



Universitat de Lleida

DEGREE CURRICULUM

APRENENTATGE I

RAONAMENT AUTOMÀTIC

Academic year 2013-14

Subject's general information

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| Subject name | APRENENTATGE I RAONAMENT AUTOMÀTIC |
| Code | 102040 |
| Semester | 2n Q Avaluació Continuada |
| Typology | Obligatòria |
| ECTS credits | 6 |
| Groups | 1 |
| Theoretical credits | 0 |
| Practical credits | 0 |
| Department | Informàtica i Enginyeria Industrial |
| Important information on data processing | Consult this link for more information. |
| Language | Castellano, pero todos los materiales en inglés |
| Distribution of credits | Ramon Bejar Torres 5 |
| Office and hour of attention | A concretar con el profesor |

Ramón Béjar Torres

Learning objectives

Not specified

Competences

University of Lleida strategic competences

- Master Information and Communication Technologies.
- Master a foreign language.

Degree-specific competences

- Know and develop computational learning techniques, and design and deploy applications and systems which use them, including those dedicated to the automatic extraction of information and knowledge from large volumes of data.
- Ability to acquire, obtain, formalise and represent human knowledge in a computable way for the resolution of problems through a computer system in any field, and particularly in those related to computer issues, perception and performance in intelligent surroundings or environments.

Subject contents

In this course, starting from basic knowledge of IA presented in the first semester, we will present different ways of representing knowledge and reasoning processes carried out on this knowledge as well as machine learning.

Knowledge representation, and obtaining answers to questions through automated reasoning, allows us to create systems for solving various problems such as resolving conflicts in resource allocations in business environments or intelligent systems for searching on web systems, where a question as "give me websites where they talk about mammals," can get back as response pages where they talk about whales, even if these pages do not mention explicitly the relationship between mammals and whales.

Finally, we reinforce the basic knowledge on learning initiated also on the first semester, covering both learning systems widely used in real applications of artificial intelligence: Bayesian networks learning and clustering algorithms. Both of them are widely used in systems such as automatic recommenders for online shopping sites such as Amazon that can be used to Recommend buying a book based on a profile that is learned for each user, or spam filters for email tools like Thunderbird mail, where the decision to classify emails as spam depends on a model that is refined according to the experience of previously obtained spam.

The syllabus of the course will be the next one:

1. Knowledge Representation and Reasoning with First Order Logic
2. Integration of knowledge representation formalisms and efficient reasoning
3. Representation of Ontologies with Description Logics
4. Probabilistic models for knowledge representation and inference under incomplete information
5. Model learning from incomplete information: Bayesian networks and clustering

