UAB
Universitat Autònoma de Barcelona

Synthesis Project II

Code: 106594
ECTS Credits: 6

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Degree	Type	Year
2504392 Artificial Intelligence	OB	3

Contact

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

There are no official prerequisites, but this course can be seen as an extension of Synthesis Project I.

Objectives and Contextualisation

The objective of the subject is to develop a project in groups that requires applying the knowledge acquired in the rest of the subjects to the design and implementation of a solution to a real challenge of artificial intelligence application. For this, the different phases in the development of a project will be addressed, including the analysis of the challenge, the design and implementation of the solution, the analysis of the results and the conclusions. We will use techniques for project management and teamwork organization. The potential ethical, legal or social implications of the proposed solution will also be considered

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Act within the field of knowledge by evaluating the social, economic and environmental impact beforehand.
- Analyse and solve problems effectively, generating innovative and creative proposals to achieve objectives.
- Communicate effectively, both orally and in writing, adequately using the necessary communicative resources and adapting to the characteristics of the situation and the audience.
- Conceptualize and model alternatives of complex solutions to problems of application of artificial intelligence in different fields and create prototypes that demonstrate the validity of the proposed system.
- Identify, analyse and evaluate the ethical and social impact, the human and cultural context, and the legal implications of the development of artificial intelligence and data manipulation applications in different fields.
- Introduce changes to methods and processes in the field of knowledge in order to provide innovative responses to society's needs and demands.
- Know and apply the innovation, technology transfer and citizen participation processes in the field of artificial intelligence.

- Students can apply the knowledge to their own work or vocation in a professional manner and have the powers generally demonstrated by preparing and defending arguments and solving problems within their area of study.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Work cooperatively to achieve common objectives, assuming own responsibility and respecting the role of the different members of the team.
- Work independently, with responsibility and initiative, planning and managing time and available resources, and adapting to unforeseen situations.

Learning Outcomes

1. Adapt the design and development of an AI project to existing regulation.
2. Analyse and solve problems effectively, generating innovative and creative proposals to achieve objectives.
3. Analyse the sustainability indicators of academic and professional activities in the field by incorporating the social, economic and environmental factors at play.
4. Communicate effectively, both orally and in writing, adequately using the necessary communicative resources and adapting to the characteristics of the situation and the audience.
5. Critically analyse the principles, values and procedures that govern the practice of the profession.
6. Design a solution architecture that integrates the methods needed to address a complex AI problem.
7. Design and apply alternatives in order to minimise ethical risks in the development of an AI project.
8. Evaluate the difficulties, prejudices and discriminations that can be found in actions or projects, in a short or long term, in relation to certain people or groups.
9. Generate new frontier knowledge by carrying out scientific research.
10. Identify the most appropriate methods for solving a complex AI problem.
11. Identify the risks of developing an AI project from an ethical point of view.
12. Identify the social, economic and environmental implications of academic and professional activities for the field of knowledge.
13. Plan and follow up the stages needed to carry out an AI project.
14. Plan, conduct and analyse the experiments or tests necessary to evaluate an AI project.
15. Present the summary, results and conclusions of the progress of an AI project.
16. Propose evaluation methods for projects and actions to improve sustainability.
17. Propose projects and actions that conform to the principles of ethical responsibility and respect for fundamental rights and responsibilities, diversity and democratic values.
18. Propose viable projects and actions that enhance social, economic and environmental benefits.
19. Select the appropriate tools for implementing the solution to an AI problem.
20. Specify the needs and requirements of an AI project.
21. Students can apply the knowledge to their own work or vocation in a professional manner and have the powers generally demonstrated by preparing and defending arguments and solving problems within their area of study.
22. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
23. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
24. Understand scientific method and use it to generate new knowledge.
25. Weigh up the risks and opportunities of both your own and others' proposals for improvement.
26. Work cooperatively to achieve common objectives, assuming own responsibility and respecting the role of the different members of the team.
27. Work independently, with responsibility and initiative, planning and managing time and available resources, and adapting to unforeseen situations.

Content

There will be no theoretical contents. The course will mainly consist in the practical implementation of a project.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Follow-up sessions	25	1	1, 6, 7, 10, 11, 13, 14, 19, 20
Type: Autonomous			
Project development	111	4.44	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27

The course will be organized around the development of a practical project based on a real challenge. Students will work in small groups of 4-6 members in the design and development of a solution to one of the proposed challenges. Class sessions will be mainly devoted to follow-up and practical work on the development of the project.

Students will have to extend the work done in the class sessions with their own work at home in order to be able to complete the project. The main body of the work necessary for the development of the project will have to be done in an autonomous way, apart from class hours.

All the information of the subject and the related documents that the students need will be available at the virtual campus (cv.uab.cat).

Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires

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Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Follow-up of the project	20%	2	0.08	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27
Oral presentations	10%	2	0.08	4, 15, 23
Project report	15%	10	0.4	4, 15, 23

The project grade is calculated weighting the evidences collected in each of the following activities:

- Follow-up sessions (20%): there will be some class sessions to monitor and assess the progress of the work done by the students.

- Written report (15%): students will have to write a final report describing their solution and presenting and discussing the main results.

- Oral presentation (10%): students will have to make a final oral presentation presenting the work done during the course.

- Technical quality of the implemented solution (50%): this evidence will correspond to the assessment of the design, implementation and testing of the proposed solution.

- Class attendance (5%)

The minimum mark for all evidences is 4, except for the technical quality of the solution, for which is 5.

In some of these evidences (follow-up sessions and oral presentation) there will be a group grade, but also an individual grade depending on the contribution of each student.

In order to obtain the final grade of the subject, the project grade calculated according to the previous criteria will be weighted by a grade of the individual contribution of each student to the project.

Final grade = Individual assessment * Project grade

The individual assessment of each student will be obtained through a process of intra-group evaluation where each member of the group will assess the contribution of the other members of the group.

As the development of the project is a continuous process throughout the semester, there is no recovery option in case the final grade does not reach the minimum of 5

Bibliography

There is no specific bibliography

Software

It will depend on the project

Language list

Information on the teaching languages can be checked on the CONTENTS section of the guide.