CS 348: Introduction to Artificial Intelligence

Professor Sara Owsley Sood

Today

- Introductions
  - Me
  - This course
  - Python, briefly

Me

- What to call me?
  - Sara
  - Professor Sood
- PhD @ NU
- Pomona College

Buzz

News at Seven

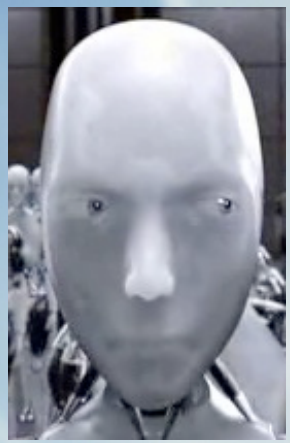
In this course…

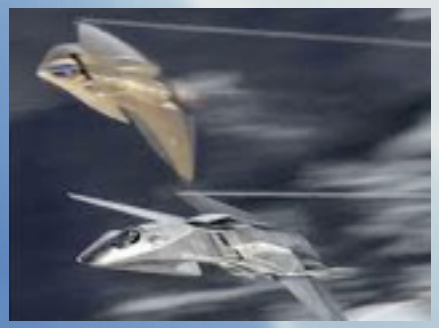
- Apply basic Artificial Intelligence techniques…
- …to solve real-world (current day) Artificial Intelligence problems, and in the process…
- …appreciate how HARD Artificial Intelligence really is (and why)

AI is a HUGE field

- "Building programs that enable computers to do what humans can do."
- Ex: read, walk around, play games, solve problems, learn, have conversations.

How is AI viewed in popular media?





What are the goals of AI? How do we measure success?

Think like a human Cognitive Modeling	**Think rationally** Logic-based Systems
Act like a human Turing Test	**Act rationally** Rational Agents

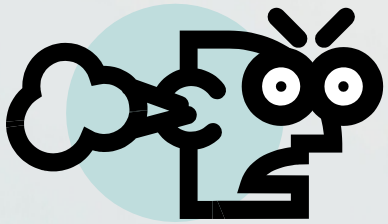

Poster by
AAAI
Association for the Advancement of Artificial Intelligence
AI magazine
Poster development supported in part by
Microsoft Research
YAHOO! RESEARCH
Optimizing Paths & Flows
Planning
AI & Creative Expression
Plan Recognition
AI in Art
AI in Music
Autonomous Vehicles & Safety
Robot Guides & Assistants
Augmenting Cognition
Humanoid Robots
Intelligent Tutoring
Ubiquitous Computing
Social Computing
Autonomous Space Exploration
AI and Preferences, Media & Entertainment
Home Robotics
Descartes
Aristotle
Leibniz
Whitehead
Lovelace
Russell
Turing
Gesture Recognition
Multimodal Interfaces
Mixed-Initiative Collaboration
Robots For Education
Robotic Surgery
Diagnosis
Drug Design
Scientific Discovery
Assistive Technology
AI LAB
MEDICAL CENTER
Handwriting & Sketch Recognition
Recommender Systems & Question Answering
BOOKS & COFFEE
Search & Retrieval
Security & Privacy
User Modeling
Communications Triage
Machine Translation
Vehicle Navigation
Ecocomputing
See the AI timeline and more at
www.aaai.org/AILandscape
The AI Landscape
David Leake, Indiana University, Poster Development Committee Chair
Poster Design: Giacomo Marchesi, www.GiacomoMarchesi.com

Natural Language

- Understanding
  - Speech recognition
  - Natural language processing
- Generation
  - Natural language generation
  - Speech & gesture generation
    - LOQUENDO KATE DEMO

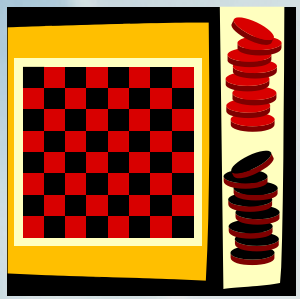
Knowledge Representation: Common Sense

- What would happen if I dropped my computer on the ground (and how do you think I would react?)
- How do you get common sense into a computer?
- Opencyc.org and OMCS (OpenMindCommonSense)
- How many facts?

