



Circle U.
European University Alliance

THE KNOWLEDGE HUB ON ARTIFICIAL INTELLIGENCE

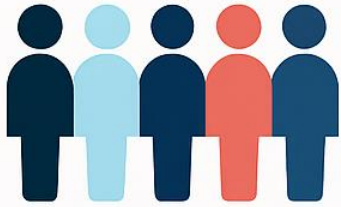
A BRIEF OVERVIEW

FRANCESCO MARCELLONI
HUB ACADEMIC DIRECTOR
UNIVERSITY OF PISA
ITALY



WHAT IS A KNOWLEDGE HUB?

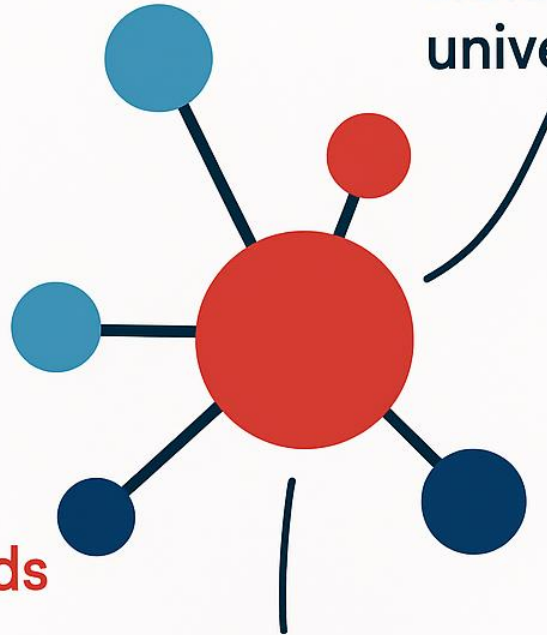
Hosts activities created with
and for various stakeholders



Inter- and
transdisciplinary
approach

Innovative teaching
and learning methods

Going beyond what is possible
within every single
university



Research collaboration

**Circle U.
Knowledge
Hubs**

Democracy

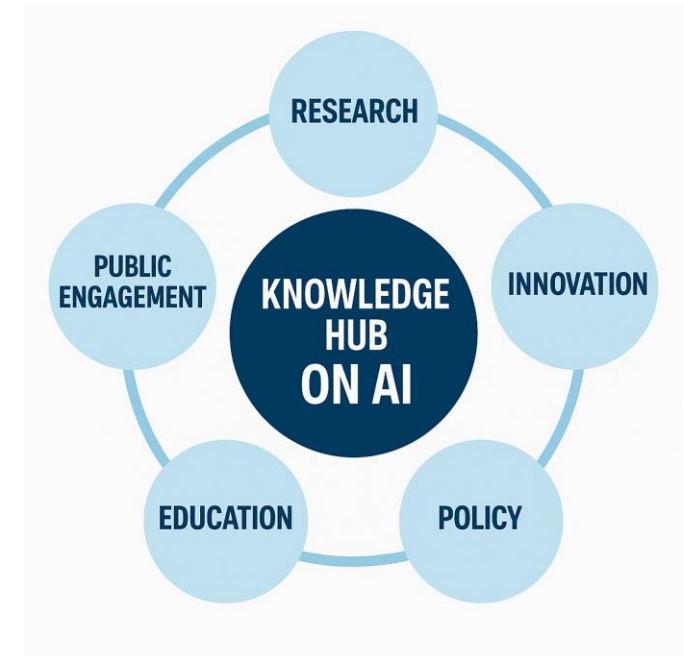
Climate

Global Health

Artificial Intelligence

THE ARTIFICIAL INTELLIGENCE KNOWLEDGE HUB

- AI is expected to have a significant impact on humans and society, including university. Thus, its development and use **should not only meet technical requirements** like accuracy and computational performance but also **consider ethical, legal, and social aspects**.
- The Knowledge Hub on Artificial Intelligence will address the challenge of **human-centered, inclusive and equitable AI** and will promote the development and the use of **robust, ethical, safe, trustworthy and sustainable AI**.
- Balancing innovation and protection of fundamental rights is essential for developing and using “**good AI**”.



