CPSC 625-600 Artificial Intelligence: Fall 2005

Syllabus

NEWS: *8/29/05, 05:42PM (Mon)*

- slide01.pdf and slide02.pdf uploaded: print and bring to clas (see lectures/)
- All indicated assignments/dues are tentative.
- General pointers:
  - All lectures and hw/solutions are in the lectures/ directory.
  - All program samples are in the src/ directory.
  - Grades are posted on the Grades page.

Read-Only Bulletin Board.: 8/31/04, 12:02PM (Tue)

Page last modified: 8/29/05, 11:37AM Monday.

General Information   Resources   Weekly Schedule   Credits   Lecture Notes   Example Code   Read-Only Board

I. General Information

Instructor:

Dr. Yoonsuck Choe
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Phone: 845-5466
Office hours: T/TR 10:00am-11:00am. Other times: by appointment only.

TA:

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Office: HRBB 322A
Phone: 845-5481
Office hours: TBA.

Prerequisite/Restrictions:

CPSC 311

Lectures:

T/TR 11:10am-12:25pm, ZACH 105B

Goals:

To understand the problems in AI and to learn how to solve them:

1. traditional methods in AI (search, pattern matching, logical inference, theorem proving, etc.).
2. modern approaches in AI (learning, probabilistic approaches, etc.).

Textbook:

Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach* (AIMA, hereafter), **2nd Edition**, Prentice Hall, New Jersey, 2003.
ISBN 0-13-790395-2
Book Homepage
* The first edition may be okay if that's what you have.

Computer Accounts and Usage:

1. Computer accounts: if you do not have a unix account, ask for one on the CS web page. We will be using the CMU Common Lisp as our main language. Example code will only be made available in Lisp, and in general other languages will not be permitted.
2. CMU Common Lisp:
   ○ Carnegie Mellon U. Common Lisp homepage
   ○ On all SunOS systems in the department (**sun.cs.tamu.edu, interactive.cs.tamu.edu, compute.cs.tamu.edu,** etc.), the program is installed in **/usr/local/bin/lisp**. (Do **not** run your jobs on **unix.cs.tamu.edu**.)
   ○ See the Read-only Board for a brief example.

Topics to be covered:

See the Weekly Schedule section for more details.

1. Introduction : 1 week
2. LISP : 1 week
3. Search : 1.5 weeks
4. Game playing, alpha-beta pruning: 0.75 week
5. Propositional Logic, first-order logic, theorem proving: 3.5 weeks
6. Uncertainty, probabilistic approaches: 1.5 weeks
7. Learning: 2 weeks
8. Special topics : 1 week

Grading:

1. Exams: 45% (midterm: 20%, final: 25%)
2. Homeworks: 15% (about 3, 5% each)
3. Programming Assignments: 36% (about 3, 12% each)
4. Paper commentary: 4% (1 page, single-spaced)

Grading will be on the absolute scale. The cutoff for an 'A' will be 90% of total score, 80% for a 'B', 70% for a 'C', 60% for a 'D', and below 60% for an 'F'.

Academic Policy:

The TAMU student rules (http://student-rules.tamu.edu/), Part I Rule 20 will be **strictly** enforced. Local Course Policy:

- All work should be done **individually** and **on your own** unless otherwise allowed by the instructor.
- Discussion is only allowed immediately before, during, or immediately after the class, or during the instructor's office hours.
- If you find solutions to homeworks or programming assignments on the web (or in a book, etc.), you may (or may not) use it. Please check with the instructor.

Students with Disabilities:

Americans With Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If

you believe you have a disability requiring an accommodation, please contact the Department of Student Life: Services for Students with Disabilities in Room 126 of the Koldus Building, or call 845-1637.

