

CPSC 625-600 Artificial Intelligence: Fall 2016

Syllabus

NEWS: 8/30/16, 11:28AM (Tue)

- [08/30] Course web site goes online.
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- [LINKS] • [News archive](#) • [Grades](#) • [Codes](#) • [Lecture notes](#)

Read-Only Bulletin Board: 8/26/16, 11:37AM (Fri)

Page last modified: 8/30/16, 11:28AM Tuesday.

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I. General Information

Instructor:

[Dr. Yoonsuck Choe](#)
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Office: HRBB 322B
Phone: 979-845-5466
Hours: Tue/Thu 2:30pm-3:30pm

TA:

Randall Reams
Email:
rcr344@tamu.edu
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Office hours: TBA

Grader:

Anavil Tripathi
Email:
anaviltripathi@tamu.edu
* Grader does not hold office hours.

Prerequisite/Restrictions:

CPSC 311 or equivalent

Lectures:

Tue/Thu 3:55pm-5:10pm, ETB 1020

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, planning, etc.).
2. modern approaches in AI (learning, probabilistic approaches, etc.).

Textbook:

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. You may use a different language but example code will only be made available in Lisp.
2. CMU Common Lisp:
 - [Carnegie Mellon U. Common Lisp homepage](#)

Topics to be covered:

See the [Weekly Schedule](#) section for more details.

1. Introduction
2. LISP
3. Search
4. Game playing, alpha-beta pruning
5. Propositional Logic, first-order logic, theorem proving
6. Planning
7. Uncertainty, probabilistic approaches
8. Learning
9. Advanced topics

Grading:

1. Exams: 50% (midterm: 20%, final: 30%)

Make up exams:

- There will be no make up exam for those who do not show up for the exam without 24 hour prior notice that is due to legitimate reasons.
- For illness-related absence, explicit doctor's note of excuse (e.g. "<Full Name> is unable to attend classes on <Date> due to illness.") is required. Just a note acknowledging that you visited the doctor's clinic or student health center is not enough.
- Make up exams will be different from the original exams although the difficulty will be adjusted to be comparable.

2. Homeworks: 15% (about 3, 5% each)
3. Programming Assignments: 30% (about 3: 10% each)
4. Attendance: 5%

There will be no curving. 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'.

Attendance is mandatory. Sign-in sheet will be distributed on random dates (about 10 times). More than 2 recorded absences will lead to 0% for attendance. Faked signatures will get 0% for attendance and an additional 15% penalty toward the final grade.

Late penalty: 1 point (out of 100) per hour. Late submissions will not be accepted 4 days after the deadline and/or after the solution has been posted.

Academic Integrity Statement:

AGGIE HONOR CODE: An Aggie does not lie, cheat, or steal or tolerate those who do.

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: <http://aggiehonor.tamu.edu/>

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:

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, or call 845-1637.

II. Resources

1. [LISP quick reference](#)
2. [CMU Common Lisp](#) (This one will be used in the class.)
3. [GNU Common Lisp](#)
4. [My general resources page](#)

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 [TAMU Calendar](#) for breaks, etc.
- 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 3rd edition.
- More detail will be available as we go along.

Week	Date	Topic	Reading	Assignments	Notices and Dues	Notes
1	8/30	Introduction	Chapter 1		First day of class	slide01
		Introduction,	Chapter 26			slide01

1	9/1	LISP	26.1 and 26.2 Lisp quick ref	slide02
2	9/6	Symbolic Differentiation	Lisp quick ref	slide02
2	9/8	Uninformed Search (BFS,DFS,DLS,IDS)	Chapter 3.1-3.6	
3	9/13	Informed Search (BestFS, Greedy, A*)	Chapter 4.1-4.3 (4.4 optional)	
3	9/15	IDA*, Heuristic Search, Simulated Annealing, Constraint Satisfaction, etc.	Chapter 4, Chapter 6.1	
4	9/20	Game playing Min-Max, Alpha-Beta	Chapter 5	
4	9/22	Game playing wrap up; Representation, logic, frames	Chapter 5 Chapter 7	
5	9/27	Guest Lecture	Topic TBA	
5	9/29	Guest Lecture	Topic TBA	
6	10/4	Propositional Logic	Chapter 7	
6	10/6	Theorem proving First order logic (FOL)	Chapter 8; Chapter 9	
7	10/11	Midterm Exam	In class	
7	10/13	Theorem proving for FOL	Chapter 8; Chapter 9	
8	10/18	Inference for FOL	Chapter 9	slide04
8	10/20	Planning	Chapter 10	
9	10/25	Uncertainty	Chapter 13	
9	10/27	Uncertainty: Decision theory, Bayes rule	Chapter 13, Chapter 14	
10	11/1	Uncertainty: Belief network	Chapter 13, Chapter 14	
10	11/3	Advanced topic: Neuroevolution		
11	11/8	Learning: Inductive learning, Decision trees, Perceptrons	Chapter 14, Chapter 18	
11	11/10	Learning: Perceptrons, Multilayer networks	Chapter 18, Chapter 20	
12	11/15	Guest Lecture	Evolving tool use behavior	
12	11/17	Learning: Backpropagation	Chapter 18, Chapter 20	
13	11/22	Learning: Unsupervised learning, Self-organizing maps	Chapter 18, Chapter 20	
13	11/24	Thanksgiving: No class		

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| 14 | 11/29 | Learning: Recurrent networks, Genetic algorithms | Chapter 18, Chapter 20 |
| 14 | 12/1 | Advanced topic: Deep learning | |
| 15 | 12/6 | Advanced topic:
Autonomous semantics through sensorimotor grounding | |
| 16 | 12/13 | Final exam: December 13 (Tuesday): 1-3pm, in ETB 1020 | |

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).
