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College of Engineering & Computer Science

Winter 2010

CS 790-01: Knowledge Representation for the Semantic Web

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CS 790 – Syllabus
Knowledge Representation for the Semantic Web
Department of Computer Science and Engineering
Wright State University
Winter 2010

Brief Description

Semantic Web is a maturing field of technology that continues to be the emphasis of much focused research and industrial investigation. The central idea behind Semantic Web is to enhance data on the World Wide Web by so-called *metadata*, which describes the meaning (semantics) of the data and thus makes it available for processing in intelligent systems. In this course we cover in depth the standardized knowledge representation languages for expressing metadata, called *ontology languages*. We will in particular cover the Resource Description Framework RDF and the Web Ontology Language OWL, both of which are recommended standards by the World Wide Web Consortium W3C.

Goals

- In-depth knowledge of the standard ontology languages RDF and OWL.
- Working knowledge in ontology modeling.
- Overview knowledge on software tools for ontology languages.
- First exposure to current research in ontology languages.

Instructor

Dr. Pascal Hitzler, 389 Joshi

pascal@pascal-hitzler.de, <http://www.knoesis.org/pascal/>

Office hours: By appointment. I will also be available after class.

Please use email as main means of communication with me (besides talking with me in or after class).

Class Hours

TBD

Textbook

Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, *Foundations of Semantic Web Technologies*.

Chapman & Hall/CRC, 2009. ISBN: 9781420090505. <http://www.semantic-web-book.org/>

Prerequisites

There are no hard prerequisites for this class. Any knowledge about XML and about predicate logic will be helpful, but is not required. Necessary preliminaries will be covered in class.

Contents

Introduction, XML, Resource Description Framework RDF and RDF Schema (syntax, semantics, proof theory), Web Ontology Language OWL (syntax, semantics, proof theory), Ontology modeling, Selected ongoing research topics

Grading

Homework 10%, Class Presentation 30%, Project 30%, Final Exam 30%

- Homework: Students will take turns in presenting completed homework in class, and grading will be done by evaluating the participation in the tutorial sessions. (Grading dimensions: correctness, preparedness, understanding of the material, clarity of presentation, frequency of participation.)
- Class Presentations: The class presentations will be assigned in the first week. Options are presentation of prominent ontology software tools or of original research papers. (Grading dimensions: correctness, preparedness, understanding of the material, clarity of presentation.)
- Project: The project will be an ontology modeling project which will have several parts and run over the whole quarter. Students are expected to write an experience report on each part. (Grading dimensions: adequacy of modeling, clarity and depth of experience report.)
- Final Exam: The final exam will be oral, i.e. in the form of a short interview (20 minutes), with the examiner asking questions and the student answering. (Grading dimension: understanding of the course contents.)

Final Grades: A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: 0-59. These may be adjusted in favor of the students.