URV seminar for the Master on Artificial Intelligence

Organizers:
  Dr. Aida Valls Mateu
  Research group ITAKA (Intelligent Tools for Advanced Knowledge Acquisition)

Topic of the seminar:

Intelligence for Decision Aiding

The research on developing intelligent decision support systems has a long tradition within the AI field. However, this topic has also been addressed from other disciplines such as economics, operational research or social choice.

In the AI field we can find different approaches, such as expert systems (rule-based), recommender systems (content-based or collaborative-based) or even case-based reasoning.

In this seminar we want to propose to narrow the area to focus on a type of problems denoted as MCDA, which stands for Multiple Criteria Decision Aiding. MCDA is focused on providing solutions to decision problems where many criteria and preferences must be taken into consideration at the same time. Many important technical aspects of MCDA are linked to classic works in Economics, in particular, welfare economics, utility theory and voting-oriented social choice theory. On one hand, aggregation mechanisms for obtaining a collective opinion from the opinions of a set of individuals are studied. On the other hand, techniques for devising comprehensive preferences from a set of conflicting criteria fall also into this field.

The need of using Artificial Intelligence methods integrated into classical MCDA techniques has been recognized in several recent papers. Some examples are the use of machine learning techniques to learn preferences, the management of uncertainty in the data by means of fuzzy sets, the development of methods able to deal with linguistic information, etc.

This seminar will be done simultaneously with the 75th meeting of the European Working Group on MCDA (12th-14th April 2012). In this way, the students will be able to participate in some activities of this meeting. In addition, we will have the opportunity of having invited lectures from two key researchers on the field of AI and MCDA:

- Dr. José Luis García Lapresta from the University of Valladolid (Spain)
- Dr. Patrick Meyer from TELECOM Bretagne (Brest, France)

Dates: April 10th to 13th 2012
Note that April 9th (Monday) is bank holiday

Preliminary Schedule

	Tuesday 10/04/2012	Wednesday 11/04/2012	Thursday 12/04/2012	Friday 13/04/2012
Morning			10:30-13:30 Participation in EWG-MCDA75	
Afternoon	15:00-19:30 Introductory lecture to MCDA and the use of AI techniques for decision making	15:00-19:30 Lecture on Social Choice and Linguistic tools in decision making	14:30-18:30 Participation in EWG-MCDA75	14:30-18:30 Lecture about the Decision Deck project

Evaluation guideline

The qualification of the students will be obtained with an individual work.
Students will be required to use the software available at the Decision Deck project to solve a case study. Each student will have to deliver a document explaining the problem definition, the parameters considered, as well as the details of the method used to find out the best alternatives. The deadline to deliver this exercise (by email) will be May 4th 2012.

The students must attend the lectures indicated in the schedule. If a student cannot attend the activities, he/she will be asked to make a report of a selection of papers that cover the contents explained in class. This report is mandatory for those people not attending regularly to the lessons (less than 60%).

Contact

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