AI AND SUSTAINABILITY

1. SYLLABUS INFORMATION

1.1. Course title
AI and sustainability

1.2. University
University of Bordeaux

1.3. Semester
3rd

2. COURSE DETAILS

2.1. Course nature
Compulsory

2.2. ECTS Credit allotment
3

2.3. Faculty data
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3. COMPETENCES AND LEARNING OUTCOMES

3.1. Course objectives
- Be able to present an AI solution designed to address environmental adaptation or mitigation

- Demonstrate a comprehensive understanding of a technological solution from data acquisition to deployment, including data types, AI algorithms, required hardware, and related components

- Be able to estimate or measure energy consumption of some hardware

- Be able to identify the assumptions and data required to assess carbon emissions and other impact indicators of an AI system for a given application

- Synthesize the available arguments of various stakeholders

3.2. Course contents

This class presents the controversy of AI regarding environment and ethics: how AI may benefit sustainable development and what its environmental and societal impacts are. First, the students learn about the life cycle of an AI service. A focus on energy consumption and global warming potential during training and inference is then done. Other environmental impacts are later discussed. In the second part, we go through the sustainability reports of a company. AI for good and AI for green applications are reviewed. Finally, in the last courses, a presentation of indirect effects, societal risks, and bias problems is given.

4. TEACHING-AND-LEARNING METHODOLOGIES AND STUDENT WORKLOAD

Activity	Hours
Lectures	12
Computer lab	12
Assessment activities	24

5. EVALUATION PROCEDURES AND WEIGHT OF COMPONENTS IN THE FINAL GRADE

5.1. Regular assessment

Reporting of the lab sessions
Tests
Final project: report and oral

5.2. List of evaluation activities

Evaluatory activity	%
Lab activities and tests	30
Project	70