

Summer School XR&AI Matera, Italy



European Laboratory for Learning and Intelligent Systems

WELCOME TO THE ELLIS SUMMER SCHOOL ON LS-AI

ELLIS Summer school

Large-scale Artificial Intelligence

Modena, Italy 18-22 September 2023

RITA CUCCHIARA

Almagelab.,

University of Modena and Reggio Emilia

Rita.cucchiara@unimore.it



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

The European Laboratory for Learning and Intelligent Systems is a pan-European AI network of excellence which focuses on fundamental science, technical innovation and societal impact in the fields of AI.

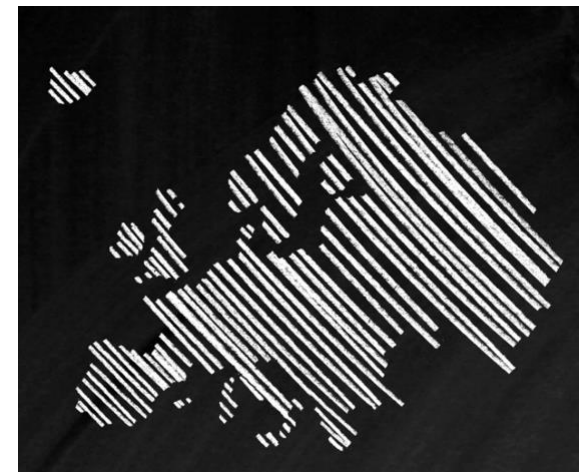
Founded in 2018, *ELLIS builds upon machine learning as the driver for modern AI and aims to secure Europe's sovereignty in this competitive field by creating a multi-centric AI research laboratory.*

ELLIS wants to ensure that the highest level of AI research is performed in the open societies of Europe

- 39 unit in Europe (<https://ellis.eu/units>)
- 16 Programs
- >300 c.a. Fellows and Scholars
- >1000 Members in Europe

ELLIS Summer school

Modena



<https://ellis.eu/>

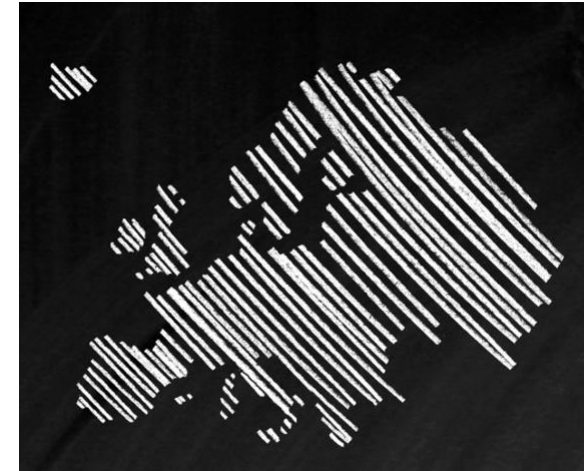


NeurIPS 2018, Montreal

The mission of ELLIS is to benefit Europe in two ways:

- 1 By ensuring that the **best basic research in AI** is performed in Europe, to enable Europe to shape how machine learning and modern AI change the world.
- 2 By contributing to **positive economic impact** and job creation in Europe. We believe that outstanding and **free basic research** is a key factor to achieve this goal.

<https://ellis.eu/letter>



<https://ellis.eu/>

ELLIS Summer school

Modena



Serge Belongie
University of Copenhagen
& Cornell University



Nicolò Cesa-Bianchi
Università degli Studi
di Milano



Florence d'Alché-Buc
Télécom Paris



Nada Lavrac
Jožef Stefan Institute



Neil D. Lawrence
University of
Cambridge



Nuria Oliver
(ELLIS Vice President)
ELLIS Alicante Unit
Foundation | Institute of
Humanity-centric AI



Bernhard Schölkopf
(ELLIS President)
Max Planck Institute
for Intelligent Systems