WHY MULTIDISCIPLINARITY?

- The overall annual impact of AI could reach up to \$26,000 billions in the world (McKinsey & Company)
- A large number of applications and services but with possible risks
- **Risks inherent to the algorithms used in AI**
 - ***stem from machine learning algorithms*** that enable computers to autonomously learn from training data.
 - If these data, for example, are influenced by biases, these will inevitably be propagated to the learned model.
 - Furthermore, the data may not fully represent all possible scenarios in which the system will operate, potentially making the AI system less robust to unexpected inputs.
 - Finally, we have high energy and water consumption

Dastin J, *Amazon scraps secret AI recruiting tool that showed bias against women*, Reuters, 11 Ottobre 2018,

<https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G>

Air Canada ordered to pay customer who was misled by airline's chatbot

Company claimed its chatbot 'was responsible for its own actions' when giving wrong information about bereavement fare



📷 The judge wrote that Air Canada's customers had no way of knowing which part of its website - including its chatbot - relayed the correct information. Photograph: NurPhoto/Getty Images

<https://www.theguardian.com/world/2024/feb/16/air-canada-chatbot-lawsuit>

WHY MULTIDISCIPLINARITY?

- **Risks arisen from the improper use of AI**
 - Social scoring, real-time biometric surveillance, and manipulative systems are some examples of improper uses.
- **AI development and use should not, therefore, only address technical requirements** such as accuracy, robustness, transparency, and computational performance **but also ethical, legal, social, sustainable and economical aspects** to fully manage both types of risks.



CONNECTION WITH THE OTHER HUBS

■ Democracy KH

- **Manipulation and misinformation:** AI, and in particular generative AI, can be used to generate and spread misinformation or manipulate public opinion through targeted advertisements, fake news, and so on.
- Machine learning algorithms can **perpetuate and amplify biases present in the training data**, leading to issues such as gender or racial discrimination.
- Too much trust in AI systems
- Since a small number of major tech companies or influential entities hold control over advanced AI technologies, it can create a **power imbalance that threatens democratic principles of equality and representation.**

