



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



Program Overview, Student Projects and Practical information



ELLIS Summer School on Large Scale AI for Research and Industry

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Locations

- Coffee breaks and lunch: under the portico, usually at 10:45, 13:00 and 16:00.
- Main lecture room: P0.4 (this one)
- Lab. Room: P2.7 on the last floor of this building (today afternoon and tomorrow afternoon)
- Room for project tutoring: 1st floor of the Library.

Always check the detailed program at www.ellis.unimore.it for updates.

	Monday 18th	Tuesday 19th	Wednesday 20th	Thursday 21st	Friday 22nd
9:00	Opening	Federico Tombari (Google Zurich)	Inauguration Ceremony of the new AI Center	Pietro Perona (California Institute of Technology, Amazon)	Marc'Aurelio Ranzato (DeepMind)
	Giuseppe Fiameni (NVIDIA)		Nicu Sebe (University of Trento)		
10:45	Coffee break			Coffee break	
11:00	Bernt Schiele (Max Planck Institute for Informatics)	Laura Leal-Taixé (NVIDIA and TU Munich)	Cees Snoek (Qualcomm QUVA Lab and University of Amsterdam)	Mario Fritz (CISPA Helmholtz Center for Information Security)	Tal Hassner (Meta AI)
13:00	Lunch				
14:00	Alberto Del Bimbo (University of Florence)	Fabian Manhardt (Google Zurich)	Björn Schuller (Imperial College London)	Victor Sanh (Hugging Face)	Project presentations
	Giuseppe Fiameni and Sergio Orlandini (NVIDIA, CINECA)	Ferrari museum Maranello			Best project ceremony and conclusion
16:00	Coffee Break			Coffee Break	
16:15	Project tutoring "Enzo Ferrari" library		Project tutoring "Enzo Ferrari" library	Project tutoring "Enzo Ferrari" library	
After 18:00		Gala Dinner at Florim Gallery			
h24	Access to Leonardo Supercomputer*				

Tuesday afternoon

- Visit to the Ferrari Museum in Maranello, pick up for transfer at 15.00
- Social event and Gala Dinner at Florim Gallery, starting from 18.00

Social Event at Florim Gallery (*"AI: a big opportunity in Industry"*)

- Institutional welcome (Dr. Claudio Lucchese)
- **Keynote talk from Cristian Canton Ferrer** (Head of Responsible AI, Meta)
- Round table with AI companies moderated by Prof. Michela Milano. With **Stefano Bonaccini**, president of Emilia-Romagna.
- Gala dinner



Wednesday morning: Foundation stone-laying ceremony for the Center for Artificial Intelligence and Vision (CAIV)

9:00-10:00

CAIV is a new infrastructure that will be built next to the Technopole of Modena. It is designed to be a center of excellence capable of hosting both researchers and companies, equipped with modern research spaces and coworking areas. The CAIV will be a major incubator for international scientific projects and innovative technology transfer activities in the field of Artificial Intelligence and Computational Vision.

With the participation of: Carlo Adolfo Porro (UNIMORE Rector), **Massimo Borghi** (Director of the “Enzo Ferrari” Department of Engineering), **Rita Cucchiara** (Director of AIRI), **Cees Snoek** (Director of Amsterdam AI) and **Stefano Bonaccini** (President of Emilia-Romagna)



- You will have the exciting opportunity to collaborate on **group projects**, using the **Booster partition of the Leonardo Supercomputer**.
- For the duration of the School, **CINECA has reserved 500 Ampere GPUs for three days**. Each node is armed with four NVIDIA Ampere GPUs with 64GB of memory, delivering an impressive 89.4 TFLOPs peak performance.
- Students should propose and implement modification to existing algorithms using the Leonardo HPC infrastructure. The top three projects will earn the title of winner of the ELLIS PhD School LS-AI Project, with formal certificate.



Six proposed project tracks:

- Efficient Foundation Model Training Using FLIP
- Detecting and Watermarking text generated by Large Language Models
- Predicting gene and protein expression levels from DNA and protein sequences exploiting Transformer-based architectures
- Multi-Instance-Learning (MIL) models to Perform a Multi-Scale Classification of Large Histological Images (WSIs)
- Per-Object Distance Estimation from Monocular Images
- Using Neural Radiance Fields in real scenarios

81.6% of the students have enrolled in projects, via expressing four ranked preferences with respect to tracks.



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All students have been assigned to **either their 1st or 2nd choice**, building groups of 5-7 people.

We also ensured at least one UNIMORE member per group, so to have an internal reference which can help the group.

Assignment procedure:

- A constrained linear programming model, with costs inversely proportional to preferences, plus a penalizing term for multiple members from same affiliation.
- Solved automatically, then manual adjustments according to our knowledge of the group members.
- Humans are (still) better than machines 😊

👉 If you haven't, go to the intranet to find out who is in your group and reach out to them. You will find their e-mail addresses, plus they will be on Slack.




