

Lecture 1

What is AI?

EECS 348

Intro to Artificial Intelligence

Doug Downey

Outline

- 1) What is AI: The Course
- 2) What is AI: The Field
- 3) Why to take the class (or not)
- 4) “Predict the future” poll

What is AI: The Course

- Communication
 - Web site, e-mails to class
- Grading
 - 6 problem sets (55%)
 - Late assignments 10% off per day
 - Midterms (weeks 4 and 9) (30%)
 - Final: Othello Tournament (10%)
 - Lecture surveys (5%)
- Prerequisite: **EECS 111**
 - You don't need EECS 325 or Lisp experience

Instructors

- Doug Downey
- TAs: Michael Lucas, Chandra Sekhar Bhagavatula
- Grader: Cassie Rommel

Problem Sets

- Programming (in groups) and exercises (indv.)
 - PS 1: AI history and search
 - PS 2: Sudoku solver
 - PS 3: Logic and Agents
 - PS 4: Tic-Tac-Toe
 - PS 5: Machine Learning
 - PS 6: Othello player
- Code:
 - Starter code provided in C++ and Python
 - Code in **groups** of (up to) 4 – write reports individually

“Programmers”

- Comp Sci majors and/or have passed 211, 214
- Could implement search algorithms easily (Wed.)

“Non-Programmers”

- Have taken only 111
- Non-CS majors (Cog Sci, Bio, Psych)
- Should join up with programmers for hmwk

Textbook

Artificial Intelligence: A Modern Approach

Topics

1. Introduction to AI, chapter 1
2. Search, chapters 3, 4
3. Constraint Satisfaction, Chapter 6
5. Game playing, chapter 5
4. Logic and agents, Ch 7-8
5. Probabilistic Reasoning, Ch 13, 14
7. Machine learning, chapters 18-20
8. Natural Language Processing, chapters 22, 23
9. The Big Questions (final week) chapters 26, 27.

Goals of this Course

- To teach you the main ideas of AI
- To introduce you to a set of key techniques and algorithms from AI
- To introduce you to the **applicability** and **limitations** of these methods

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Why not to take the class

- It won't be easy
- You have to like/tolerate programming
- You're best off if you already know:
 - The basics of probability theory
 - The basics of first-order logic

What you must know from 111

- Big- O notation
- Stacks, queues
- Recursive algorithms

Why to take the class

- Touches on a huge number of fields
 - Mathematics, Philosophy, Neuroscience, Psychology, Cognitive Science, Economics
- Get to play with fun algorithms
- Get to think about the future
- Material has potentially large impact

Recent press

“Computers have entered the age when they are able to learn from their own mistakes, a development that is about to turn the digital world on its head.”

<http://www.nytimes.com/2013/12/29/science/brainlike-computers-learning-from-experience.html>

Google Acquires Artificial Intelligence Startup DeepMind For More Than \$500M

<http://techcrunch.com/2014/01/26/google-deepmind/>

Zuckerberg, Musk and Kutcher Invest In Artificial Intelligence Firm

<http://time.com/35551/zuckerberg-musk-and-kutcher-invest-in-artificial-intelligence-firm/>

A question for our time

. . . Although trips around the moon and to neighboring planets may seem a long way off, the United States is probably in a better position at present to progress in this direction than any other nation. Since mastery of the elements is a reliable index of material progress, the nation which first makes significant achievements in space travel will be acknowledged as the world leader in both military and scientific techniques. To visualize the impact on the world one can imagine the consternation and admiration that would be felt here if the United States were to

Should the US Government spend \$1 trillion trying to bring about super-human-level AI?

<http://www.fas.org/spp/eprint/origins/part05.htm>

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 - See Blackboard