CS 44 – Winter 2008

Artificial Intelligence

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Administrivia

Lectures Kemeny 006 | 2 hour | MWF 1:45-2:50, X-hr Th 1:00-1:50

Instructor Afra Zomorodian | Sudikoff 163 | 6-8744 | Office hours: TBA

Teaching Assistant Eric Kee | Sudikoff 158 | 6-8722 | Office hours: TBA

Textbook *Artificial Intelligence: A Modern Approach.* 2nd Edition. Stuart Russell and Peter Norvig. ISBN 0-13-790395-2

Prerequisites CS 8 (or CS 18)
CS 19 is recommended

Official Name COSC 44 / COGS 44

Plan We plan to cover chapters 1 - 9, 13 - 15, and 18. We will also have some guest lecturers for some advanced topics.

Grading Final grades will be based on the following:

Class Participation	10%
Assignments	40%
Midterm	20%
Final Project	30%

Honor Code You may discuss homeworks with other students at a general level, but you must write up your homework on your own (unless we allow for teams.) A good rule of thumb is that you should never *look* at another student's solutions or allow another student to see your writeup. You *must* also credit other students you talked with as well as any other sources that you used (such as books and websites.)

As a student of Dartmouth College, you are bound by the Academic Honor Code. Cheating during exams, plagiarism (copying or not crediting work that is not your own), and unauthorized collaboration violates the honor code and is "subject to disciplinary actions, up to and including suspension or separation." Don't do it. If we find violations, we have to report you, and we will.

Homework Policy All homeworks will be due at the *beginning* of class on their due date. You may submit a homework late up to one *class day* with one letter grade deduction, where a class day is the next day we have a lecture. You get *one free late day* that you may use any time during the quarter (except the last homework). Don't use it early as you will not get any more!

Regrades If you believe that you were mistakenly not given credit for a correct solution, you may talk to the TA and present your argument. If the TA still decides not to give you any more credit, his decision is *final*.

Absences There are no automatically excused absences from class. If you have a conflict (due to athletics, religious observances, etc.), please meet with me before the end of the second week of the term to discuss appropriate accomodations.


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Date	Day	#	Lecture Topic	Links	Reading	I/O
01/07	M	1	Overview. Agents	Shakey – ASIMO – Stanley	1 & 2	Lecture 1 Slides (pdf)
01/09	W	2	Blind Search		3.1 – 3.4 Turing's Article	
01/11	F	3	Informed Search; A*		3.5, 4.1, 4.2	
01/14	M	4	Heuristics; Local Search		4.3, 5.1	Assignment One
01/16	W	5	Turing's article; CSPs	Loebner Prize – jabberwacky Cyc – Cyc Browser	5.2, 5.3	Notes on Turing's Article
01/18	F	6	Backtracking Search	Santos Lecture	5.4, 6.1	
01/21	M		*MLK Holiday* – No Class			
01/23	W	7	CSP Structure; Minimax		6.2, 6.3 Solving Every Sudoku Puzzle	Assignment One Due
01/24	θ	8	*MLK x-hour* – α-β Pruning; Imperfect Games	Chinook Deep Blue	6.4, 6.5 Checkers Is Solved	
01/25	F	9	Propositional Logic		7.1 – 7.5	
01/30	M	10	Resolution; Chaining; DPLL	SAT Competitions	7.6, 8.1, 8.2 McCarthy's Article (Hardcopy)	Assignment Two
02/01	W	11	Walk-Sat; First Order Predicate Logic	SHRDLU	8.3, 8.4 – 9.1, 9.2	
02/01	F	12	Generalized Modus Ponens;		9.3, 9.4 Newell &	

			Unification; Forward Chaining		Simon's Article	
02/04	M	13	Forward & Backward Chaining; Resolution		9.5	
02/06	W	14	McCarthy's paper; Prolog	SWI-Prolog		Assignment Two Due
02/07	θ	15	*Carnival x-hour* – Probability Theory		13.1 – 13.3	Assignment Three (all.txt, csp.txt)
02/08	F		*Carnival Holiday* – No Class			
02/11	M	16	Marginalization; Conditioning; Probabilistic Inference		13.4 – 13.6	**Midterm: Kemeny 006, 7 – 9 PM**
02/13	W	17	(Conditional) Independence; Bayes's Rule		14.1 – 14.3	
02/15	F	18	Newell & Simon's Paper; Bayesian Networks	Jones Lecture Pinker's Article	14.4 – 14.5	MIF Results & Feedback
02/18	M	19	Hybrid Bayesian Networks; Exact Inference		14.6 – 14.7	Assignment Three Due
02/20	W	20	Variable Elimination; Rejection Sampling			
02/22	F	21	Likelihood Weighting; MCMC		18.1 – 18.3	Assignment Four – Final Project Instructions
02/25	M		No Class – Work on your Project Proposals			Proposals Due 2/26 at 2 PM
02/27	W	22	Inductive Learning; Decision Trees		18.4 – 18.6	Project Proposal Feedback

02/29	F	24	Validation; Ensemble Learning; Computational Learning Theory	20.1 – 20.2	
03/03	M	25	Neural Networks – Guest lecture by Prof. Richard Granger, Director of The Neukom Institute		
03/05	W	26	Bayesian Learning; Maximum A Priori (MAP); Maximum Likelihood		Project Milestone 2: Updates Due
03/07	F	27	Naive Bayes Learning; Continuous Models; Bayesian Parameter Learning		
03/12	W		**Final Project Due at 11:59 PM**		

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