CSCI 8110 Advanced Topics in Artificial Intelligence: Knowledge Representation and Reasoning; Natural Language Understanding
Spring 2013

Time: MW 5:30 - 6:45 PM
Room: PKI 274
Website: http://faculty.ist.unomaha.edu/ylierler/teaching/

Instructor: Yuliya Lierler, PKI 280D, ylierler@unomaha.edu
Office Hours: Tue 2:00-3:00 PM and by appointment; PKI 280D

Course Outline:
1. Introduction to Knowledge representation and reasoning (KR)
2. Declarative Programming
3. First Order Logic+
4. Answer Set Programming
5. Constraint Logic Programming
6. Introduction to Natural Language Processing (NLP) tasks: syntax, semantics, and pragmatics
7. Introduction to NLP applications: information extraction, question answering, recognizing textual entailment, and machine translation
8. Syntactic Parsing
9. Lexical Semantics
10. Semantic representation and logic forms; Principle of compositionality

Presentation and one page report: Each student will be assigned a topic (for example, Zink Languages and MiniZink Challenge; knowledge bases FrameNet/VerbNet) for a class-long presentation that will take place in class. One week before the presentation a written one page report is due that will provide a summary on the topics to be covered in the presentation. Not submitting this report on time may result in lowering of a grade [-.25 grade].

For example,

- What is FrameNet...
- How was it created
- What technology/ideas/theory is behind FrameNet...
- How can it be used or how is it used
- Online and literature pointers

UNO Speech Center requirement: In this assignment you will need to use effective public speaking skills. The presentation must include an effective introduction, solid body with main points and supporting materials, and a fitting conclusion. You may/should use slides/handouts to assist you in the presentation.

Students are required to visit the Speech Consulting Room in UNO Speech Center (http://www.unomaha.edu/speechcenter/) at least once to help plan/deliver an effective presentation (prior to the presentation). Not visiting a Speech Center at least once may result in lowering of a grade [-.25 grade].
Make an appointment by calling the Speech Consulting Room at 554-3201 or stopping by Arts & Sciences Hall 185. Appointments must be reserved at least 48 hours in advance of scheduled consultation date. You are encouraged to schedule appointments at least one week prior to your presentation date.

When you come to the Speech Consulting Room for your first appointment you need to bring at least a rough draft outline and materials you would like to use during the meeting. For the second appointment you will need to bring any visual aids you will be using during the presentation and be prepared to give your presentation in its entirety.

**Course Assignments:** There will be a set of individual and group assignments announced in class and posted online. For group assignments: any group dynamic issues should be resolved within a group; please be thoughtful of your group members. The first set of assignments will be driven by the *Forth Answer Set Programming Competition - 2013*. Later in the semester, assignments will be targeting tasks required to address SemEval-2012 Task – Choice of Plausible Alternatives (COPA).

**Course Infrastructure:** There is a Linux lab PKI 278 that you are welcome to use. The names of some machines you may login remotely to:

- linux-lab-1.ist.unomaha.edu
- linux-lab-2.ist.unomaha.edu
- linux-lab-3.ist.unomaha.edu
- linux-lab-4.ist.unomaha.edu

Your blackboard credentials should work for accessing these machines. Otherwise, please email your NetID to Zack Buhman zbuhman@pki.nebraska.edu.

Assignments and reports will be due via your Linux accounts.

Information about Arch Linux is available at [https://wiki.archlinux.org](https://wiki.archlinux.org).

Tutorials about Linux commands and editing files is available at [http://www.linux.org/tutorial](http://www.linux.org/tutorial).

Third party software that you will be required to use in class will be made available on the Linux lab machines.

**Course Objectives:** Introduce students to the developments and research issues in KR and NLP. Also, seminar nature of a course provides a great setting for introducing students to the world of academic research in a broad sense.

**Attendance Policy:** Attendance is required. It is a unique and crucial experience that cannot be replaced by looking up course material online. Missing more than two classes during the semester may result in lowering of a grade [3 classes missed = -.25 grade; 4 classes missed = -.5 grade; 6 classes missed = -1 grade].

If you miss class, please take responsibility to find out what you have missed, including assignments.

**Final Grade:**

45% Presentation  
55% Assignments  
Attendance (see Attendance Policy)

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*https://www.mat.unical.it/aspcmp2013  
†http://www.ict.usc.edu/~gordon/copa.html*