UNIVERSITÀ DI PISA

LAW AND ETHICS OF AI

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Anno accademico	2023/24
CdS	INNOVATION LAW FOR BUSINESS AND INSTITUTIONS
Codice	569NN
CFU	9

Moduli	Settore/i	Tipo	Ore	Docente/i
LAW AND ETHICS OF AI	IUS/09	LEZIONI	72	ERNESTO BELISARIO ILARIO BELLONI DOMENICO LAFORENZA

Learning outcomes

Knowledge
The course aims to offer an in-depth study of the main ethical and legal issues involved in Artificial Intelligence.

Assessment criteria of knowledge
The assessment of knowledge will take place at the end of the course with a final exam, according to the methods indicated below.

Skills
At the end of the course the student will be able to critically analyze the main ethical and legal issues related to the uses of artificial intelligence.

Assessment criteria of skills
During the examination the student's ability to recognize and critically analyze the main ethical and legal issues related to the uses of artificial intelligence.
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Behaviors
The course aims to make students acquiring the aptitude to take position in a reasoned and coherent way on the issues addressed.

Assessment criteria of behaviors
During the exam interview, through specially designed questions, the student who will have proficiently followed the lessons will demonstrate his ability to approach the study of the themes addressed with a critical view and with full awareness of the ethical and political dimensions it underlies.

Prerequisites
The course requires knowledge of the basic concepts developed by legal science.

Teaching methods
Further learning methods and in-depth activities can be defined and agreed during the lessons.

Syllabus

A first part of this course is designed to provide students with the basic technical and methodological elements of AI and machine learning systems. Also depending on the composition of the class, typically populated by students from “non-STEM” background, the course will focus

on the introductory and easy-to-understand aspects of the topics, also through a series of simple case studies, using modern learning tools.
The topics that will be covered in the first part of the course are:

- Introduction to Artificial Intelligence: How to navigate this fascinating and complex multidisciplinary ecosystem.
- Machine Learning: How to teach “machines".
- Machine learning methods.
    - Supervised, Unsupervised, with Reinforcement.
- Creating simple Machine Learning models:
- Simple case studies: Linear Regression. Classification (K-MEANS).
- Deep Learning: operating principles of neural networks and their applications.
    - Case study: Neural network for handwritten character recognition.
- Outline of the main types of neural networks (Recurrent, Convolutional, Generative).
    - Case study: Image recognition (How to build an image classifier).
- Some application sectors of artificial intelligence (Banking; e-Commerce; Healthcare; Legal-Juridical; Security; etc.)

Optional part:

- *Jupyter Notebook*:
    - applicazione per la creazione e la condivisione di documenti; ambiente IPython: per usare il linguaggio di programmazione Python.
- Preparatory part:
    - Elements of mathematics.
    - Elements of Python programming

The second part of the course aims to explore the legal profiles of Artificial Intelligence (AI), analysing the legal and policy challenges that the adoption of AI poses in different application domains.
Students will be introduced to the basic principles of AI in order to contextualise the legal issues, with a specific focus on the main (European and international) regulatory provisions concerning AI systems, personal data protection, civil liability and human rights implications.
The topics that will be covered in the second part of the course will be as follows:

- Introduction to the legal regulation of AI: from ethical principles to norms
- The implications of AI for human rights
  Case study: social scoring
- AI governance and international relations
- European regulation of AI: the AI Act (principles, obligations, compliance and deadlines)
- GDPR and AI: the processing of personal data for AI
  Case studies: facial recognition, learning AI systems
- Civil liability and AI: the EU liability directive
  Case study: autonomous vehicle accidents
- Copyright and intellectual property in AI
  Case study: works of art and music created by AI
  Case study: New York Times vs. OpenAI
- Algorithmic decisions and bias: the reservoir of humanity

During this module, lectures will be alternated with case study discussions and analyses of current and proposed legislation to provide a practical and in-depth understanding of AI-related legal issues.

In the last part of the course, the theoretical-philosophical approach to the topic of intelligent machines will be given a more general overview and, specifically, some ethical questions and dilemmas related to the development of artificial intelligence will be investigated. Particular attention will be paid to the issue of trust and vulnerability in human-machine interaction. The lectures will aim to provide interested students with a critical key to analysing the legal regulation of artificial intelligence produced in response to these ethical dilemmas.

Bibliography

Slides and other documents (articles, laws, regulations, etc.) will be presented during the lessons. This material will be available by accessing the TEAMS virtual room enabled for each student taking the course.

Non-attending students info

In the virtual Teams classroom, teaching tools and materials will be provided for the use of non-attending students as well.

Assessment methods

The exam for verification of acquired knowledge takes place in oral form.

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