S. Russell and P. Norvig. 

CMPSC442: Artificial Intelligence
Fall 2017
Mon/Wed/Fri 10:10-11:00
Willard Bldg 158
Rebecca J. Passonneau (Becky)
Contact Information Etc.

• Becky Passonneau, rjp49@cse.psu.edu
• TA: Athar Sefid, azs5955@cse.psu.edu
• Athar will teach on 9/27
• Office hours:
  – Becky: Tuesdays, 2:30-3:30 and by appt, W318
  – Athar: Tuesdays, 9:00-10:00, W368
• Piazza
• Canvas
Textbook and Sources

• Lectures based on:
  – Norvig & Russell AIMA text book, 3rd Edition; the sections on machine learning covered in the course (18.2, 18.6, 18.9) are not in the 2nd Edition. Because this course is a prerequisite for machine learning, the 3rd Edition is recommended over the much cheaper 2nd Edition
  – Jurafsky & Martin, Speech & Language Processing, 3rd Ed.; pdf
  – Supplementary material in class slide packs

• Course Genealogy: materials drawn from
  – Mitch Marcus, UPenn; Dragomir Radev, UMich, Columbia University, Yale; many others (see AIMA website)
Accessibility

Accessibility Statement: Penn State welcomes students with disabilities into the University’s educational programs. Every Penn State campus has an office for students with disabilities. The Student Disability Resources Web site provides contact information for every Penn State campus. For further information, please visit the Student Disability Resources Web site.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. If the documentation supports your request for reasonable accommodations, your campus’s disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. You must follow this process for every semester that you request accommodations.
Activities and Outcomes

Student activities in this class will include

• Python programs (homework assignments) that implement AI techniques
  o Solve programming problems in python
  o Use a variety of data structures
• Reading and class discussion
• A final class presentation done in teams of 5-6 students that asks you to consider what AI is and what it’s long term impact on society will be

Students who do the work will acquire

• Basic techniques for building intelligent computer systems
  o Agents, search, games, constraint satisfaction, uncertainty and probability, Bayes Rule, Naïve Bayes, Bayesian belief networks, Hidden Markov Models
  o Introduction to fundamental concepts in machine learning: linear regression, linear regression classifier, perceptron learning rule
• Understanding of the role AI will play in our lives in the next decades
Academic Integrity

• Academic Integrity Statement: The University defines academic integrity as the pursuit of scholarly activity in an open, honest and responsible manner. All students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts (refer to Senate Policy 49-20). Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be dishonest will receive academic sanctions and will be reported to the University's Office of Student Conduct for possible further disciplinary sanctions (refer to Senate Policy G-9).
Academic Integrity Violations

• Discovery of violations
  – Will go through proper channels
  – Allows student to contest accusations
• Process cultivates a culture of integrity

• Complete your own homework
• Complete your own exams
• Prepare your own presentations
Classroom Respect

Contribute to climate of learning
• Attend class
• Do the homework
• Participate in discussion

Contribute to culture of respect for everyone’s efforts & time
• No phones/texting etc
• Minimal laptop
• Do not ask other students to help you cheat
• Help other students by, e.g.,
  – Pointing them to resources
  – Pointing them to practice problems
  – Discussing good programming practice
# Syllabus: Topics by week *(approximate)*

1. *(08/21)* Intro; Python programming
2. *(08/28)* Python; Intelligent Agents (AIMA 2.1-2.2; 3.1-3.3)
3. *(09/06)* Uninformed Search and Informed Search (AIMA 3.1-3.5)
4. *(09/11)* Informed Search continued (AIMA 3.5-3.6)
5. *(09/18)* Games (AIMA 5.1-5.3); Constraint Satisfaction (AIMA 6.1-6.4)
6. *(09/25)* Constraint Satisfaction (AIMA 6.1-6.4); Context Free Grammar (AIMA 22, 23); Logical Agents (AIMA 7)
7. *(10/02)* Logical Agents continued (AIMA 7); First Order Logic (AIMA 8); Inference (AIMA 9)
8. *(10/09)* Uncertainty (AIMA 13); Review
9. *(10/16)* Naïve Bayes (AIMA 13.5-13.6); Spam Filter; Machine Learning Intro (AIMA 18)
10. *(10/23)* Smoothing; Bayes Nets (AIMA 14); Natural Language Processing Intro
11. *(10/30)* Markov Processes (AIMA 15); Natural Language Part of Speech Tagging; (Jurafsky & Martin 9)
12. *(11/06)* Markov Process; Hidden Markov Models; Part-of-Speech Tagging (AIMA 15; Jurafsky & Martin 9)
13. *(11/13)* Natural Language Parsing; Linear Regression; Perceptron Learning Rule *(11/21) THANKSGIVING*
14. *(11/27)* Guest lecture: Deep learning: SVMs; Speech Recognition
15. *(12/04)* Dialog systems; Student Presentations
16. *(12/11)* **FINAL**
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**Key**
- **Assigned**
- **Due**
- **Optional**

8/21/17 CMPSC 442
Grading and Homework

Homework: 8 Required Programming Assignments, 1 Optional

- Homework assignments
  - 11-12 days per assignment
  - Available at midnight
  - Due at 11:59 pm
- Homework not submitted on time will get a zero grade. Up to two homeworks can be 2 days late.

**ALL HOMEWORK MUST BE YOUR OWN INDEPENDENT WORK**

- We will use high grade plagiarism detection code
- Do not copy other people's code or misrepresent it as yours, period.

Grading:

- 55% Homework (7 out of 8 required, OR 7 out of 8 plus optional 9th)
- 35% Final
- 10% Discussion & Presentation (Classroom; Piazza)
Homework Grading

• Homework will be graded partly automatically
  – You cannot have syntax errors that prevent the homework from being graded
  – You must use homework template *py files; there is one for each assignment
  – You get credit if your code produces a correct or partly correct answer
  – You do not get credit if your code produces no output, or incorrect output
  – Ask for regrading through Canvas email; no personal email about homework will be responded to