Josef Sivic
Czech Technical
University, École
Normale Supérieure &
INRIA



Sepp Hochreiter
(Board Guest)
Johannes Kepler
University Linz



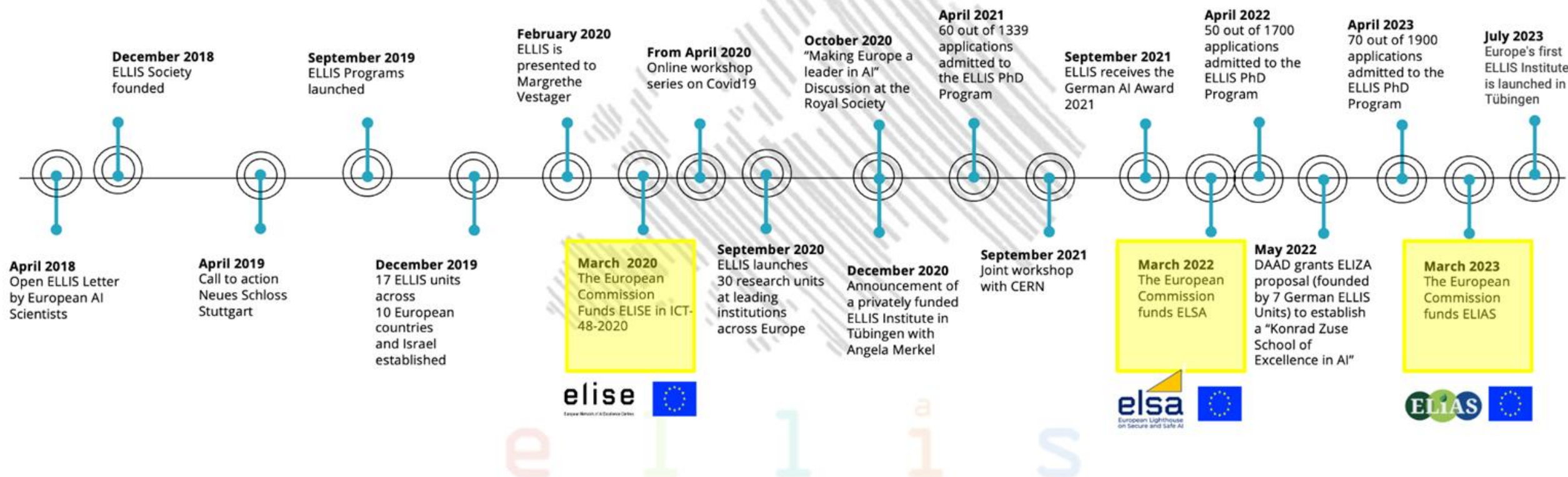
ELLIS Summer school

Modena

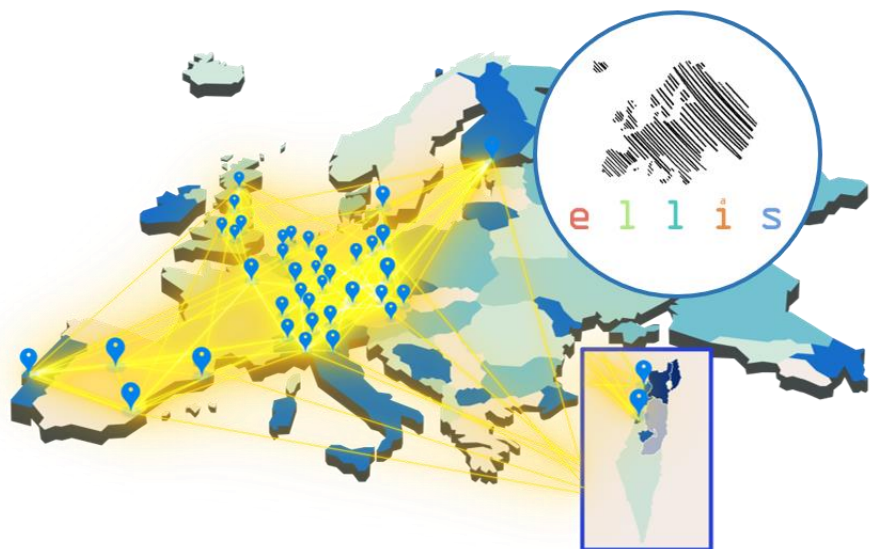
- Relations with non-academic institutions, such as the European Commission, companies, start-ups and venture capital funds

