
人工智能
上海
The ShanghAI
Lectures
授课

The ShanghAI Lectures

An experiment in global teaching

Fabio Bonsignorio
The BioRobotics Institute, SSSA and Heron Robots

Today from the BioRobotics Institute, Pontedera (PI)

欢迎您参与
“来自上海的人工智能系列讲座”

Lecture 2

A Theory of Embodied Intelligence

3 November 2016

ISTITUTO DI BIOROBOTICA

Scuola Superiore Sant'Anna

The ShanghAI Lectures 上海人工智能授课

Goals

- What is intelligence? Natural and artificial?
- conceptual and technical know-how in the field
- informed opinion on media reports
- things can always be seen differently
- new ways of thinking about ourselves and the world around us

Intelligence?

From the Penguin Dictionary of Psychology

“Few concepts in psychology have received more devoted attention and few have resisted clarification so throughly.”

(Reber, 1995, p. 379)

Some definitions (1927 psychology journal)

"The ability to carry on abstract thinking" (L. M. Terman)

"Having learned or ability to learn to adjust oneself to the environment" (S. S. Colvin)

"The ability to adapt oneself adequately to relatively new situations in life" (R. Pintner)

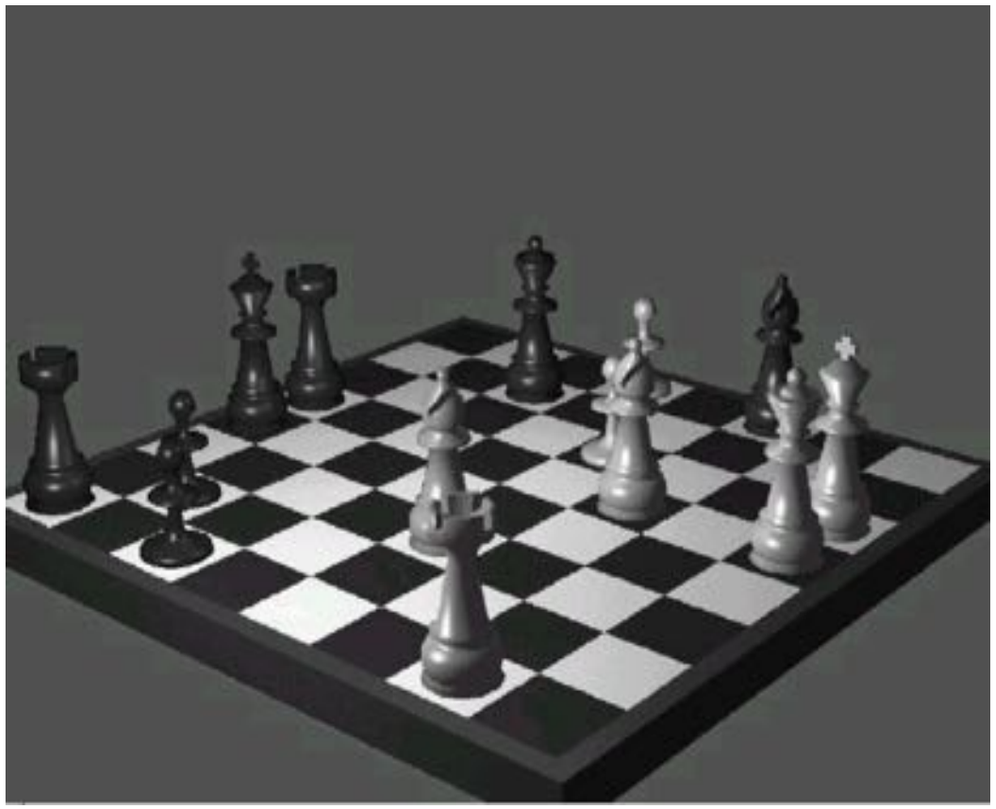
"A biological mechanism by which the effects of a complexity of stimuli are brought together and given a somewhat unified effect in behavior" (J. Peterson)

"The capacity to acquire capacity" (W. Woodrow)

"The capacity to learn or to profit by experience" (W. F. Dearborn)

