Spring 2012

CS 790-03: Knowledge Representation: Advanced Topics

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Knowledge Representation: Advanced Topics
CS 790
Wright State University
Spring 2012

Brief Description:
We cover advanced topics in knowledge representation and reasoning (KRR), with a focus on issues which are important for the Semantic Web. In particular, we cover a wide range of traditional KRR techniques and how they impact state-of-the-art research related to the Semantic Web. Guided by the instructor, each student will prepare and deliver a substantial presentation covering both the fundamentals of a KRR approach, and one or more recent and prominent research results related to it. Emphasis is put on controversial discussion in class of the value of state-of-the-art research for future developments of the field.

Student Learning Outcomes:
Students acquire in-depth knowledge of mainstream topics in knowledge representation and reasoning, and how they impact state-of-the-art research in knowledge representation for the Semantic Web. They learn to assess original literature, and how to search for and understand original research papers. They also acquire presentation and discussion skills as required in scientific settings.

Instructor:
Dr. Pascal Hitzler, 389 Joshi. 
pascal@pascal-hitzler.de, http://www.knoesis.org/pascal
Office hours: Wednesdays 5:00pm to 6:00pm and by appointment.
Please use email as main means of communication with me outside class.

Class Hours:
Wednesdays 10:30am to 2pm, Russ 346.

Course Materials:
Original research papers, provided by the instructor.

Method of Instruction:
Student presentations of original research papers, and discussion of the covered topics.

Evaluation:
Quality of student presentations (65%) and participation in discussions in class (35%).

Course Outline:
Week 1 Introduction
Week 2 Logic Programming and Resolution
Week 3 Open versus closed-world reasoning
Week 4 RDF and lightweight OWL (RL) reasoning
Week 5 Tableaux reasoning algorithms
Week 6 Dealing with uncertainty
Week 7 Dealing with inconsistencies
Week 8 OWL-based database access
Week 9 Querying OWL
Week 10 Contextualized knowledge