- Coordination of EC-funded projects: ELISE, ELSA, ELIAS

- PPP on Data, Robotics and AI: ADRA



39 units in Europe in 2023

















ELLIS Summer school

Modena

Each program focuses on a **high-impact area** that has the potential to move the needle in modern AI, either in methodology or in applications.

2 New programs soon

<p>Geometric Deep Learning</p> 	<p>Robust Machine Learning</p> 	<p>Interactive Learning</p> 	<p>Computer Vision</p> 	<p>Robot Learning</p> 
<p>Human-centric Machine Learning</p> 	<p>Theory & Algorithms</p> 	<p>Quantum- & Physics-Based ML</p> 	<p>Natural Intelligence</p> 	<p>Health</p> 
<p>Earth & Climate Sciences</p> 	<p>Natural Language Processing</p> 	<p>Symbolic Machine Learning</p> 	<p>Multimodal Learning Systems</p> 	







ELLIS Summer school

Modena

Each program focuses on a **high-impact area** that has the potential to move the needle in modern AI, either in methodology or in applications.

2 New programs soon

ELLIS PhD & POSTDOC PROGRAM

-  attract & support excellent young researchers in Machine Learning
-  metaprogram on top of existing graduate programs
-  European collaboration
-  focus on excellence
-  joint supervision within the ELLIS network
-  aiming to become the #1 brand in Machine Learning



Attracting global talent in AI



Retaining talent



Training, mobilizing and connecting talent in Europe



ELLIS Summer school

Modena

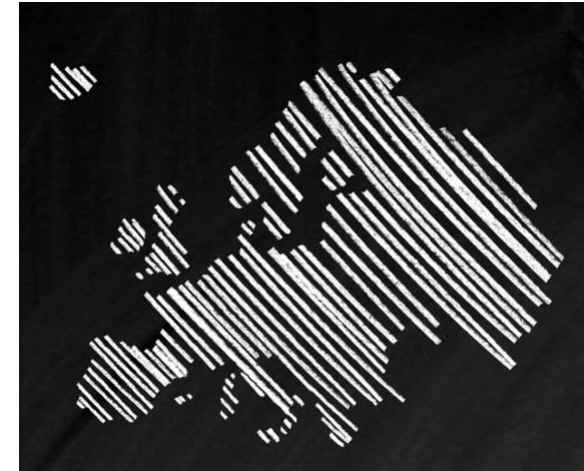
The ELLIS Phd Program

Central recruitment:

https://ellis.eu/uploads/ckeditor/attachments/1015/ELLIS_PhD__Postdoc_Program_-_Information_for_applicants__v4_2022_.pdf

ELLIS Phd nomination

ELLIS fellows, scholars or unit faculty may nominate PhD students or postdocs who are working with them to become ELLIS PhD students or postdocs in the academic or industry track.



