Pooyan Fazli

CIS 666 - Artificial Intelligence (Spring 2018)

Overview   Grades   Exams   Final Project   Texts   Email and Blackboard Policies   Feedback   Assignments   Schedule

Overview

Course Description: This course provides an introduction to the field of Artificial Intelligence. It will make a broad coverage of modern AI. The course is designed for computer science students, but is also suitable for engineering students or those with some familiarity with algorithms, complexity, and probability.

> **Meeting Times:** Monday, Wednesday, 6:00pm-7:15pm
> **First Class:** Wednesday, January 17, 2018
> **Location:** FH 314
> **Instructor:** Pooyan Fazli (pooyan.fazli at gmail dot com)
> **Instructor's Office Location:** FH 220
> **Instructor's Office Hours:** Monday, Wednesday, 7:15pm-8:00pm, or by appointment
> **TA:** Mike D'Arcy (m.m.darcy at vikes dot csuohio dot edu)
> **TA's Office Hours:** By appointment
> **Course Discussion Board:** Login to Blackboard using your CSU ID. Course announcements will be posted on Blackboard. You are responsible for reading all announcements posted on Blackboard.

Course Topics: The major topics covered will include search, game playing, knowledge representation, inference, planning, reasoning under uncertainty, machine learning, and some AI applications. The techniques you learn in this course apply to a wide variety of artificial intelligence problems and will serve as the foundation for further study in any application area you choose to pursue.

Prerequisites: Prior computer programming experience is required. Additional background in data structures and algorithms, linear algebra, and probability will all be helpful. You should be prepared to review basic probability on your own if it is not fresh in your head.

Programming Language: Course programming assignments will be in Python.

Academic Honesty: Plagiarism is a serious offence and will be dealt with harshly. I consider plagiarism to be the unattributed use of an external source (e.g., another student, a web site, a book) in work for which a student takes credit, or the inappropriate use of an external source whether or not attribution is made. The seriousness of the offence depends on the extent to which the student relied upon the external source. All code and written responses must be your own. All work ideas, quotes, and code fragments that originate from elsewhere must be cited according to standard academic practice. Students caught cheating will automatically fail the course.

Grades

Overall Grading Scheme
Warning: The instructor reserves the right to adjust this grading scheme during the term, if necessary.

Graduate Students	
Assignments	30 %
Final	30 %
Project Proposal	5 %
Project Presentation + Project Paper	25 %
Participation in Discussions; Attendance	10 %

Grades are on the following fixed scale:

A	[90 - 100]%
A-	[85 - 90)%
B+	[80 - 85)%
B	[75 - 80)%
B-	[70 - 75)%
C+	[65 - 70)%
C	[60 - 65)%
F	[0 - 60)%

Curving Grades: Final grades may be curved to give the overall distribution of grades a desired mean and standard deviation.

Late Assignments: Students will be given five late days for use on the assignments; at most two can be used for any one assignment. The purpose of late days is to allow students the flexibility to manage unexpected obstacles to coursework that arise during the course of the term, such as travel, moderate illness, conflicts with other courses, extracurricular obligations, job interviews, etc. Thus, additional late days will NOT be granted except under truly exceptional circumstances. If an assignment is submitted late and a student has used up all of her/his late days, 20% will be deducted for every day the assignment is late. (E.g., an assignment 2 days late and graded out of 100 points will be awarded a maximum of 60 points.)

How late does something have to be to use up a late day? A day is defined as a 24-hour block of time beginning at 1:00 pm on the day an assignment is due. Examples:

- Handing in an assignment at 4 pm on the day it is due consumes one late day.
- Handing in an assignment at 10:15 am the morning after it is due consumes one late day.
- Handing in an assignment at 1:30 pm the day after it is due consumes two late days.

Exams

- **Final Exam:** May 9, 2018, 6:00pm-8:00pm

For the final exam, you will be allowed to bring one single-sided handwritten 8.5"x11" aid sheet. You can put anything you want on your aid sheet as long as it is handwritten

Final Project

Students will complete a course project. Projects will be accompanied by a presentation and a paper (4-6 pages AAAI Format) due at the end of the semester. Students are allowed (and encouraged) to work in groups of two.