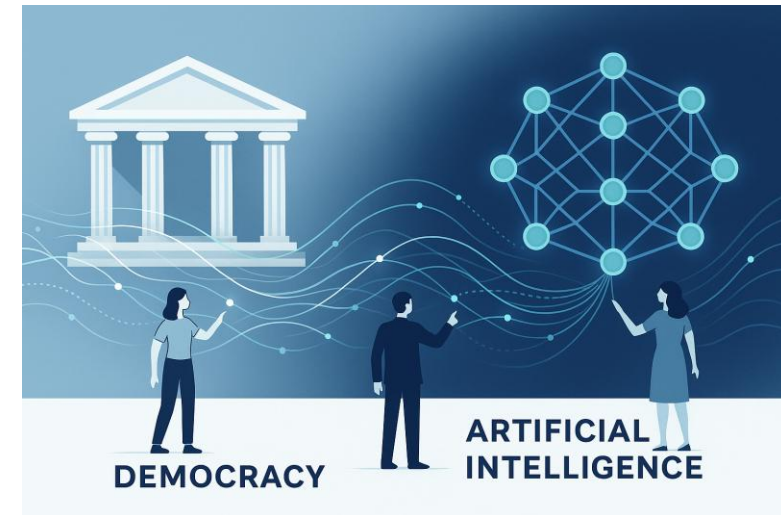


Image by ChatGPT

CONNECTION WITH THE OTHER HUBS

■ Climate KH

- GPT-3 required 1,287 MWh for training its 175 billion parameters.
 - **1,287 MWh** is equivalent to the annual electricity consumption of about 400 households with 4 people each.
- OpenAI needs more than 3,600 NVIDIA HGX A100 servers, with a total of about 29,000 graphics processing units (GPUs), to support ChatGPT, which implies a daily energy requirement of **564 MWh**.
- Training GPT-3 at Microsoft's state-of-the-art data centers in the United States required more than **5.4 million liters of water**, of which approximately **700,000 liters were lost to evaporation**. Additionally, for each inference, **about 16 milliliters of water** are required, with **2.2 milliliters lost to evaporation**.
- Global demand for AI could be responsible for the withdrawal of 4.2 – 6.6 billion cubic meters of water by 2027, an amount that is **4 – 6 times higher than Denmark's total annual water withdrawal** or equivalent to half of that of the United Kingdom."



Image by ChatGPT

CONNECTION WITH THE OTHER HUBS

■ Global Health

- Improved Diagnostic
- Personalized Medicine
- Predictive analysis: AI models can process large datasets to forecast disease outbreaks, pinpoint at-risk groups, and monitor infection spread.
- Remote Monitoring
- ...
- **and also possible risks concerning biases..**



Google researchers have developed a system that can detect lung cancer by screening better than human radiologists with an average of eight years' experience

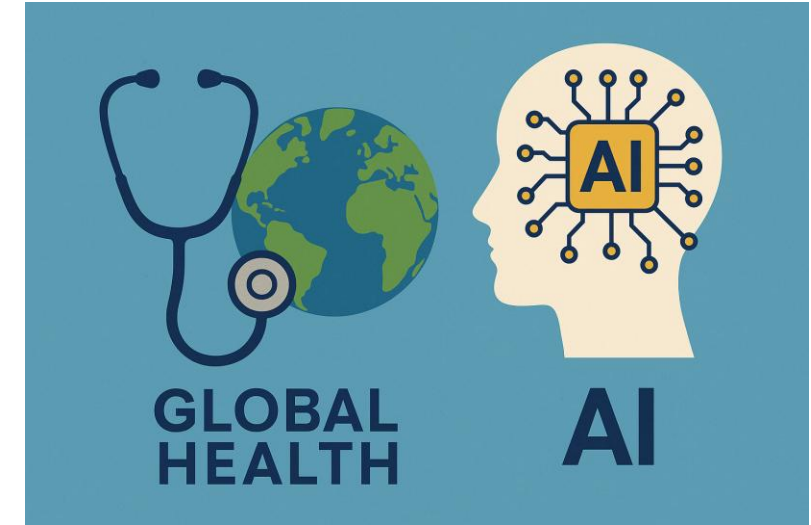


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CONNECTION WITH THE TEACHING INNOVATION LAB AND INCU.BATOR

- **Teaching Innovation Lab**
 - How can AI help the learning process?
 - How should we preserve the learning outcomes in the presence of AI?
- **How can we encourage our students to bring their ideas to the market?**



KH ON AI: CHAIRS

The team

- Francesco Marcelloni – University of Pisa
- Miroslav Maric - University of Belgrade
- Yves Deville - University of Louvain
- Mark Coeckelbergh - University of Vienna
- Stephan Oepen - University of Oslo
- Gergely Bérczi - Aarhus University
- Guillaume Wisniewski – Université Paris Cité
- Christine O’Dea - King's College
- Alexander Meyer - Humboldt University of Berlin



Team of Chairs

OBJECTIVES OF THE HUB

Long-term sustainability of the Alliance

- Pre-defined learning path for student mobility
- Double degrees (Council takes steps towards a new joint European degree label *)
- Lifelong learning
- Research collaborations
- Public engagement
- Focus groups