Many initiatives, schools and workshops

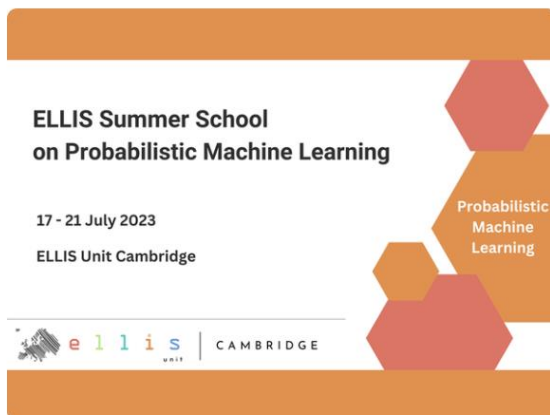
ELLIS Summer school

Modena



ELLIS Doctoral Symposium
2023

28 Aug 2023 - 01 Sep 2023



ELLIS Summer School on
Probabilistic Machine
Learning - Cambridge Unit

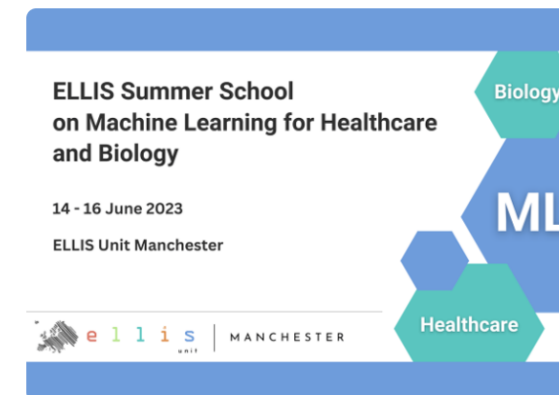
17 Jul 2023 - 21 Jul 2023



ELLIS-LAION Workshop on
Foundation Models

Max Planck Institute for Intelligent
Systems - Tübingen

13 Jul 2023 - 14 Jul 2023

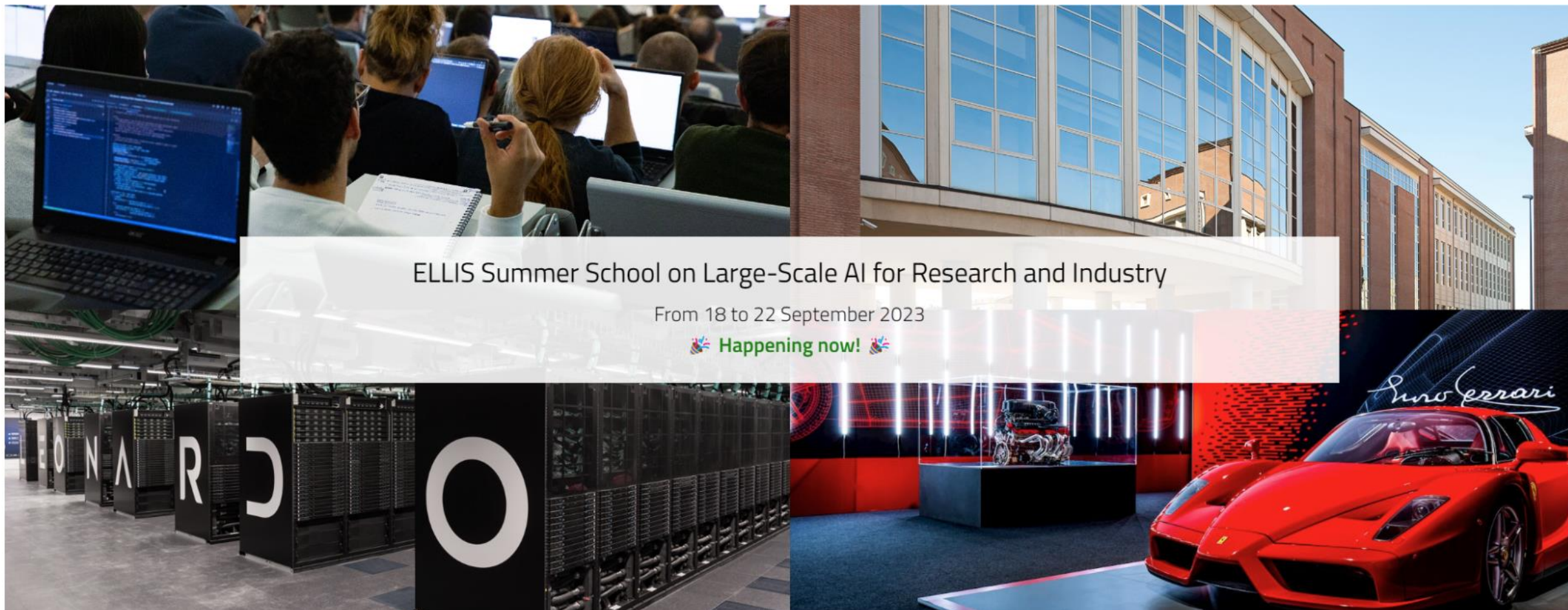


ELLIS Summer School on
Machine Learning for
Healthcare and Biology -
Manchester Unit

