Course guide
270425 - AESIA - Ethical and Social Aspects of Artificial Intelligence

Last modified: 02/02/2024

Unit in charge: Barcelona School of Informatics
Teaching unit: 270 - FIB - Barcelona School of Informatics.

Degree: BACHELOR'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2021). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Spanish, English

LECTURER

Coordinating lecturer: CLAUDIO ULISES CORTÉS GARCÍA

Others: Segon quadrimestre:
CLAUDIO ULISES CORTÉS GARCÍA - 11, 12

PRIOR SKILLS

The course has no prerequisites, but solid Elements of AI and logic.
Reading Aristotle's Nicomachean ethics is recommended

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE15. To acquire, formalize and represent human knowledge in a computable form for solving problems through a computer system in any field of application, particularly those related to aspects of computing, perception and performance in intelligent environments or environments.
CE16. To design and evaluate human-machine interfaces that guarantee the accessibility and usability of computer systems, services and applications.
CE17. To develop and evaluate interactive systems and presentation of complex information and its application to solving human-computer and human-robot interaction design problems.

Generical:
CG5. Work in multidisciplinary teams and projects related to artificial intelligence and robotics, interacting fluently with engineers and professionals from other disciplines.
CG6. To identify opportunities for innovative applications of artificial intelligence and robotics in constantly evolving technological environments.
CG7. To interpret and apply current legislation, as well as specifications, regulations and standards in the field of artificial intelligence.
CG8. Perform an ethical exercise of the profession in all its facets, applying ethical criteria in the design of systems, algorithms, experiments, use of data, in accordance with the ethical systems recommended by national and international organizations, with special emphasis on security, robustness , privacy, transparency, traceability, prevention of bias (race, gender, religion, territory, etc.) and respect for human rights.
CG9. To face new challenges with a broad vision of the possibilities of a professional career in the field of Artificial Intelligence. Develop the activity applying quality criteria and continuous improvement, and act rigorously in professional development. Adapt to organizational or technological changes. Work in situations of lack of information and / or with time and / or resource restrictions.

Transversal:
CT2. Sustainability and Social Commitment. To know and understand the complexity of economic and social phenomena typical of the welfare society; Be able to relate well-being to globalization and sustainability; Achieve skills to use in a balanced and compatible way the technique, the technology, the economy and the sustainability.
CT4. Teamwork. Be able to work as a member of an interdisciplinary team, either as a member or conducting management tasks, with the aim of contributing to develop projects with pragmatism and a sense of responsibility, taking commitments taking into account available resources.
CT8. (ENG) Perspectiva de gènere. Conèixer i comprendre, des del propi àmbit de la titulació, les desigualtats per raó de sexe i gènere a la societat; Integrar les diferents necessitats i preferències per raó de sexe i de gènere en el disseny de solucions i resolució de problemes.

Basic:
CB1. That students have demonstrated to possess and understand knowledge in an area of ??study that starts from the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that imply Knowledge from the vanguard of their field of study.
CB3. That students have the ability to gather and interpret relevant data (usually within their area of ??study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

TEACHING METHODOLOGY

Actively engaging students. This can involve inviting students to surface their current ideas about ethics or engage in ethical decision-making activities before the lecturer presents the content to them for the first time.

The teacher selects texts to match the needs of the course.

We will use these methods to bring ELSEC thinking into the classroom, lectures, using case-studies, role-playing, and group discussions.

LEARNING OBJECTIVES OF THE SUBJECT

1.To explore the role of ethics in artificial intelligence practice and research
2.Be able to develop a set of ethical, legal, socioeconomic, cultural and gender criteria for the development of AI applications and evaluate each of the identified applications against these criteria.
4.To determine the AI technologies, tools, architectures, and algorithms that would be most suitable for the Industrial applications.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Hours small group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

Introduction. ethical principles

Description:
In this module, we will consider the laws, policies and ethical principles for regulating and managing the use of AI for the common good.

Applications of Artificial Intelligence for Health and other relevant domains:

Description:
In this module, we will explore AI's current and emerging applications in health care and other relevant domains. Their legislation and ethical aspects. In particular, we will address the responsible decision-making procedures.

Building an ELSEC approach to the use of AI

Description:
This module will discuss how measures other than law and policy can ensure that AI improves human well-being.