II. Resources

1. LISP quick reference
2. **CMU Common Lisp** (This one will be used in the class.)
3. GCL manual (very in-depth and technical).
4. GNU Common Lisp
5. Lisp resources
6. My general resources page
7. 625/689 Reading List
8. An interesting popular view of AI

III. Weekly Schedule and Class Notes

- **Lecture notes (in PDF format)**: all notes will be uploaded in this directory.
- It is **your responsibility** to download, print, and bring the notes to the class. Notes will be available 24 hours before each class.
- See the **2005 Fall TAMU Calendar** for breaks, etc. December 6 (Tue) is the last class day.
- When reading the chapters, you do not have to memorize everything. A separate list of terms you need to know will be handed out prior to each exam.
- All reading material below refers to the AIMA book 2nd edition. The *(old XX)* tags next in the Reading field are the corresponding chapters in the old AIMA book (1st edition). To see how the 1st and the 2nd edition chapters correspond, see the "AIMA 1st and 2nd edition chapter map".
- More detail will be available as we go along.

Week	Date	Topic	Reading	Assignments	Notices and Dues	Notes
1	8/30	Introduction	Chapter 1 1.1 and 1.2		First day of class	slide01.pdf
1	9/1	Introduction	Chapter 26 26.1 and 26.2		Unix basics (DIY); Last day to drop a course is 9/2	slide01.pdf slide02.pdf
2	9/6	Lisp	Lisp quick ref			slide02.pdf
2	9/8	Lisp (Symbolic Differentiation)		Prog. Asmt. #1 to be announced		slide02.pdf
3	9/13	Uninformed Search (BFS,DFS,DLS,IDS)	Chapter 3.1-3.5 (3.6,3.7 optional)			slide03.pdf
3	9/15	IDA*,Heuristic Search, Simulated Annealing, etc.	Chapter 4			slide03.pdf
4	9/20	Informed Search (BestFS,Greedy,A*)	Chapter 4.1-4.3 (4.4 optional)(old 4.1-4.3)			slide03.pdf
4	9/22	Game playing Min-Max, Alpha-Beta	Chapter 5 (optional) and 6.1-6.8 (old 5)	HW Asmt. #1 Prog. Asmt. #2 to be announced		slide03.pdf
5	9/27	Game playing wrap up; Propositional Logic	Chapter 7.1, 7.3, 7.5, 7.6 (old 6)			slide03.pdf slide04.pdf
5	9/29	Theorem proving	Chapter 9 (old 10)		HW Asmt. #1 due	slide04.pdf
6	10/4	First-order logic	Chapter 8 (old 7)	HW Asmt. #2 to be announced		slide04.pdf

6	10/6	Inference for FOL	Chapter 9			slide04.pdf
7	10/11	Theorem proving for FOL	Chapter 9 (old 10)		**HW Asmt. #2 due**; Midterm review	slide04.pdf
7	10/13	**Midterm**	**Exam**		In class exam.	
8	10/18	Uncertainty	Chapter 13 (old 14)		10/17: Midsemester grades due.	slide05.pdf
8	10/20	Uncertainty (continuted)	Chapter 13 (old 14)			slide05.pdf
9	10/25	Probabilistic reasoning	Chapter 14 (old 15)		11/5 (Q-drop)	slide05.pdf slide06.pdf
9	10/27	Learning	Chapter 18	Prog. Asmt. #3 to be announced		slide06.pdf
10	11/1	"				slide06.pdf
10	11/3	"		Paper Commentary Asmt. to be announced		slide06.pdf
11	11/8	Learning (Nnets)	Chapter 20 (old 19)			slide06.pdf
11	11/10	Guest Lecture	Yingwei Yu: Topic TBA			slide00.pdf
12	11/15	No class	Society for Neuroscience meeting: Make up to be announced			slide00.pdf
12	11/17	Learning (Nnets)			Course evaluation	slide06.pdf
13	11/22	No class	Make up to be announced			slide00.pdf
13	11/24	**Thanksgiving**			No class	
14	11/29	No class	Make up to be announced			slide00.pdf
14	12/1	Learning (Nnets)	Chapter 20 (old 19)		**Paper commentary due**	slide06.pdf
15	12/6	Natural language processing			Last day of class. Final exam review (TBA).	slide09.pdf
	12/15	**Final Exam**			8:00-10:00am HRBB113	

IV. Credits

Many ideas and example codes were borrowed from Gordon Novak's AI Course and Risto Miikkulainen's AI Course at the University of Texas at Austin (Course number CS381K).

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