The topic of the final project need not be too ambitious, however, I encourage creativity in both the project topic choice and execution. One possible type of project is to combine techniques from AI with your own research. You can also perform a survey of a subarea in Artificial Intelligence or a compare-and-contrast study of two or more influential papers in the field.

Project Proposal: Project proposals should consist of a short (2 pages) summary of your project idea accompanied by a plan of execution.

Texts

We will be using the following textbooks:

- Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*, Prentice Hall, 2009 (Third edition).
- David L. Poole and Alan K. Mackworth, *Artificial Intelligence: Foundations of Computational Agents*, Cambridge University Press, 2017 (Second edition). The entire book is available for free in e-format at the above link.

Email and Blackboard Policies

- Please use email for **personal matters** only. For email, always include the course number. A good practice is to start your subject as "CIS 666: ...".
- For general questions about the course material or assignments or exams, Blackboard is the default place to ask questions. Many of your fellow students may have the exact same question in mind and will appreciate it if they see the question asked (and already answered) on their next visit to the board. I strongly encourage students to participate in discussions, ask, and answer questions through this site.

Feedback

Please give feedback (positive or negative) as often as and as early as you can. To send a message to the instructor, use this form. You do not need to enter your name or email address unless you wish to receive a direct response. Note that your question or a paraphrase of it may be posted (and answered) on the discussion board, or in lecture.

Assignments

Assignments	Due Date
Assignment 0	Jan 24, 1pm
Assignment 1	Feb 13, 1pm
Assignment 2	March 2, 1pm
Assignment 3	March 23, 1pm
Assignment 4	April 11, 1pm
Assignment 5	April 29, 1pm

Schedule

Date	Lecture	Book Section	Notes
Jan 17	Introduction to AI	Ch. 1, 26.3, 27.4	Assignment 0 Out
Jan 22	Intelligent Agents	Ch. 2	
Jan 24	Uninformed Search	Ch. 3.1-4	
Jan 29	Informed Search	Ch. 3.5-6	Assignment 1 Out
Jan 31	Local Search	Ch. 4.1	
Feb 5	CSP I	Ch. 6, 6.1, 6.2, 6.2.1, 6.2.2, 6.2.6, 6.3, 6.3.1, 6.4 + Ch. 4.6 P&M Textbook	
Feb 7	CSP II	Ch. 6, 6.1, 6.2, 6.2.1, 6.2.2, 6.2.6, 6.3, 6.3.1, 6.4 + Ch. 4.6 P&M Textbook	
Feb 12	Games I	Ch. 5.1-5	
Feb 14	Games II	Ch. 5.1-5	Assignment 2 Out
Feb 19	No Class (President's Day)		
Feb 21	Markov Decision Processes I	Ch. 17.1-3	
Feb 26	Markov Decision Processes II	Ch. 17.1-3	Project Proposal Due

Feb 28	Reinforcement Learning I	Ch. 21.1-3	
March 5	Reinforcement Learning II	Ch. 21.4-5	Assignment 3 Out
March 7	Probability	Ch. 13.1-5	
March 12	No Class (Spring Break)		
March 14	No Class (Spring Break)		
March 19	Bayes Nets: Representation	Ch. 14.1-2	
March 21	Bayes Nets: Independence	Ch. 14.1-2	
March 26	Bayes Nets: Inference	Ch. 14.4	
March 28	Markov Chain	Ch. 15.1-3	Assignment 4 Out
April 2	HMM	Ch. 15.1-3	
April 4	ML: Intro	Ch. 18.1-2	
April 9	ML: Classification	Ch. 18.6, 18.9	
April 11	ML: Classification II	Ch. 18.6, 18.9	
April 16	ML: Clustering	Ch. 11.1, 11.1.2 P&M Textbook	Assignment 5 Out
April 18	ML: Deep Learning	Ch. 18.7	
April 23	Final Review		
April 25	Project Discussions		
April 30	Project Presentations		
May 2	Project Presentations		Project Paper Due
May 9	Final Exam, 6:00p-8:00p		

Last updated January 16, 2018