers and developers** aiming to scale models or optimize performance
- **Project consortia** preparing proposals for national or European funding calls

📌 No HPC access? We can guide you through the process of applying for resources, choosing the right infrastructure, and getting started with your first project.

Agenda 23-02

- **10.30-13: Introduction to HPC:**
 - Leonardo infrastructure
 - How to submit and monitor jobs on Leonardo
 - Modules, python envs and containers
- **13-14: Lunch break**
- **14-17.30: Classification models based on CNNs and Vision Transformers**
 - **Convolutional Foundations:** From 1D convolution to 2D cross-correlation on multi-channel inputs, understanding how convolutional layers operate.
 - **Landmark CNN Architectures:** The historical progression of convolutional networks for image classification, from AlexNet to ResNet, highlighting the key architectural innovations that enabled deeper and more efficient models.
 - **The Attention Operator:** From convolution to attention: how the attention mechanism works, why it differs from convolution, and examples of architectures based on this paradigm, such as Vision Transformers.





Access to Leonardo



Reach out to us @

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Thank you



**Co-funded by
the European Union**



This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101182737. The JU receives support from the Digital Europe Programme.