CS 4100/5100 Foundations of Artificial Intelligence

108 WVH
Spring 2014
Tuesdays and Fridays 9:50-11:25
Website: http://www.northeastern.edu/magy/courses/AISpring2014/AI.html

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Description:
Introduces the fundamental problems, theories, and algorithms of the artificial intelligence field. Includes heuristic search; knowledge representation using predicate calculus; automated deduction and its applications; planning; and machine learning. Additional topics include game playing; uncertain reasoning and expert systems; natural language processing; logic for common-sense reasoning; ontologies; and multiagent systems.

Teaching Method:
The course will be taught in a combination of lecture and in-class and out-of-class assignments that demonstrate knowledge and understanding of the subject through applying the concepts algorithmically.

Course Prerequisites:
CS 2800 and CS 3500

Text Book:

Evaluation:
Grading rubrics are established for each assignment. For assignments, demonstration of code execution will merit understanding of the concepts (80%). 20% of the assignment will be based on code review done by instructor.
For the project assignment, different criteria are used. In particular, the criteria will include: (a) demonstration of presentation skills through presentation of the project ideas and final project, (b) creativity in selection and development of the game pitch, (c) demonstration of writing and communication abilities, and (d) demonstration of ability to work in group and manage complexity of the project.
Individual Assign 0 (5%)

Individual Assignments (20%) – 2 assignments (Assign1, Assign2)

Pair-Programming Assignment (10%) – In groups of 2 (Assign3)

Quizzes (20%)

Project (45%) – group of 4-5
  Iteration 1: 10% (written and code)
  Iteration 2: 10% (written and code)
  Iteration 3: 10% (written and code)
  Final: 10% (written and code)
  Pitch: 0% advancement to planning (presentation)
  Project Plan: 0% advancement to iteration 1 (online document)
  Project Management: 5% – keep updating the schedule and reporting

Software Required:
Python

Class Conduct:
Cell phones and Texts: No use of cell phones, texting is permitted.
Social Networking: social networking is not allowed unless specified by the instructor.
Late: Don’t be late (more than 7 minutes is considered late). Every class you are late without permission will result in deduction of 2% from your grade.
Attendance: attendance is required. Absence without a pressing and convincing excuse will result in 5% deduction form your grade.
Use of 3D party assets or code: you are encouraged to use resources from the Internet. All arts and code used from other resources should be acknowledged and the sources/author should be credited. Failure to do so will be considered plagiarism, which has severe repercussion to your grade and your academic standing in the University. As a student in the University you are expected to be familiar with and abide by Northeastern University rules of academic honesty and integrity, including plagiarism. Full text of Northeastern’s Academic Honesty and Integrity Policy can be found online on the Office of Student Conduct and Conflict Resolution (www.osccr.neu.edu) at http://www.northeastern.edu/osccr/academichonesty.html.

Disability:
Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Additionally, if you have a documented disability you are protected from discrimination and have the right to a reasonable accommodation. Additional information can be found at the Northeastern University Disability Resource Center (www.access-disability-deaf.neu.edu).

Participation in TRACE:
TRACE (Teacher Rating and Course Evaluation) is a required part of every course. Your participation is needed and encouraged as it is one way to enhance the quality of the course. Your voice matters.

Tentative Outline:

Week 1 (Jan 7, 10): Introductions, Introduction to AI and Applications, Assignment #0 (working lab)
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Jan 14, 17</td>
<td>Agents, Class assignment on Agents, Search Algorithms (Classical Search, Adversarial Search)</td>
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<tr>
<td>3</td>
<td>Jan 21, 24</td>
<td>Search Algorithms cont’d, Constraint Satisfaction, Assignment #1 (working lab)</td>
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<td>4</td>
<td>Jan 28, Jan 31</td>
<td>Assignment #1 (working lab), Logic</td>
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<tr>
<td>5</td>
<td>Feb 4, 7</td>
<td>Inference, Assign # 2 (classwork and working lab)</td>
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<td>6</td>
<td>Feb 11, 14</td>
<td>Knowledge Representation, Planning</td>
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<td>7</td>
<td>Feb 18, 21</td>
<td>Planning, Assign # 3 (classwork and working lab)</td>
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<td>8</td>
<td>Feb 25, Feb 28</td>
<td>Machine Learning, data mining</td>
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<td>9</td>
<td>March 4, 7</td>
<td>Spring break</td>
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<td>10</td>
<td>March 11, 14</td>
<td>Go over Planning assignment, Project Pitches</td>
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<tr>
<td>11</td>
<td>March 18, 21</td>
<td>Fuzzy Logic, Project work</td>
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*Magy is out of town March 18 and 21st [Huy will cover fuzzy logic and check on conduct project critique]*

| 12   | March 25, 28 | Game AI, Project work |
| 13   | April 1, 4 | Affective Computing, Project Work |

*Magy is out of town April 2-9 [Guest Lecturer: Stacy Marsella on Affective Computing, Huy will cover project critique]*

| 14   | April 8, 11 | Robotics, Project Work |

*Magy is out of town April 2-9 [Guest Lecturer: Marty Vona on Robotics, Huy will cover project critique]*

| 15   | April 15 | Project Presentations |

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