

For Wednesday

- Read chapter 3
- Homework:
 - Chapter 2, exercises 5-6
 - May be done in groups.

Homework

- Reflex = rational?
- Reflex = intelligent?
- “Surely computers cannot be intelligent—they can do only what their programmers tell them.”
- “Surely animals cannot be intelligent—they can do only what their genes tell them.”
- “Surely animals, humans, and computers cannot be intelligent—they can do only what their constituent atoms are told to do by the laws of physics.”

Popular Tasks of Today

- Data mining
- Intelligent agents and internet applications
 - softbots
 - believable agents
 - intelligent information access
- Scheduling applications
- Configuration applications

State of the Art

- Deep Blue beats Kasparov
- NASA's Remote Agent program controls a spacecraft autonomously
- High accuracy continuous speech recognition with fairly large vocabularies
- Usable natural language interface to air travel system
- No Hands Across America: Automated vehicle drives cross-country on freeways

State of the Art

- Medical diagnosis in specialized fields is sometimes assisted by AI programs
- AI logistics programs were critically important in the Gulf War.
- PROVERB can solve crossword puzzles faster than most humans.

Views of AI

- Weak vs. strong
- Scruffy vs. neat
- Engineering vs. cognitive

What Is an Agent?

- In this course (and your textbook):
 - An agent can be viewed as **perceiving** its environment
 - Note that perception and environment may be very limited
 - An agent can be viewed as **acting** upon its environment (presumably in response to its perceptions)
- Agent is a popular term with nebulous meaning--so don't expect it to mean the same thing all of the time in the literature

Rational Agents

- Organizing principle of textbook
- A **rational** agent is one that chooses the best action based on its perceptions
- This does not have to be the best action that could have been taken--perception may be limited

Determining Rationality

- Must have a performance measure.
- Rationality depends on
 - The performance measure.
 - Agent's prior knowledge.
 - Agent's possible actions.
 - Agent's percept sequence to date.

Issues in Determining Rationality

- Omniscience
- Autonomy

Task Environment Specification

- Performance measure
- Environment
- Actuators
- Sensors

Environment Issues

- Observability
- Deterministic or stochastic
- Episodic or not
- Static or dynamic
- Discrete or continuous
- Single or multi-agent

Types of Agents

- Simple Reflex
- Model-based Reflex
- Goal-based
- Utility-based

- Learning