

OUTLINE OF OLLI WORKSHOP ON COMPUTERS VERSUS HUMANS

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February 2011

Outline

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Goal

- To demystify the subject of Computer Intelligence (often called Artificial Intelligence) and to discuss various computer applications where they seem to perform a task usually associated with Human Intelligence.

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Coverage

- Basic Topics (repeated every term, about two sessions)
- Selected Topics from a List of about 20 (depending on preferences of the participants)
- Topical Topics: Motivated by Public Events.

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Basic Topics (~ 60 slides) (repeated every term)

- What is a Computer?
 - Hardware, Software, and Text Processing
- Early achievements of computers:
 - Breaking the German encryption codes in WW II.
- Telling Computers and Humans apart:
 - The Turing Test and CAPTCHA
- The Power of Computers: Speed, not Smarts
- The Semantic Gap: Why it is much harder for computers to deal with pictures than with text.

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Selected Topics from a List

1. Finding what People Like [\(covered in Fall 2010\)](#)
 - Use of computers to guess customer preferences; the *Netflix* challenge.
 - Google
 - Data Mining.
 - Machine Learning
2. Games Computers Play [\(covered in Fall 2010\)](#)
 - Checkers
 - Chess (Deep Blue)
 - Scrabble (Maven)
 - Jeopardy (Watson: watch the show in mid February!)

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Selected Topics from a List (cont)

3. How Computers read text
4. How Barcodes work. [\(covered in Fall 2010\)](#)
5. Teaching Computers to Talk and to Listen:
 - Speech Recognition.
 - Voice Synthesis

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Selected Topics from a List (cont)

6. Making Sense of what a Computer Sees - Image Analysis and Computer Vision.

- Finding the size of a box from one view ([covered in Fall 2010](#))
- Content-based Image Retrieval ([covered in Fall 2010](#))
- Finding Object Outlines
- Face Recognition
- Aerial Reconnaissance
- ???

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Selected Topics from a List (cont)

7. Synthetic Images

- Medical applications (such as CAT scans)
- Entertainment applications (Computer Animation).

8. Robotics

- Examples from both industrial and home use
- Cars driven only by robots (the DARPA challenge).

9. Computer Predictions

- From the weather to the stock market.
- Chaotic Systems ([covered in Fall 2010](#))

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Selected Topics from a List (cont)

10. Strategic Issues

- Object Oriented Programming
- The Rise and Fall of Unix (covered in Fall 2010)
- Corporate Adventures in Software
- Why General Artificial Intelligence is so Hard (covered in Fall 2010 but it is also a major topic, so we may repeat it)

Topical Topics

- These will be selected depending on the News, articles in the Scientific Press, etc.