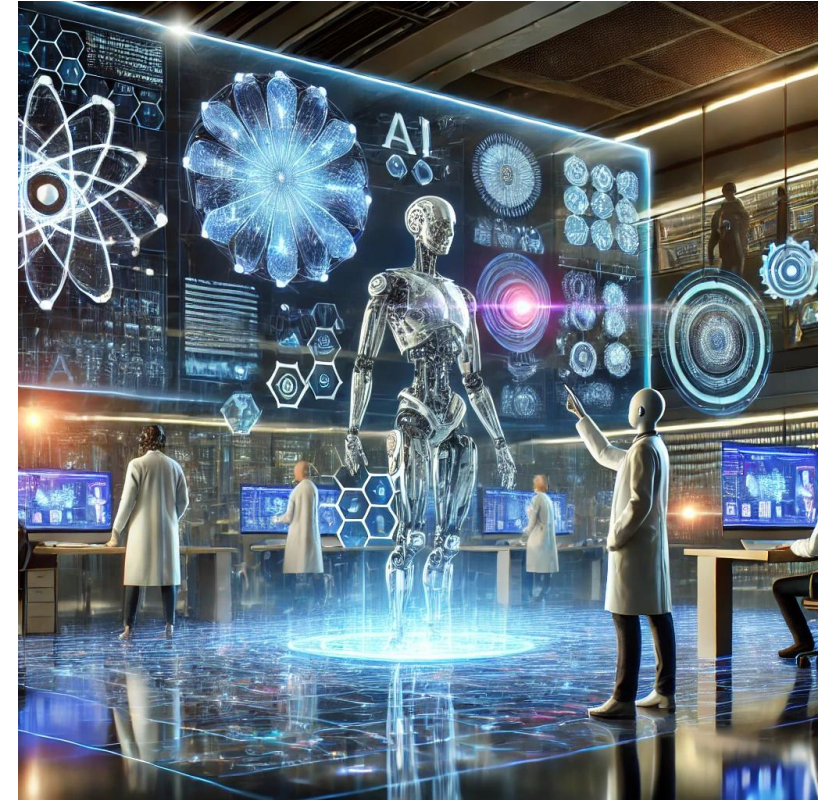


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*<https://www.consilium.europa.eu/en/press/press-releases/2025/05/12/council-takes-steps-towards-a-new-joint-european-degree-label/>

CURRENT STATUS IN THE INDIVIDUAL UNIVERSITIES

Survey launched in November

- Education: programs and courses offered
- Research: Research groups and main projects
- Dissemination and Outreach
- Third Mission

As an example, programs at University of Pisa

- ❑ Artificial Intelligence and Data Engineering
- ❑ Digital Humanities (informatica umanistica)
- ❑ Informatics for digital health
- ❑ Computer Science, curriculum AI
- ❑ Biotechnologies and Applied Artificial Intelligence for Health (funded by Digital Europe, double degree with Aix-Marseille Université (AMU) and probably with University of Stockholm)

