

Artificial Intelligence and Sustainability

Ph.D. School in Computer Science and Engineering, University of Bologna
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Lecturer

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About the Course

The course will analyze the twofold nature of AI and sustainability. First, the main concept of AI for sustainability will be introduced. This refers to the use of AI for achieving the objectives defined by the Sustainable Development Goals (SDGs). The course will provide a first overview of these goals and the main challenges and risks of AI for sustainable development w.r.t. the three main pillars of sustainability: society, economy and environment. Then, the concept sustainable AI will be introduced. This refers to the sustainable development of AI systems, and how to align the life cycle of AI algorithms with the conservation of environmental resources, economic models, and social values.

During the course, case studies related to ongoing projects and practical sessions will be proposed (e.g., an explanation of tools for monitoring carbon emissions and the computing power of AI systems). The final exam will consist of a project (PhD research project or related ones would be better) to be analyzed and discussed in a sustainable perspective. The final report will be submitted for evaluation.

Organization

The course is organized as 3 lectures for 10 hours in total. The lectures will be given in English and held in person in the lecture rooms at viale Risorgimento 2, based on the following schedule:

- Lecture 1: 10/09/24 during 14:00-17:30 (5.5)
- Lecture 2: 12/09/24 during 10:00-13:30 (5.4)
- Lecture 3: 13/09/24 during 10:00-13:00 (5.2)

For PhD students who are during their abroad period: please notify me in advance (in the registration form) so that I can arrange a Teams connection for these specific cases.

Attendance

As this is meant to be an interactive course, 80% of attendance is obligatory for obtaining the attendance certificate and the optional assessment.

Optional Assessment

Students requiring an exam will be asked to put some advice into practice and prepare a report to be submitted after the course, in addition to their course attendance. This activity will be done both during the final part of the last lecture and after the course, according to the following dates:

- Initial preparation and interactive discussion: during the last lecture 13/09/2024
- Submission deadline: by 29/09/2024

For students that do not require an exam, the last lecture will be still useful to understand how to analyze an ongoing project from a sustainable perspective.

Enrolment

Please sign up for the course **by September 2** via the sheet at <https://forms.gle/KJyUDWJ2hSmbJLTD9>

Late enrolment requests will not be accepted.