

# CP468: Artificial Intelligence

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# Agenda

- What is Artificial Intelligence?
- What can AI do?
- What is this course?





What is AI?

# What is **Intelligence?**

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The capacity to acquire  
and apply knowledge

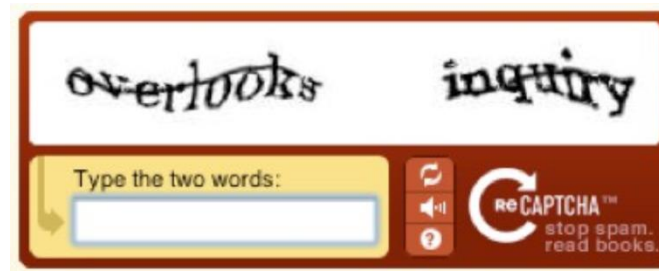
Reference: Webster



# Classical Test of (Human) Intelligence



- The Turing Test: A human interrogator.  
Communicates with a hidden subject that is either a computer system or a human.
- Weak Turing type tests:



*See Luis von Ahn, Manuel Blum, Nicholas Hopper, and John Langford. CAPTCHA: Using Hard AI Problems for Security. In Eurocrypt.*

# AI is the science of making machines



Think like people



Act like people



Think rationally



Act rationally

# Rationality

- Typically this is a precise formal notion of what it means to ***do the right thing*** in any particular circumstance.
- Formal characterizations of rationality have come from diverse areas like logic and economics.

# Degrees of Intelligence

- Building an intelligent system as capable as humans remains an elusive goal.
- Formalisms and algorithms ideas have been identified as being useful in the construction of these “intelligent” systems.



# What Can AI Do?

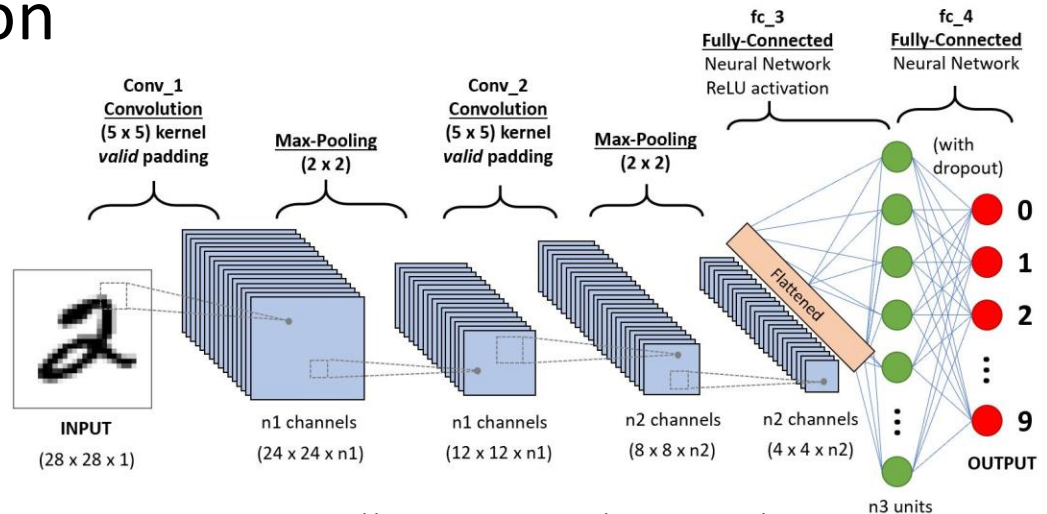
# Natural Language

- Speech technologies (e.g. Siri)
  - Automatic speech recognition (ASR)
  - Text-to-speech synthesis (TTS)
  - Dialog systems
- Language processing technologies
  - Question answering
  - Machine translation
  - Web search
  - Text classification, spam filtering, etc...



# Vision (Perception)

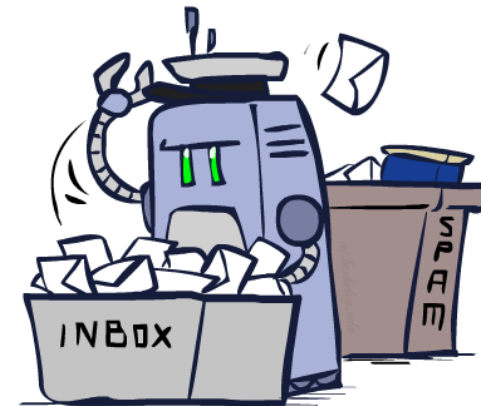
- Object and face recognition
- Scene segmentation
- Image classification



<http://rpmarchildon.com/ai-cnn-digits/>

# Decision Making

- Applied AI involves many kinds of automation
- Scheduling, e.g. airline routing, military
- Route planning, e.g. Google maps
- Medical diagnosis
- Web search engines
- Spam classifiers
- Automated help desks
- Fraud detection
- Product recommendations
- ... Lots more!

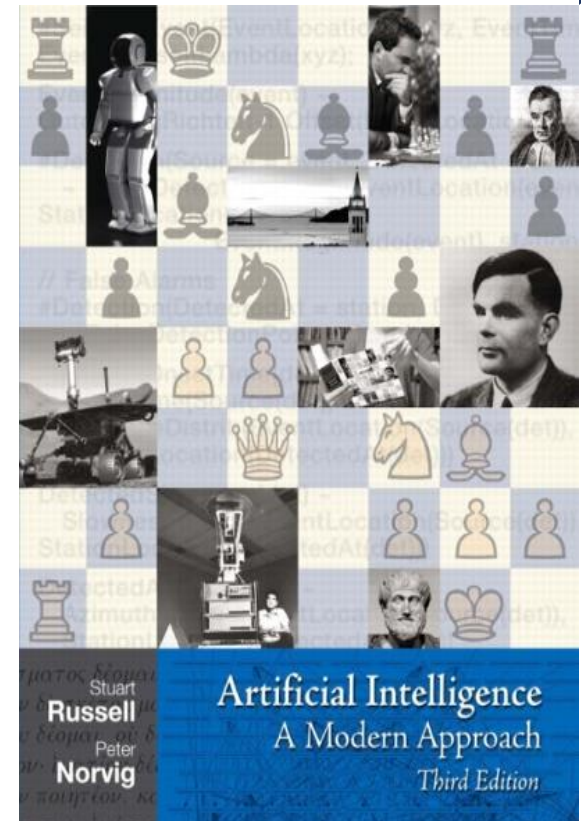


# Course Information

- Communication
  - Announcements on course webpage (MyLS)
  - If you have questions? Discussion Forums
  - Email me for administration issues
- Course Handouts
- Course technologies

# Course Information

- Prerequisites
  - CP213 - Introduction to Object-Oriented Programming
- Textbook
  - Artificial Intelligence: A Modern Approach (3rd Edition), S. Russell, P. Norvig, Prentice Hall



# What We Cover in CS 468 (Tentative)

- Intelligent Agents
- Problem-solving and searching
- Knowledge, Reasoning and Planning
- Uncertain knowledge and reasoning
- Learning
- Understanding Natural Language and text mining

# To Do

- During this week:
  - Make yourself familiar with the course outline
  - Forming a group for the course project
  - Review Java Syntax and Fundamentals
  - Read:
    - 1.1: What is AI?, 1.2: Foundations, and 1.3: History