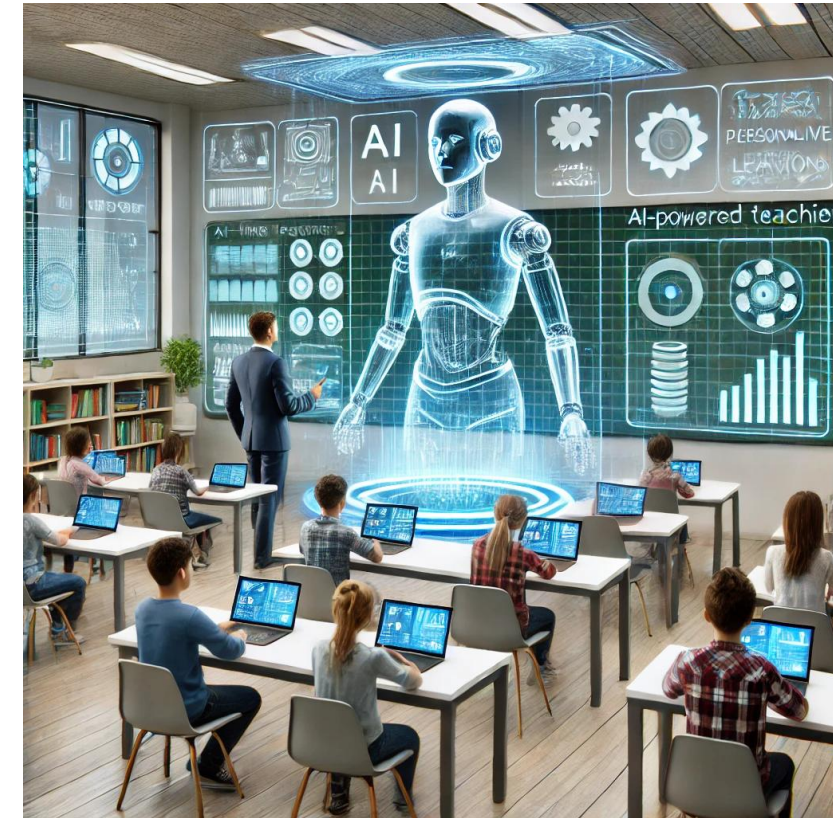


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ON-LINE SYMPOSIUM

- Title: **AI in Circle U.: Connecting Minds, Shaping the Future**
- Target group: University Staff, PhD Candidates, Master Students, Associations and Companies
- Date: **27-28 May**
- Registration deadline: 26/05/2025
- Format: Online
- Organizer: University of Belgrade



Image by ChatGPT

SUMMER SCHOOL

- Title: **Towards Human-Centered, Inclusive, and Equitable Artificial Intelligence**
- Dates: **15–19 September 2025**
- Location: Aula Pacinotti, School of Engineering, Largo Lucio Lazzarino 1
- Pisa, Italy
- ECTS: 3
- Speakers: researchers from the nine universities
 - **Currently, all the chairs have been engaged as lectures**
- Organization:
 - **Lectures and group works**
 - Final day: team project presentations (I ask to at least some of the speakers to evaluate the project)



Image by ChatGPT

SURVEY ON THE USE OF GEN-AI (MAY)

- CU.til and AI Knowledge Hub are launching a **survey for collecting experiences on the use of Generative AI tools in teaching and research**
- The survey is managed by Dr. Jelena Dzakula, Academic Chair at Circle U. Teaching Innovation Lab
- After collecting the data, we are planning to organize a workshop to present how Gen AI is used in teaching, pointing out possible challenges

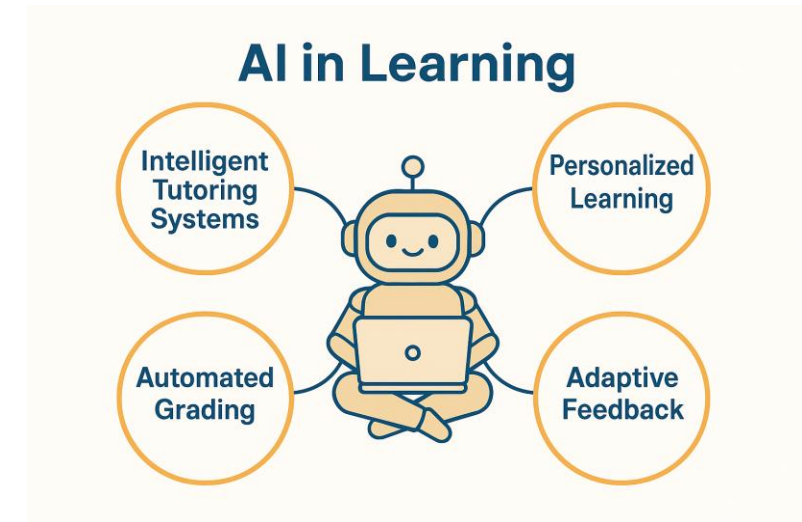


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JOINT MASTER THESIS (JUNE)

- **List of possible topics for joint Master Theses**
- Supervisors from at least two possible universities
- Issues
 - different number of ECTSs for theses in the single universities
 - funds for mobility