14 Jun 2023 - 16 Jun 2023

ELLIS Summer school
Modena

The ELLIS summer school on Large Scale AI in Modena



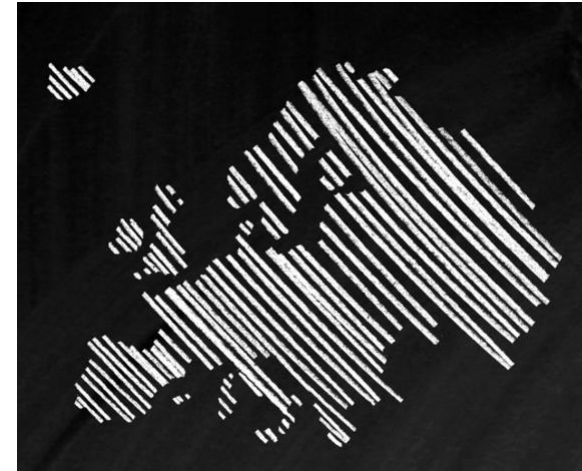
ELLIS Summer school

Modena

Organization of the LS-AI school in Modena.

Organized by **the Modena Ellis unit** by Rita Cucchiara and Lorenzo Baraldi* together with

- other ELLIS unit senior members (many thanks to Roberto Vezzani, Simone Calderara, Costantino Grana, Elisa Ficarra, and Alberto Del Bimbo**)
- **Fondazione “Marco Biagi”** of UNiMORE (thanks to Director Carlotta Serra)
- Researchers and post-docs co-tutoring project (thanks to Federico Bolelli, Marta Lovino, Marcell Cornia, Angelo Porrello, Enver Sangineto, Vittorio Cuculo, Silvia Cascianelli) and all **Almagelab** of DIEF
- **CINECA Supercomputer Center** (thanks to Director Sergio Bassini**)



ELLIS Summer school

Modena

*To contact name.surname@unimore.it

** Albertodelbimbo@unifi.it, s.bassini@cineca.it

Organizers



Artificial Intelligence
Research and Innovation Center (AIRI)



And Endorsers



Sponsors



ELLIS Summer school

Modena

Thanks!

An Education initiative for the “best” European Phd Students for

- Understanding, designing and training next generation of large-scale machine learning architectures by exploiting supercomputer Facilities (CINECA and NVIDIA tutorials)
- Preparing scientific projects and write and present scientific papers



Giuseppe Fiameni 

NVIDIA AI Technology Center

Larger-scale model training on multi-GPU systems



Sergio Orlandini

CINECA

Larger-scale model training on multi-GPU systems



Alberto Del Bimbo 

University of Florence

Science Writing - from lived life experiences

ELLIS Summer school

Modena

- Building the future human-centric AI research, Responsible, trustworthy and secure AI



Pietro Perona 

California Institute of Technology,
Amazon

Responsible AI: Measuring
accuracy and bias in Computer
Vision Systems



Mario Fritz 

CISPA Helmholtz Center for
Information Security

Trustworthy AI - A Cybersecurity
Perspective



Cristian Canton Ferrer 

Head of Responsible AI, Meta

Responsible AI in the age of GenAI:
the case of Llama2

During the [Social Event at Florim
Gallery](#)

ELLIS Summer school

Modena

- Developing and Scientifically testing new solutions for robust and interpretable AI



