



CS886 Advanced Topics in
Artificial Intelligence
AI for Healthcare Applications
Prof. Robin Cohen

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School of Computer Science

Fall 2010
Fridays 9am-11:30am MC2036

([PDF](#) of course handout)

Course Outline

In this course, we will provide students with an overview of various research currently being conducted by artificial intelligence researchers, for healthcare applications. We will focus on six distinct subfields of AI, as follows: i) natural language processing ii) computer vision iii) reasoning under uncertainty iv) intelligent tutoring v) user modeling vi) multiagent systems. We will begin the course with an introduction to artificial intelligence, followed by a one-hour lecture in each case to introduce the class to the topic areas above, in the context of current research for healthcare applications. This will be followed by paper presentations from students to deepen our appreciation for current research in the field. Following this, the class will work together in groups on a specific project of relevance to the hSITE healthcare initiative, leading to a class where the group projects are discussed in depth. At the end of the term, students each complete an individual research project on a topic of their choice (relevant to the course), involving analysis of existing work and creation of an original proposal; each student will also present an overview of the project in class. Background in artificial intelligence is desirable but not mandatory; the introductory lectures will help to provide an overview of the field to the class.

**** Schedule ****

Fridays 9am-11:30am

On days when we have individual student presentations, we will begin at 9am.
On all other days, we will begin at 9:30am instead.

Sep 17 Introduction to Course; Introduction to AI
Sep 24 Natural Language Generation (Chrysanne Di Marco); Computer Vision (Jeff Orchard)
Oct 1 Reasoning Under Uncertainty (Pascal Poupart); Intelligent Tutoring (John Champaign)
Oct 8 User Modeling, Multiagent Systems; Paper Presentations Sorted
Oct 15 Project presentations (7)
Oct 22 Project presentations (7)
Oct 29 Project presentations (6), Overview of Group Project
Nov 5 Presentation by Diane Doran (hSITE); Time for Groups
Nov 12 Guest speaker (TBA)
Nov 19 Group presentations
Nov 26 Project presentations (10)
Dec 3 Project presentations (10)

Note: (Numbers in parenthesis indicate maximum number of presentations each day -- maximum class size is 20)

Workload (tentative)

Paper presentation and handout (25): 15 plus 10 = 25

Group presentation and project (20): 5 plus 15 = 20

Individual Project Presentation (10)

Individual Project (45)

Due Dates and Details

Paper presentations -- Oct 15, Oct 22, Oct 29

(chosen from a list compiled by the instructor, papers spanning the subtopics covered Sep 24, Oct 1, Oct 8)

(15 minute presentation; one-page point-form summary of paper distributed in class as a handout, just prior to presentation)

Group presentation -- Nov 19

(each group has 10 minutes to present an overview of their project; each group member should speak; there will be extensive Q/A and discussion with each group afterwards)

Group project -- Nov 19

(10 page writeup; project requirements will be outlined by Oct 29 and instructor will organize the class into groups)

Project presentation -- Nov 26, Dec 3

(10 minute overview of project as conceived to date -- aim to provide a coherent and interesting introduction to your project that includes at least some depth of detail somewhere)

Individual Project -- Dec 6

(10 page writeup -- project requirements will be outlined by Oct 29; students will be urged to submit a one-paragraph project proposal by Nov 12 (not graded but read and handed back))

(all projects will include analysis of existing research, proposal of some original research)

Office Hours: by appointment -- [rcohen at uwaterloo.ca](mailto:rcohen@uwaterloo.ca)

For problems or questions regarding this site contact: [jchampai at cs.uwaterloo.ca](mailto:jchampai@cs.uwaterloo.ca)

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