Title	Short Description	Proposing Supervisor - University	Co-supervisor - University	Planning and Time Management	Resources
Generative AI in ...	The thesis will focus on the application of ...	Francesco Marcelloni – University of Pisa	... – University of ...	3 months at the University of Pisa and 2 months at the University of ..	Data Center at the University of Pisa – Public datasets

PHD CONSORTIUM (JUNE)

- Promote co-tutelle PhD agreements
- Share PhD courses and initiatives
- Some universities offer courses for PhD students
- To create a catalogue with these courses
- Give the possibility to attend these course to students from the different universities
- Issues:
 - No courses in some PhD programs
 - No on-line courses

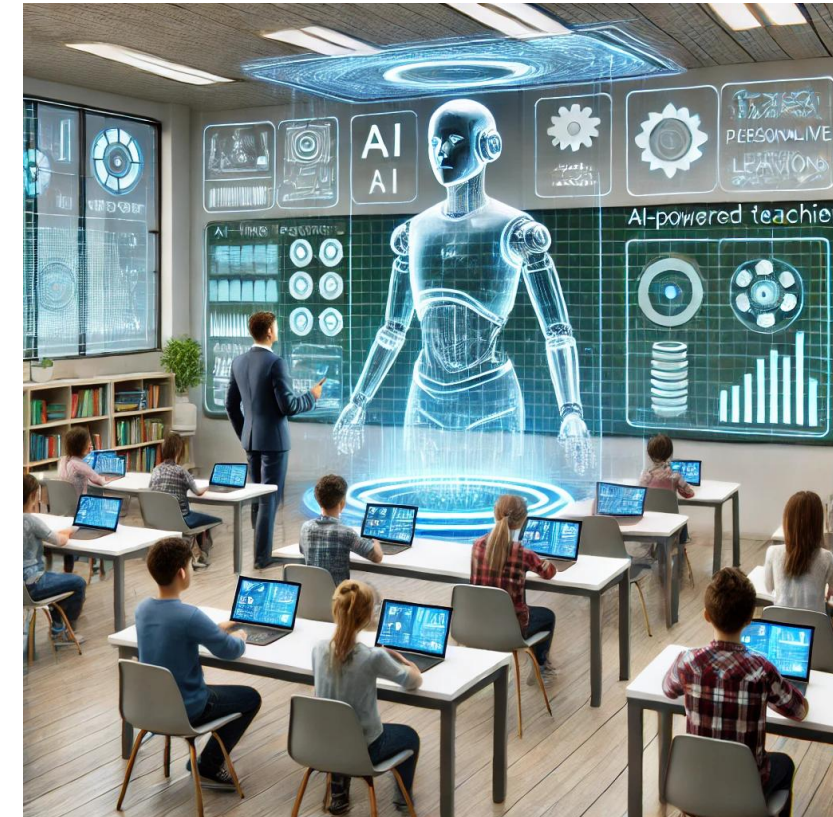


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FOCUS GROUPS (JUNE-JULY)

- AI is pervasive
- Different possible application domains
- Focus groups on:
 - AI in learning
 - AI in climate
 - AI in democracy
 -
- The focus groups will be in charge of the organization of thematic events.

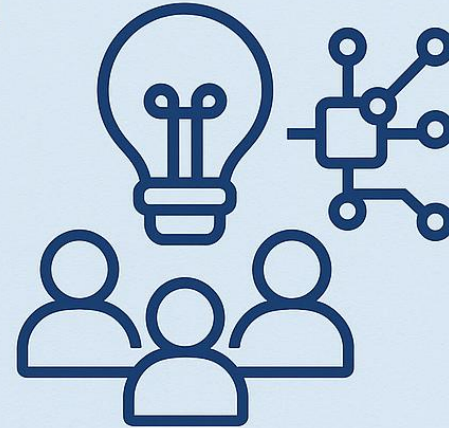


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THANKS AND INVITATION

THANK YOU FOR YOUR ATTENTION

Let's work together to advance
the Knowledge Hub on AI!





Circle U.
European University Alliance

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