Bernt Schiele 

Max Planck Institute for
Informatics

Interpretability for Deep Learning
in Computer Vision



Tal Hassner 

Meta AI

AI Robustness: What, Why, and
How

ELLIS Summer school

Modena

Learning new trends and SOTA in AI scientific research

- Generative AI
- 3D scene understanding
- Tracking and Video understanding
- Affective Computing
- Space-Time Video AI



Nicu Sebe 

University of Trento

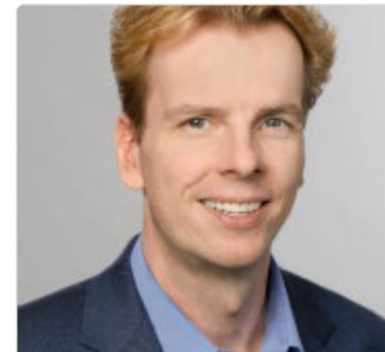
Cross-modal Video Generation



Cees Snoek 

Qualcomm QUA Lab and
University of Amsterdam

Learning to Generalize in Video
Space and Time



Björn Schuller 

Imperial College London

Think Big: Entering Large Scale
Affective Computing



Federico Tombari 

Google Zurich

3D scene understanding for real
applications



Laura Leal-Taixé 

NVIDIA and TU Munich

ELLIS Summer school

Modena

Learning new trends and SOTA in AI scientific research

- Large Video and Language models
- Large Continual Learning



Victor Sanh 

Hugging Face

Training an open-access 80 billion parameters vision and language model, lessons learned



Marc'Aurelio Ranzato 

DeepMind

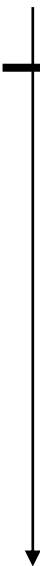
Modular Large-Scale Continual Learning

ELLIS Summer school

Modena

t0 (Day 1)

t1 (Day 2)



Tomorrow
19 Sept.

- 2 Lectures
- 1 Tutorial
- 1 Cultural visit (Ferrari Museum)
- 1 Evening Lecture
- 1 Industrial Panel
- 1 time for Fun gala Dinner in Florim
- (GPUs are already available)



19th September 2023
**ARTIFICIAL INTELLIGENCE:
A BIG OPPORTUNITY
IN INDUSTRY**

18.15 Registration

18.30 Welcome & Florim Corporate Presentation

18.45 Keynote speech by **Christian Canton**
Head of Engineering of "Responsible AI"

19.00 Roundtable discussion between invited companies,
managed by **Rita Cucchiara UNIMORE**

19.45 Visit at Florim Gallery exhibition spaces | on request

20.15 Buffet dinner

With the participation of the Territorial Authorities,
The Event is part of the "Large Scale AI for Research and Industry"
ELLIS summer school for ELLIS (European Labs of Learning and Intelligent systems)
phd students organized by UNIMORE, CINECA and ELLIS.
<https://www.ellis.unimore.it/summer-school/>

Exclusive event by invitation only.

Event location:
Florim Gallery
Via del Canaletto, 24
Florano Modenese



Today
18 Sept.

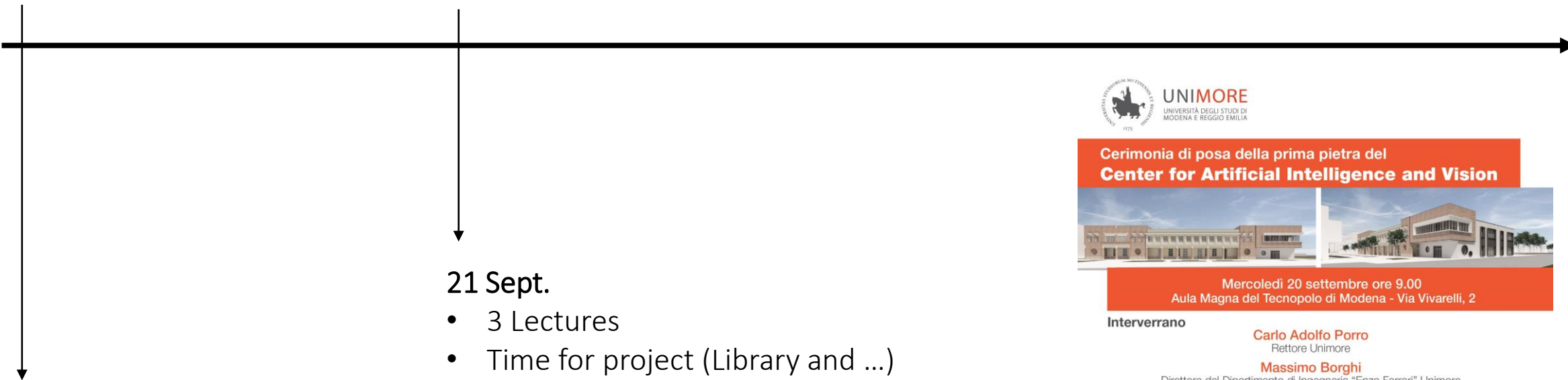
- .Welcome
- 1 Lecture
- 3 Tutorials
- Time for project (Library and ...)