Track	# groups	Internal tutor(s)	External co-tutor
Efficient Foundation Model Training using FLIP	3	Enver Sangineto, Lorenzo Baraldi	
Detecting and Watermarking text generated by Large Language Models	3	Lorenzo Baraldi	Victor Sanh
Predicting gene and protein expression levels from DNA and protein sequences exploiting Transformer-based architectures	2	Marta Lovino, Silvia Cascianelli	
Multi-Instance-Learning (MIL) models to Perform a Multi-Scale Classification of Large Histological Images (WSIs)	2	Marta Lovino, Silvia Cascianelli	
Per-Object Distance Estimation from Monocular Images	2	Angelo Porrello	
Using Neural Radiance Fields in real scenarios	2	Roberto Vezzani	Fabian Manhardt

Tutors are there to help and propose feasible ideas.

👉 Identify and contact your internal tutor ASAP! 😊

For internal tutors, mail is always name.surname@unimore.it.
You will find all of them on Slack as well.



- You will have eight hours without lectures, dedicated to the project (with a dedicated room in the Library)
 - Plus, experiments can run during lectures
- You need to deliver a short report + a short presentation by Fri. @ 9:00.
 -  Time management is crucial if you want to win.

My suggestions:

- Read suggested literature first
- Check out the provided dataset and advised source code
- Come up with an idea early
 - Avoid ideas that require heavy implementations
 - Carefully predict the computational time you require
 - Look for genius and simple ideas
 - Iterate until you have an idea that fits with the available time
- Then, start working.
 - **Project management** is always crucial. Define a project leader, draft a GANTT, assign tasks, set task deadlines, define who is accountable for doing what.




Other hints:

- Don't necessarily stick to methodological novelty when defining your ideas
 - Dataset or computation-related ideas are also welcome.
- 🖱️ Go slow and steady. Ideas first, then try on a small scale (even your laptop), then move to HPC.
- There will be a tutorial (this afternoon) on how to use Leonardo, from NVIDIA and CINECA
 - How to access, using the scheduler, partitions, file systems, etc.
 - Suggested datasets are already on the machine.
 - You can upload others, but it will take more time.

On Friday, all groups will present their project, and a jury will select the best three. Judgment will be based on novelty, technical soundness, experimental results, and relatedness to the School lectures.



- **WIFI access:**

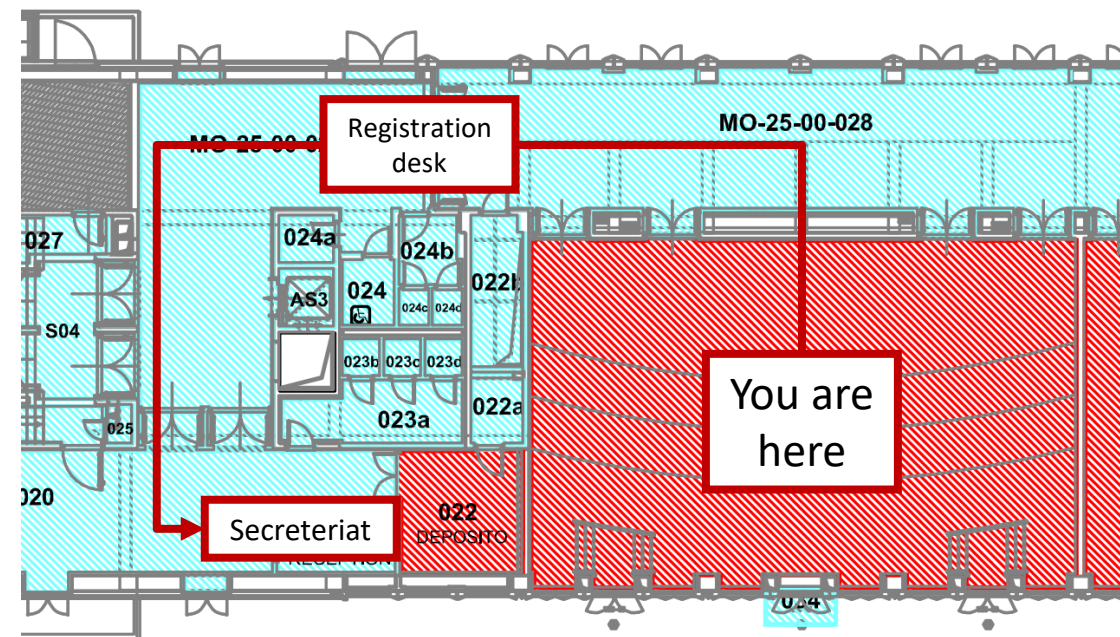
- If you have Eduroam, you are already connected 
- Otherwise, take a picture of this QR code:



- Or go to <https://selfaccess.unimore.it/> and digit “vbzkw” as code



- Need help? We have a contact point for any need.
 - Check out the website for updates first: www.ellis.unimore.it
 - E-mail support: ellis-summer-school@unimore.it
 - Slack workspace: see the invitation e-mail
 - In person: go to the School secretariat (see map)
 - School intranet: see the invitation e-mail
- The **intranet of the School** contains lecture slides, information about the projects, and materials you can download.



Summer School Intranet	Lecture materials and slides
Registration status	
Onboarding and participation details	
Lecture materials and slides	
	Available slides

Have a productive School! 😊