270737 - PPAI - Professional Practice in Artificial Intelligence

Coordinating unit: 270 - FIB - Barcelona School of Informatics
Teaching unit: 723 - CS - Department of Computer Science
Academic year: 2019
Degree: MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2012). (Teaching unit Optional)
MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Teaching unit Optional)
ECTS credits: 3

Prior skills

We require the student to be knowledgeable on:

* Processes for developing large and complex software systems
* Roles and technologies to help you control such projects
* Research-level issues in areas such as software engineering, information systems, simulation modelling, digital media and games, network computing and artificial intelligence.

Degree competences to which the subject contributes

Specific:
- CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
- CEP4. Capability to design, write and report about computer science projects in the specific area of Artificial Intelligence.
- CEP5. Capability to design new tools and new techniques of Artificial Intelligence in professional practice.
- CEP7. Capability to respect the legal rules and deontology in professional practice.
- CEP8. Capability to respect the surrounding environment and design and develop sustainable intelligent systems.

Generic:
- CG1. Capability to plan, design and implement products, processes, services and facilities in all areas of Artificial Intelligence.

Transversal:
- CT1. ENTREPRENEURSHIP AND INNOVATION: Capability to know and understand a business organization and the science that defines its activity; capability to understand the labor rules and the relations between planning, industrial and commercial strategies, quality and profit.
- CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
- CT6. REASONING: Capability to evaluate and analyze on a reasoned and critical way about situations, projects, proposals, reports and scientific-technical surveys. Capability to argue the reasons that explain or justify such situations, proposals, etc.

Teaching methodology

There it will be invited speakers from the industry --at least 4-- and up to 7 case studies of Artificial Intelligence Industrial applications. The format will be a seminar with direct participation and reporting tasks.

Learning objectives of the subject
1. To determine the AI technologies, tools, architectures, and algorithms that would be most suitable for the Industrial applications.
2. To be able to develop a set of criteria for AI applications development, and evaluate each of the identified applications in terms of this criteria.
3. To make short- and long-term ethical recommendations for the industrial AI applications development and work in a multidisciplinary team.

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 10h 13.33%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>10h 13.33%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>5h 6.67%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>2h 2.67%</td>
</tr>
<tr>
<td>Self study:</td>
<td>48h 64.00%</td>
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Content

**Industrial Applications of Artificial Intelligence**

**Degree competences to which the content contributes:**

**Description:**

This part of seminar is a compendium of Artificial Intelligence applications naturally taking full advantage of the research potential of professors at Universitat de Barcelona, Universitat Politècnica de Catalunya and Universitat Rovira i Virgili and the experience of their members in numerous R&D projects undertaken in recent years.

**Face to face with the Artificial Intelligence Industrial Applications**

**Degree competences to which the content contributes:**

**Description:**

AI is being used extensively in the business world. Its applications cross a wide spectrum. For example, AI is being applied in management and administration, science, engineering, manufacturing, financial and legal areas, military and space endeavors, medicine, and diagnostics.

Senior managers in many companies use AI-based strategic planning systems to assist in functions like competitive analysis, technology deployment, and resource allocation. They also use programs to assist in equipment configuration design, product distribution, regulatory-compliance advisement, and personnel assessment. AI is contributing heavily to management's organization, planning, and controlling operations, and will continue to do so with more frequency as programs are refined. AI is also influential in science and engineering.

In this part of the seminar students will be face to face with successful industrials that have been using AI techniques in their businesses.

**Introduction**

**Degree competences to which the content contributes:**

**Description:**

Methodological issues and discussion about the general calendar.
# Planning of activities

## Conferences with CEO's from AI industries

| Description: | A cycle of conferences with CEOs will be organized so students get to know successful industrial histories that used Artificial Intelligence as their basis for success. |
| Specific objectives: | 1, 2, 3 |

### Hours:
- Theory classes: 6h
- Practical classes: 0h
- Laboratory classes: 0h
- Guided activities: 0h
- Self study: 16h

## Examples of Industrial Applications of Artificial Intelligence from R&D

| Description: | The Artificial Intelligence applications developed for science and engineering are used to organize and manipulate the ever-increasing amounts of information available to scientists and engineers. The Artificial Intelligence is used in complex processes and it is the increased use of robotics in business. In this part of the seminar we will study edge applications of Artificial Intelligence born as R&D results. Most of the examples will come from European Union funded research. |
| Specific objectives: | 1, 2, 3 |

### Hours:
- Theory classes: 15h
- Practical classes: 0h
- Laboratory classes: 0h
- Guided activities: 0h
- Self study: 44h

## Introduction

| Description: | The student will learn the objectives of this seminar. He will receive the materials and learn the calendar of activities. |

### Hours:
- Theory classes: 1h 30m
- Practical classes: 0h
- Laboratory classes: 0h
- Guided activities: 0h
- Self study: 0h
Qualification 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:


Complementary: