

Welcome!

CS5811 - Advanced Artificial Intelligence

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Outline

Information about me and you

Course logistics

Lecture topics

What is AI? (Chapter 1 - Introduction)

Agents and environments (Chapter 2 - Intelligent Agents)

Information about me

- ▶ Dr. Nilufer Onder
- ▶ Research interests:
 - ▶ Artificial intelligence planning
 - Planning under uncertainty
 - Temporal, concurrent planning
 - ▶ Memory management
 - Characterizing program behavior
 - Efficient memory allocation and deallocation
 - ▶ Project management
 - Decision making under uncertainty
 - Simulation based intelligent assistance
 - ▶ Increasing and broadening participation in STEM fields
 - Student persistence
 - Underrepresentation
 - Career choices

Information about you

Please tell:

- ▶ Your full name
Repeat your first name only so that others can hear the pronunciation
- ▶ Where you are from
Hometown, schools
- ▶ What program you are in
- ▶ What are your research or academic interests
- ▶ What are your hobbies
- ▶ Where is your dream travel destination

Course logistics

- ▶ 2 exams
- ▶ No final exam
- ▶ Written assignments
- ▶ Paper presentation (IAAI and AAI)
- ▶ Paper research report
- ▶ Attending all classes and presentations is mandatory

Overview of the lecture topics

- ▶ Textbook: Russell and Norvig's "AI A Modern Approach (AIMA)". 3rd edition, 2010.
- ▶ Prerequisite: CS4811
- ▶ Ch. 01: Introduction
- ▶ Ch. 02: Intelligent agents
- ▶ Ch. 03: Solving problems by searching
- ▶ Ch. 06: Constraint satisfaction problems
- ▶ Temporal Constraint Networks

Lecture topics (cont'd)

- ▶ Ch. 13: Quantifying uncertainty
- ▶ Ch. 14: Probabilistic reasoning
- ▶ Ch. 16: Making Simple Decisions
- ▶ Ch. 17: Making Complex Decisions
- ▶ Ch. 15: Probabilistic reasoning over time
- ▶ Additional topics, time permitting

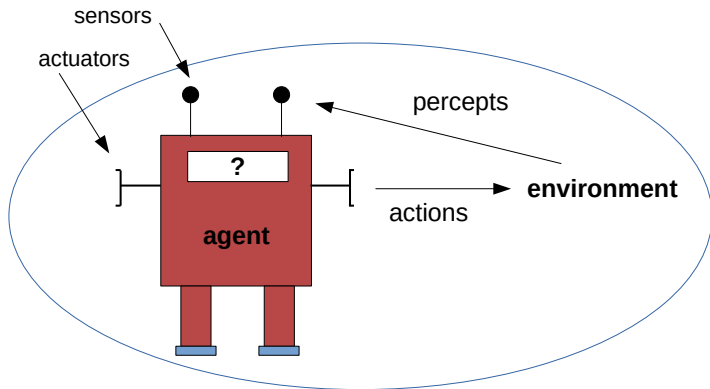
What is AI?

Systems that:

| | |
|-------------------|------------------|
| think like humans | think rationally |
| act like humans | act rationally |

- ▶ Cognitive science
- ▶ The Turing test
- ▶ Logic
- ▶ Doing the right thing
 - ▶ Knowledge representation
 - ▶ Reasoning (algorithms)

Agents and environments



- ▶ Agents interact with environments through sensors and actuators
- ▶ Agents include humans, robots, softbots, thermostats, etc.
- ▶ The agent function maps percept histories to actions:
 $f : P^* \rightarrow A$

Basic agent types

In order of increasing generality (and complexity):

- ▶ simple reflex agents
- ▶ reflex agents with state
- ▶ goal-based agents
- ▶ utility-based agents

All of the basic types can be turned into learning agents

Sources for the slides

- ▶ AIMA textbook (3rd edition)
- ▶ AIMA slides (<http://aima.cs.berkeley.edu/>)