Course guides
270733 - IDAAB - Intelligent Data Analysis Applications in Business

Last modified: 12/07/2021

Unit in charge:	Barcelona School of Informatics
Teaching unit:	1004 - UB - (ENG)Universitat de Barcelona.

Degree: MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Optional subject).

Academic year: 2021 **ECTS Credits:** 2.0 **Languages:** English

LECTURER

Coordinating lecturer:

Others:

PRIOR SKILLS

Interest in business and financial applications from the perspective of AI.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEA7. Capability to understand the problems, and the solutions to problems in the professional practice of Artificial Intelligence application in business and industry environment.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
CEP5. Capability to design new tools and new techniques of Artificial Intelligence in professional practice.

Generical:
CG3. Capacity for modeling, calculation, simulation, development and implementation in technology and company engineering centers, particularly in research, development and innovation in all areas related to Artificial Intelligence.

Transversal:
CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

CT7. ANALISIS Y SINTESIS: Capability to analyze and solve complex technical problems.

TEACHING METHODOLOGY

During this seminar, different methodologies will be followed. In a master class, basic theoretical concepts will be explained. A guided lab session will be used for putting those concepts in practice. Finally, a set of real case studies in business will be presented.

LEARNING OBJECTIVES OF THE SUBJECT

1.Understand the general behaviour of the recommender systems
2.Understanding how recommender systems work to address the big amout of existing data.
3.Understanding the potential applications of recommender systems in the industry
4.Understanding the potential applications of AI in the business environment

CONTENTS

Recommender Systems for industrial applications.

Description:
We will give an overview of different kinds of recommenders systems, uses and evaluation.

Collaborative Filtering: we will explain how Collaborative Filtering works, and how we can use other users' information for making recommendations.

Coding a recommender system: we will explain how recommender systems can be easily implemented and validated in Python.

Real experiences of AI applications in the industry

Description:
Different companies will be invited to explain their applications in the field of AI

ACTIVITIES

Notebook solution

Description:
Students will solve a (set of) notebook(s) proposed at the lab session

Specific objectives:
1, 2

Related competencies :
CEA7. Capability to understand the problems, and the solutions to problems in the professional practice of Artificial Intelligence application in business and industry environment.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
CT7. ANALISIS Y SINTESIS: Capability to analyze and solve complex technical problems.
CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

Full-or-part-time: 13h
Guided activities: 3h
Self study: 10h

Report on a potentially novel use of AI technologies

Specific objectives:
2, 3

Related competencies :
CG3. Capacity for modeling, calculation, simulation, development and implementation in technology and company engineering centers, particularly in research, development and innovation in all areas related to Artificial Intelligence.
CEA7. Capability to understand the problems, and the solutions to problems in the professional practice of Artificial Intelligence application in business and industry environment.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.

Full-or-part-time: 12h
Self study: 12h

Synthesis company presentations

Description:
Perform a synthesis of the contributions by the companies

Specific objectives:
4

Related competencies :
CEP5. Capability to design new tools and new techniques of Artificial Intelligence in professional practice.

Full-or-part-time: 10h
Self study: 10h

Introduction to recommender systems

Description:
The student will work on the insight about recommender systems.

Specific objectives:
1, 2

Related competencies :
CEA7. Capability to understand the problems, and the solutions to problems in the professional practice of Artificial Intelligence application in business and industry environment.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
CT7. ANALISIS Y SINTESIS: Capability to analyze and solve complex technical problems.
CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

Full-or-part-time: 5h
Theory classes: 4h
Laboratory classes: 1h

Real experiences of AI applications in the industry

Description:
The student will observe business practice

Specific objectives:
4

Related competencies :
CEP5. Capability to design new tools and new techniques of Artificial Intelligence in professional practice.

Full-or-part-time: 10h
Practical classes: 10h

GRADING SYSTEM

The evaluation of the seminar has three parts: Firstly, a report on a potentially novel use of artificial intelligence technologies (30%); secondly, a practical notebook (30%); and, finally, a summary of the AI technologies presented by the companies (40%).

BIBLIOGRAPHY

Basic:
- Hastie, T.; Tibshirani, R.; Friedman, J. The elements of statistical learning: data mining, inference, and prediction. 2nd ed. Springer, 2009. ISBN 9780387848570.
- Cherkassky, V.M.; Mulier, F. Learning from data: concepts, theory, and methods. 2nd ed. John Wiley, 2007. ISBN 0471681822.
- Torra Porras, S.; Monte, E. Modelos neuronales aplicados en economía: casos prácticos mediante Mathematica/Neural Networks. Addlink Media, 2013. ISBN 9788461654970.
- Ricci, F.; Rokach, L.; Shapira, B. (eds.). Recommender systems handbook. 2nd ed. Springer, 2015. ISBN 9781489976376.