ELLIS Summer school

Modena

t2 (Day 3)

t3 (Day 4)



20 Sept.

- 1 Ceremony
- 3 Lectures
- Time for project (Library and ...)

21 Sept.

- 3 Lectures
- Time for project (Library and ...)
- All the night to prepare the project



Cerimonia di posa della prima pietra del Center for Artificial Intelligence and Vision



Mercoledì 20 settembre ore 9.00
Aula Magna del Tecnopolo di Modena - Via Vivarelli, 2

Interverranno

Carlo Adolfo Porro
Rettore Unimore

Massimo Borghi
Direttore del Dipartimento di Ingegneria "Enzo Ferrari" Unimore

Rita Cucchiara
Direttore del Centro Interdipartimentale AIRI Unimore

Cees Snoek
Director of Amsterdam AI, University of Amsterdam

Stefano Savoia
Dirigente della Direzione Tecnica Unimore

Franco Vitali
EFFE-GI Impianti s.r.l. - Costruttore

Stefano Bonaccini
Presidente della Regione Emilia-Romagna

A seguire posa della Prima Pietra

Il nuovo Centro di Ricerca in Visione ed Intelligenza Artificiale è una nuova infrastruttura che sorgerà accanto al Tecnopolo di Modena che nasce dalla collaborazione tra il laboratorio Almagelab del Dipartimento di Ingegneria "Enzo Ferrari" di Unimore, il Centro Interdipartimentale Artificial Intelligence Research and Innovation di Unimore, la Regione Emilia Romagna e la Rete di Eccellenza europea ELLIS - European Labs of Learning and intelligent systems, progettata per essere un polo di eccellenza capace di ospitare sia ricercatori che aziende. Dotato di spazi moderni per la ricerca e aree di coworking, il CAIV sarà un grande incubatore per progetti scientifici internazionali e innovative attività di trasferimento tecnologico in materia di Intelligenza Artificiale e della Visione Computazionale.

Accesso libero. Per informazioni: rettore@unimore.it

ELLIS Summer school

Modena

A SUPER-ATTENDANCE

Last day attendance...
Very compressed but smiling



ELLIS Summer school

Modena

t4 (Day 5)

t5....



22 Sept.

- 2 Lectures
- Project presentations
- Winner Ceremony

ELLIS Summer school

Modena

WINNERS



The winners are...



ELLIS Summer school
Large-scale Artificial Intelligence
Modena, Italy 18-22 September 2023



ELLIS Summer school

Modena

If I have seen further , it is by
standing on the shoulders of Giants

(I.Newton 1675*)



ELLIS Summer school

Modena

* C. Chen, *Mapping Scientific Frontiers: The Quest for Knowledge Visualization* © Springer-Verlag London Limited 2003

Enjoy in Modena



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



<https://www.ellis.unimore.it/>

Thanks to all Aimagelab

<http://Aimagelab.unimore.it>

Rita.cucchiara@unimore.it

ELLIS Summer school

Modena