CSCI 431: Introduction to Artificial Intelligence

Professor
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Meetings
TTh 12:30-1:50 in Thompson 395. The final will be on December 19th at 12:00.

Course Description
Artificial Intelligence. The term conjures images of science fiction stories; of distopian worlds with evil robot overlords, or beneficent android companions who will help us as society evolves.

However state-of-the-art AI is a little less dramatic—but no less game changing. AIs that will profoundly alter life are already here, from automated vehicles to algorithms and machines that will eliminate millions of jobs. Many tasks are considered to be AI, such as recommending a video or book that you’ll like, predicting whether or not you’re a terrorist from your cell phone records, and data-mining your social network accounts to determine your insurance premiums.

We will be using the Python programming language, which is a high-level language like Java. Your first job is to master this language. The class will start with basic search techniques, but by the end will delve into deep neural networks using Google’s TensorFlow library.

Topics Covered
• The Python language.
• Search algorithms.
• Playing games using antagonistic search.
• Machine learning & data mining.
• Deep neural networks.
• Basic natural language processing.

Web Page
The class web page will be located at http://mathcs.pugetsound.edu/~aasmith/cs431/. Valuable info and links will be posted there.

Text
The text will will use is “Artificial Intelligence in the 21st Century” by Stephen Lucci and Danny Kopec.

Prerequisites
The prerequisites for this class are CSCI 361 (“Algorithms and Data Structures”) and MATH 180 (“Calculus and Analytic Geometry I”), or their equivalents. If you have not taken these classes, please see me ASAP.

Course Policies
There will be four or five assignments over the course of the class—one every two or three weeks. You are free to talk to others in the class about them, but I expect what you finally turn in to be 100% your own work. Assignments will be penalized by 20% for each working day (or fraction thereof) they are late, down to 40%. However, you will have five “extension days” during the semester to extend a deadline by one working day. They will be used automatically, unless you specify otherwise.
There will also be a final project, in which you will explore some area of the class more deeply. You may work in pairs for this if you wish, but expectations will be substantially higher.

You all should be aware of the Honor Code at the college. Please do not cheat—it will not go well for you. *Any suspected cheating will be immediately reported.*

Exams are closed book, and will be cumulative. The midterm will be given in the evening. You are allowed a calculator (or your phone, so long as it is in “airplane mode”) and one two-sided, letter-sized page of notes. They will be graded on a curve, with the highest score considered to be 100%.

**Grading**

Final grades will be determined as follows:

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<tr>
<th></th>
<th>Homeworks</th>
<th>Project</th>
<th>Midterm</th>
<th>Final</th>
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<tbody>
<tr>
<td>Percentage</td>
<td>35%</td>
<td>15%</td>
<td>20%</td>
<td>30%</td>
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In particular, notice how heavily weighted assignments are. *Missing assignments is the easiest way to get a lower grade.* Please be sure you do them, and on time. In addition, class participation and effort may help bump you up, if your final grade is borderline.

**Attendance**

I will not be keeping attendance (except on the first day). However, odds are that your attendance will correlate highly with your final grade.

**Miscellany**

If there are any special holy days that you will be taking off, please let me know as soon as you can so that we can work around them.

Please consider getting a flu shot. Influenza kills, and disease can spread rapidly in the dorms. (And you really don’t want to miss a week of class. Trust me.)

**Required Boilerplate UPS Info**

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Lie on the floor out of sight and away from windows and doors. Place cell phones or pagers on vibrate so that you can receive messages quietly. Wait for further instructions.

**Student Accessibility and Accommodation:** If you have a physical, psychological, medical or learning disability that may impact your coursework, please contact Peggy Perno, Director of Student Accessibility and Accommodation, 105 Howarth, 253.879.3399. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

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Finally...if there’s anything else I can do to help you, please let me know. I’m willing to go out of my way to make this a valuable class for you, but I can’t do that unless you talk to me.