Subjectivity, expectations

Playing chess



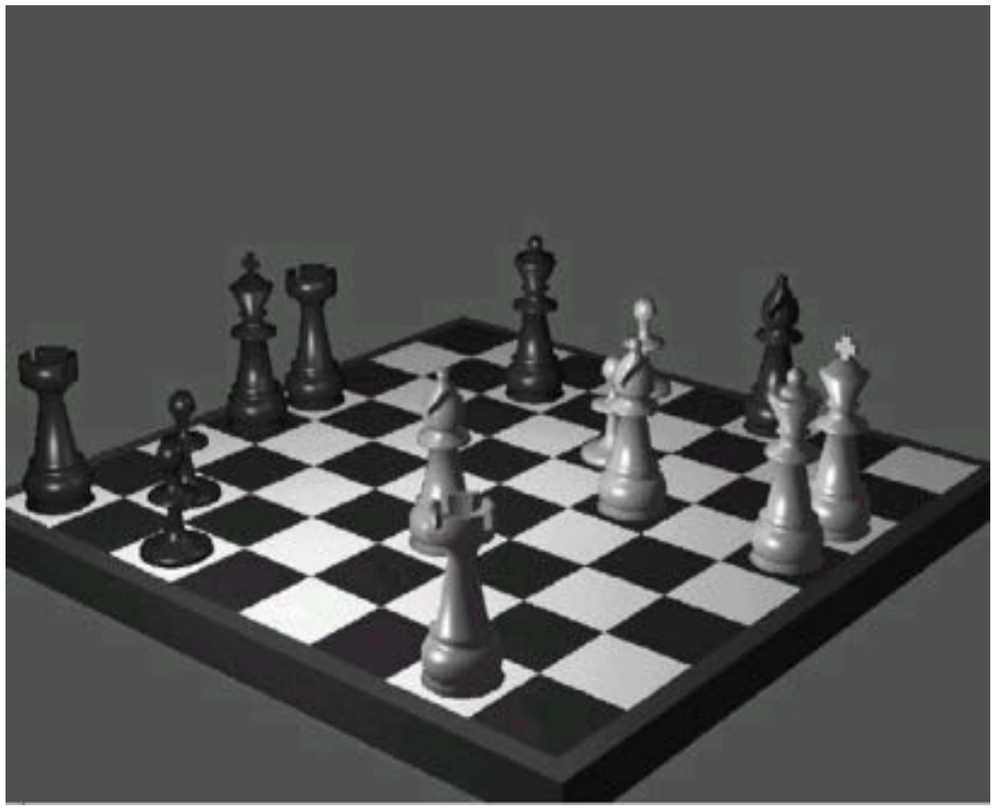
Rolf playing chess

Rolf

Note: Fabio is obviously much better :-)

