270739 - AIHC - Artificial Intelligence in Health Care

Coordinating unit: 270 - FIB - Barcelona School of Informatics
Teaching unit: 1042 - URV - Universitat Rovira i Virgili
Academic year: 2019
Degree: MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE (Syllabus 2017). (Teaching unit Optional)
ECTS credits: 3

Prior skills

Basic concepts of AI.

Degree competences to which the subject contributes

Basic:
CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.
CB8. Capability to communicate their conclusions, and the knowledge and rationale underpinning these, to both skilled and unskilled public in a clear and unambiguous way.
CB9. Possession of the learning skills that enable the students to continue studying in a way that will be mainly self-directed or autonomous.

Specific:
CEA8. Capability to research in new techniques, methodologies, architectures, services or systems in the area of ??Artificial Intelligence.
CEP3. Capacity for applying Artificial Intelligence techniques in technological and industrial environments to improve quality and productivity.
CEP6. Capability to assimilate and integrate the changing economic, social and technological environment to the objectives and procedures of informatic work in intelligent systems.

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

Transversal:
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

The entire course will be worked in groups. A topic of AI applied to health care will be presented to all the groups, an article and a list of questions related to the topic presented will be released. Each group will have two weeks to prepare an oral presentation of 15 minutes which will outline the important issues of the article and his response to the questions. After the presentation of all groups, there will be an open discussion among all groups about topic. This methodology will be repeated five times throughout the course, each with a different topic of IA applied to medicine.

Learning objectives of the subject

1. Capacity to read, understand, and relate the information contained in scientific & technological documents
2. Train the synthesis, preparation, exposition, and defense of scientific topics in public
3. Ability to connect and complement own ideas with other's and also with AI technologies explained in other courses
## Content

### Artificial intelligence in health care

**Degree competences to which the content contributes:**
**Description:**
A review of the state of AI in health care will be analyzed

### Grand challenges in clinical decision support

**Degree competences to which the content contributes:**
**Description:**
A review of the pending research and development CDS open problems will be analyzed

### Data mining in health care

**Degree competences to which the content contributes:**
**Description:**
A review of important AI data mining technologies and their application to medicine will be analyzed

### Big data analytics in health care

**Degree competences to which the content contributes:**
**Description:**
A description of BDA and its application to health care will be analyzed

### IBM Watson

**Degree competences to which the content contributes:**
**Description:**
The use of IBM Watson and technology underneath when applied to health care will be analyzed

### Conclusions to AI in health care

**Degree competences to which the content contributes:**
**Description:**
Summary of important issues of AI in health care
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## Planning of activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Description</th>
<th>Specific objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction of the course</strong></td>
<td>1h 30m</td>
<td>The professor will expose the relevant issues related to the subject: Content; Material; Calendar; Evaluation; Bibliography</td>
<td></td>
</tr>
<tr>
<td><strong>Preparation of 5 topics by the students</strong></td>
<td>21h</td>
<td>The five topics of the subject are prepared by the students in groups, every other week.</td>
<td>1</td>
</tr>
<tr>
<td><strong>Conclusions I by the professor</strong></td>
<td>7h 30m</td>
<td>The conclusions of the course are exposed.</td>
<td>3</td>
</tr>
<tr>
<td><strong>Presentation of Conclusions II by the professor</strong></td>
<td>7h 30m</td>
<td>The conclusions of the course are exposed.</td>
<td></td>
</tr>
</tbody>
</table>
Specific objectives:

3

Qualification system

Presentations (60%): adjustment to time; clarity of presentation (oral); clarity of presentation (slides); addressed all the relevant issues in the questions; amenity will be the main issues considered for the evaluation of the presentations.

Participation in discussions of other's presentations (40%)

Bibliography

Basic:


