CSE 511A: Introduction to Artificial Intelligence (Fall 2017)

Instructor  Professor Roman Garnett (garnett)
TAS         Zimu Wang (zimu.wang), Matthew Ranftle (matthew.ranftle),
            Jack Robards (jrobards)
Time/Location Monday/Wednesday 4–5:30pm, Hillman 70
Office Hours (Garnett) TBA
Office Hours (TAs)   TBA
URL           http://cse.wustl.edu/~garnett/cse511a/
Piazza message board http://piazza.com/wustl/fall2017/cse511a/home/

Course Description
The discipline of artificial intelligence (AI) is concerned with building systems that think and act like humans or rationally on some absolute scale. This course is an introduction to the field, with special emphasis on sound modern methods. The topics include knowledge representation, problem solving via search, game playing, logical and probabilistic reasoning, planning, machine learning (decision trees, neural nets, reinforcement learning, and genetic algorithms) and machine vision.
Programming exercises will concretize the key methods. The course targets graduate students and advanced undergraduates. Evaluation is based on programming assignments, a midterm exam, and a final exam.

Prerequisites
If you are unsure about any of these, please speak with the instructor.

- cse 132, cse 240, and cse 347, or permission of the instructor.
- Knowledge of Python. This will be critical to complete the programming assignments.
- Basic knowledge of statistics, probability theory, and first order logic.

Book
The book is Russell and Norvig, Artificial Intelligence: A Modern Approach. Either the second or third edition is fine. This is a classic textbook and is strongly recommended. I will suggest readings from this book for every lecture.

A good reference for reinforcement learning is Sutton and Barto, Reinforcement Learning: An Introduction. This book is available online and I might suggest reading from it as well.

Assignments
The assignments for this course are a progression of Python programming assignments related to the classic game Pac-Man. These projects will culminate with a capture-the-flag contest. You will submit an agent who tries to eat the opponents dots, while avoiding the opponent’s ghosts. The winner will earn extra credit and gain the people’s ovation and fame forever.

The assignments will be automatically graded, and a dynamic scoreboard will (anonymously) show your standing on each assignment compared with your peers. You may find information related to interacting with the autograder on the website.

The assignment schedule will be kept up-to-date on the webpage.
Late policy
Assignments will be due at the beginning of class on the due date. I will allow you to turn in your assignment up to one class late with no penalty. After that, it will no longer be accepted under any circumstance.

Collaboration policy
You may work on the assignments in pairs if you prefer. If you choose to work with someone, please be sure to indicate this via the partners.txt file in your Subversion repository.

Examinations
There will be a midterm held in class on Wednesday, October 11. This will count for 25% of your grade. The final exam will be held on Friday, December 15. This will count for another 25% of your grade.

Grading
Your final grade will consist of the following weighted components:

<table>
<thead>
<tr>
<th>component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>programming projects</td>
<td>50%</td>
</tr>
<tr>
<td>midterm</td>
<td>25%</td>
</tr>
<tr>
<td>final exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

I will determine grade boundaries based on the distribution of final weighted grades.