

## Introduction to Artificial Intelligence

# AI

### What is intelligence?

From the dictionary...

- The capacity to acquire and apply knowledge
- The faculty of thought and reason
- Superior powers
- Information (especially secret information)

Let's observe some intelligent behaviors

What are some examples of intelligence displayed by Joshua, the WOPR?

What are some examples of intelligence displayed by C3PO & R2D2?



### How do you know if an entity is intelligent?

#### The Turing Test

- “Can a machine think?” “If a machine could think, how could we tell?”
- Based on the “the imitation game”
- The Loebner prize awards the “most human-like” computer. It is the first formal implementation of the Turing Test.
- Roots of the field of Natural Language Processing



- CAPTCHA
- Completely Automated Public Turing Test for Telling Computers and Humans Apart



What is the goal of research in artificial intelligence?

- Not to create C3PO ☹
- Engineering: create artifacts that display useful intelligent behavior
- Science (1): understand intelligence
- Science (2): understand human intelligence

Some questions AI might try to answer

- Given these symptoms, what illness do I have?
- What is the best way to go from Ithaca to Aswan, Egypt?
- Is the next hurricane/earthquake/... the big one?

Real AI (right now)

- **Robots!** (Mars rovers, DARPA grand challenge, Roomba, ...)
- **Game playing** (world-class chess, checkers, badgammon, ...)
- **Language technology** (speech recognition, machine translations, ...)
- ...

Extremely brief history of AI

- The term “Artificial Intelligence”—coined in 1956
- **Classic AI:** (60s-80s) models of intelligence, search, games, knowledge representation
- **Empirical AI:** (90s-present) learning, data-driven, probabilistic/statistical

What are some ethical issues with AI?

AI topics in this course

(There's not enough time for all of AI!)

- Natural language understanding  
Computational linguistics
- Machine learning
- Information retrieval
- Historical, cultural, and ethical issues
- Robotics