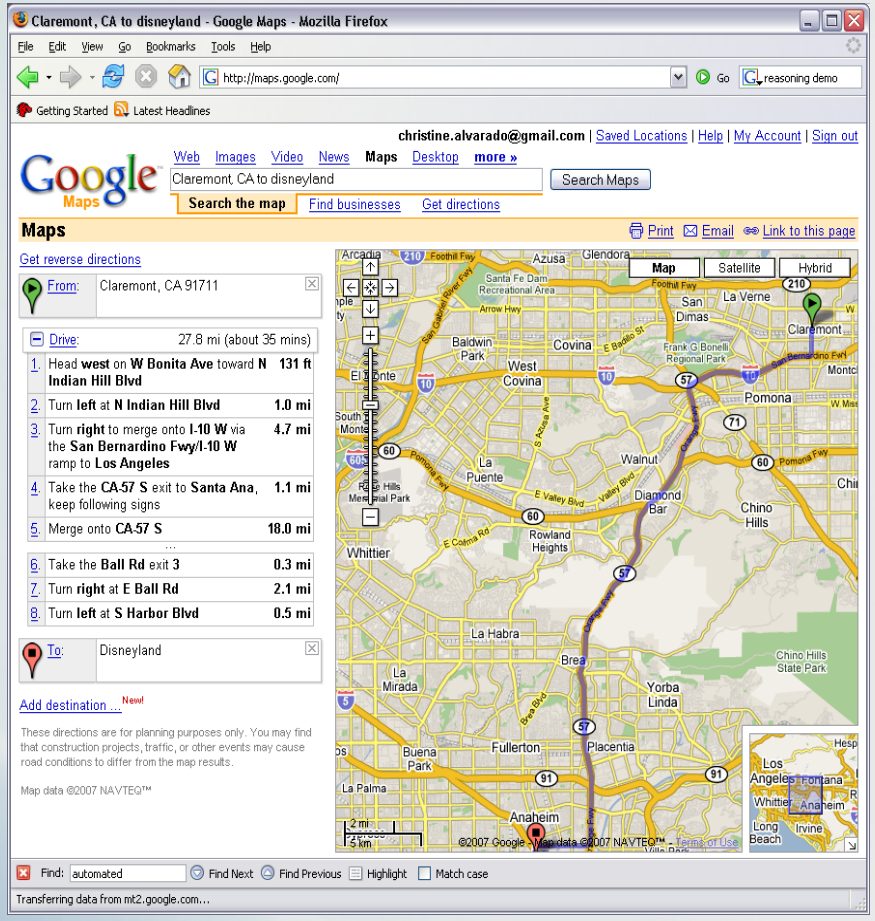


Automated Reasoning

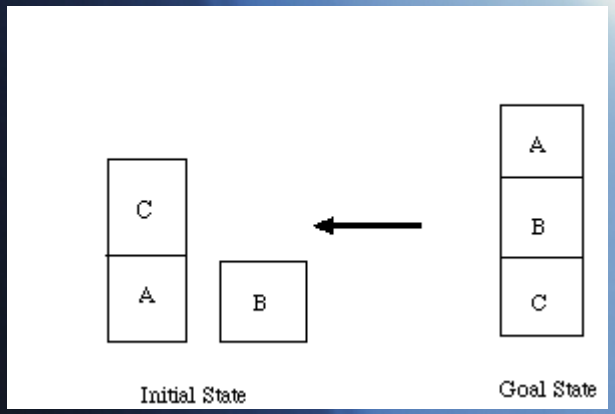
Game playing



Route Finding



Planning

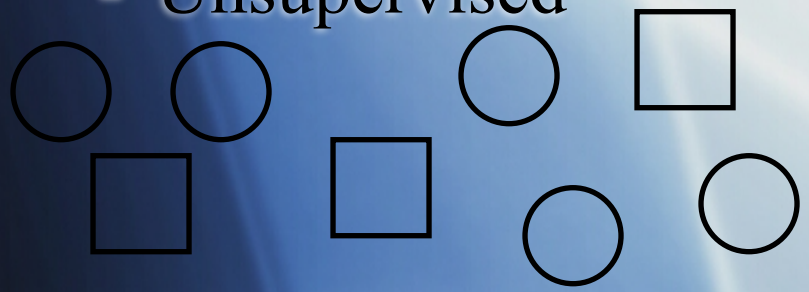


Learning

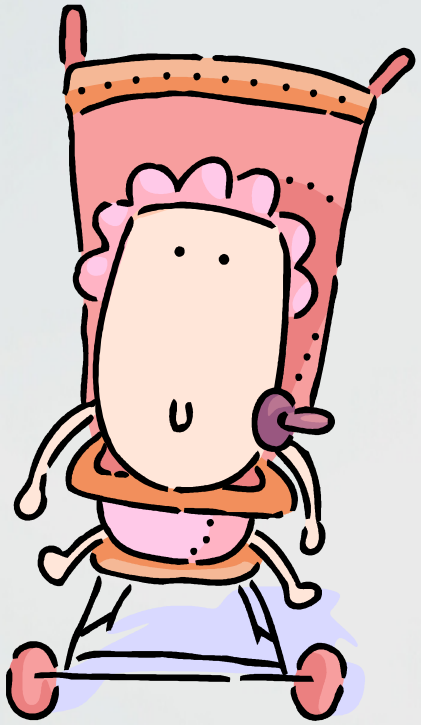
- What does it mean for the computer to learn?
  - Supervised

"circle" "square" "circle" "square" …

  - Unsupervised



"group these into two categories"



Perception

- Visual Image Understanding
- Task: find the table

Robotics

- Do you have to be smart to walk?

MIT Leg Lab: D. Paluska et al.
http://www.ai.mit.edu/projects/leglab/robots/robots.html

Sony QRIO

Emotions

- Kismet, C. Breazeal, MIT

(image courtesy of P. Menzel)

Timeline of AI history

http://aitopics.net/BriefHistory

Course Logistics - syllabus

Introduction to Python

`dir` and `help` !

provide all of the methods and data members available to an object

```
help(listSearch)
dir("foo")
help("foo".split)
dir(str)
help(str.split)
dir(42)
dir([])
```

No memorizing! Just use dir & help…