Applications of Artificial Intelligence

Description:
En aquest mòdul, explorarem les aplicacions actuals i emergents de la IA en diverses aplicacions de domini. Les sol·licituds seran la base per a un debat en profunditat i el material a avaluar

ACTIVITIES

Introduction. Ethical principles

Specific objectives:
1

Related competencies :
CG8. Perform an ethical exercise of the profession in all its facets, applying ethical criteria in the design of systems, algorithms, experiments, use of data, in accordance with the ethical systems recommended by national and international organizations, with special emphasis on security, robustness , privacy, transparency, traceability, prevention of bias (race, gender, religion, territory, etc.) and respect for human rights.
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CB3. That students have the ability to gather and interpret relevant data (usually within their area of ??study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

Full-or-part-time: 40h
Theory classes: 8h
Practical classes: 8h
Self study: 24h

Applications of artificial intelligence for healthcare

Specific objectives:
1, 4

Related competencies :
CG7. To interpret and apply current legislation, as well as specifications, regulations and standards in the field of artificial intelligence.
CG8. Perform an ethical exercise of the profession in all its facets, applying ethical criteria in the design of systems, algorithms, experiments, use of data, in accordance with the ethical systems recommended by national and international organizations, with special emphasis on security, robustness , privacy, transparency, traceability, prevention of bias (race, gender, religion, territory, etc.) and respect for human rights.
CG5. Work in multidisciplinary teams and projects related to artificial intelligence and robotics, interacting fluently with engineers and professionals from other disciplines.
CG6. To identify opportunities for innovative applications of artificial intelligence and robotics in constantly evolving technological environments.
CG9. To face new challenges with a broad vision of the possibilities of a professional career in the field of Artificial Intelligence. Develop the activity applying quality criteria and continuous improvement, and act rigorously in professional development. Adapt to organizational or technological changes. Work in situations of lack of information and / or with time and / or resource restrictions.
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Full-or-part-time: 10h
Theory classes: 2h
Practical classes: 2h
Self study: 6h

Building an ELSEC approach to the use of AI

Specific objectives:
1, 2, 4

Related competencies :
CG7. To interpret and apply current legislation, as well as specifications, regulations and standards in the field of artificial intelligence.
CG8. Perform an ethical exercise of the profession in all its facets, applying ethical criteria in the design of systems, algorithms, experiments, use of data, in accordance with the ethical systems recommended by national and international organizations, with special emphasis on security, robustness , privacy, transparency, traceability, prevention of bias (race, gender, religion, territory, etc.) and respect for human rights.
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CB3. That students have the ability to gather and interpret relevant data (usually within their area of ??study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

Full-or-part-time: 30h
Theory classes: 6h
Practical classes: 6h
Self study: 18h

Artificial Intelligence applications.

Specific objectives:
1, 2, 4

Related competencies :
CG7. To interpret and apply current legislation, as well as specifications, regulations and standards in the field of artificial intelligence.
CG8. Perform an ethical exercise of the profession in all its facets, applying ethical criteria in the design of systems, algorithms, experiments, use of data, in accordance with the ethical systems recommended by national and international organizations, with special emphasis on security, robustness , privacy, transparency, traceability, prevention of bias (race, gender, religion, territory, etc.) and respect for human rights.
CG5. Work in multidisciplinary teams and projects related to artificial intelligence and robotics, interacting fluently with engineers and professionals from other disciplines.
CG6. To identify opportunities for innovative applications of artificial intelligence and robotics in constantly evolving technological environments.
CG9. To face new challenges with a broad vision of the possibilities of a professional career in the field of Artificial Intelligence. Develop the activity applying quality criteria and continuous improvement, and act rigorously in professional development. Adapt to organizational or technological changes. Work in situations of lack of information and / or with time and / or resource restrictions.
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Full-or-part-time: 60h
Theory classes: 12h
Practical classes: 12h
Self study: 36h

Conclusions

Specific objectives:
2

Related competencies :
CE16. To design and evaluate human-machine interfaces that guarantee the accessibility and usability of computer systems, services and applications.
CE15. To acquire, formalize and represent human knowledge in a computable form for solving problems through a computer system in any field of application, particularly those related to aspects of computing, perception and performance in intelligent environments or environments.
CT8. (ENG) Perspectiva de gènere. Conèixer i comprendre, des del propi àmbit de la titulació, les desigualtats per raó de sexe i gènere a la societat; Integrar les diferents necessitats i preferències per raó de sexe i de gènere en el disseny de solucions i resolució de problemes.
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CB3. That students have the ability to gather and interpret relevant data (usually within their area of ??study) to make judgments that include a reflection on relevant social, scientific or ethical issues.

Full-or-part-time: 10h
Theory classes: 2h
Practical classes: 2h
Self study: 6h

GRADING SYSTEM

We will be asking all participants - through an evaluation questionnaire - how far they believed the seminar met the objectives.

Participants will be asked to provide papers evaluation each of the 7 seven relevant applications. There it will be a single note for 6 of the papers and another one for a paper selected by the student.

BIBLIOGRAPHY

Basic:
- Dignum, Virginia. Responsible artificial intelligence : how to develop and use AI in a responsible way. Springer, 2019. ISBN 9783030303716.
- Russell, Stuart J. Human compatible : artificial intelligence and the problem of control. ©2019. ISBN 9780525558613.
- Véliz, Carissa. Privacy is power : why and how you should take back control of your data. Melville House, [2021]. ISBN 9781612199153.
- Coeckelbergh, Mark. AI Ethics. ISBN 9780262538190.