Subjectivity, expectations

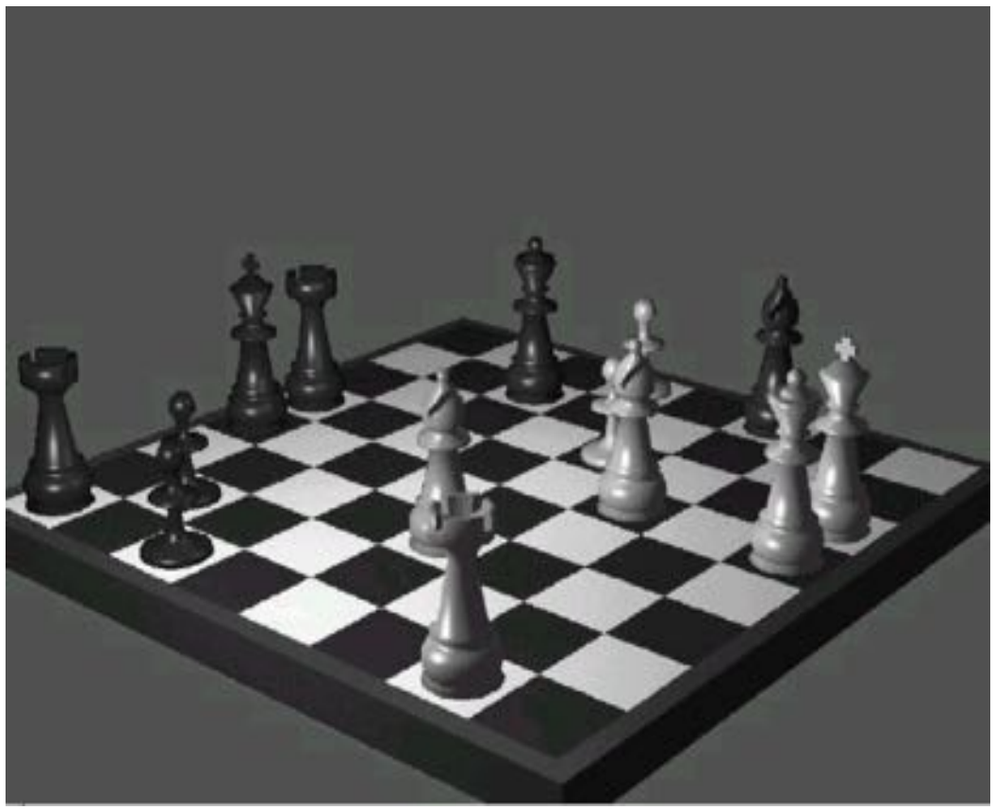
Playing chess



baby girl playing chess

Subjectivity, expectations

Playing chess



dog playing chess

Definitions, arguments

- hard to agree on
- necessary and sufficient conditions?
- are robots, ants, humans intelligent?

- more productive question:

  “Given a behavior of interest, how does it come about?”

Interaction and observation

Video “Robovie”

Video “iCub attention”

Interaction and observation

videos:

intelligent?

—> highly subjective

—> Turing suggests empirical test

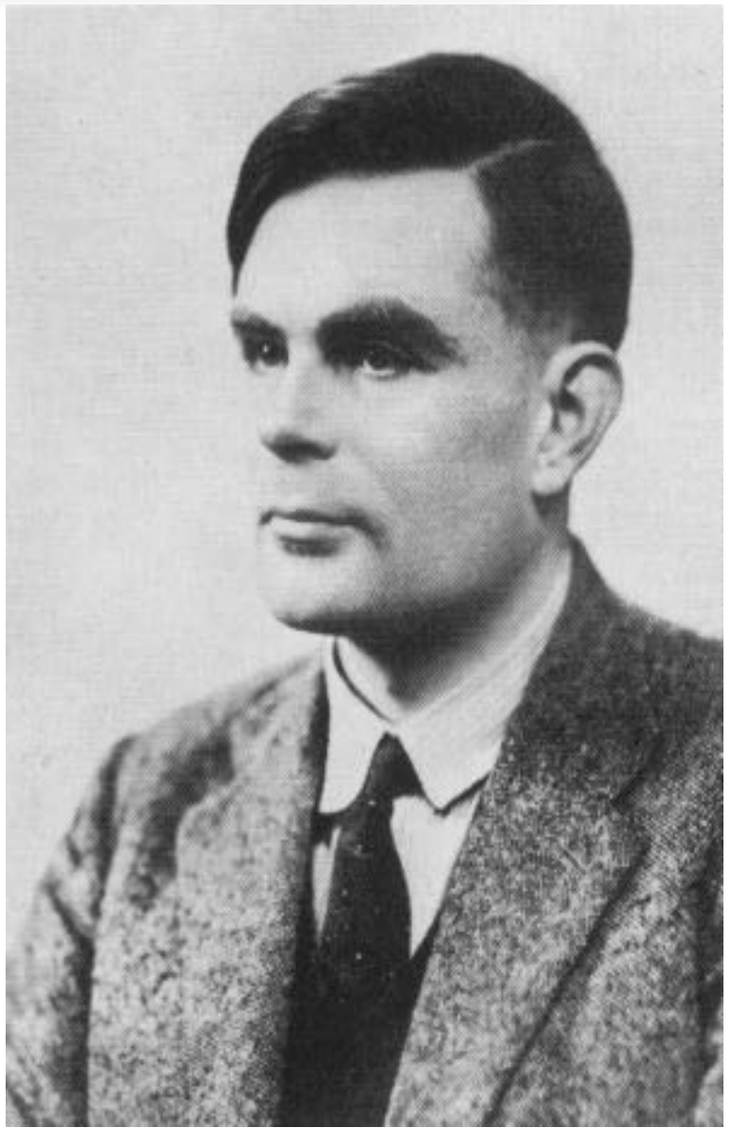
Today's topics

- characterizing intelligence, thinking, and cognition
- **"Turing Test" and "Chinese Room Experiment"**
- intelligence testing — IQ
- artificial intelligence and its goals
- how to study intelligence: the "synthetic" methodology

An empirical test?

Alan Turing (1912 - 1954)

- **computer**
- **“computation”**
- **intelligence**

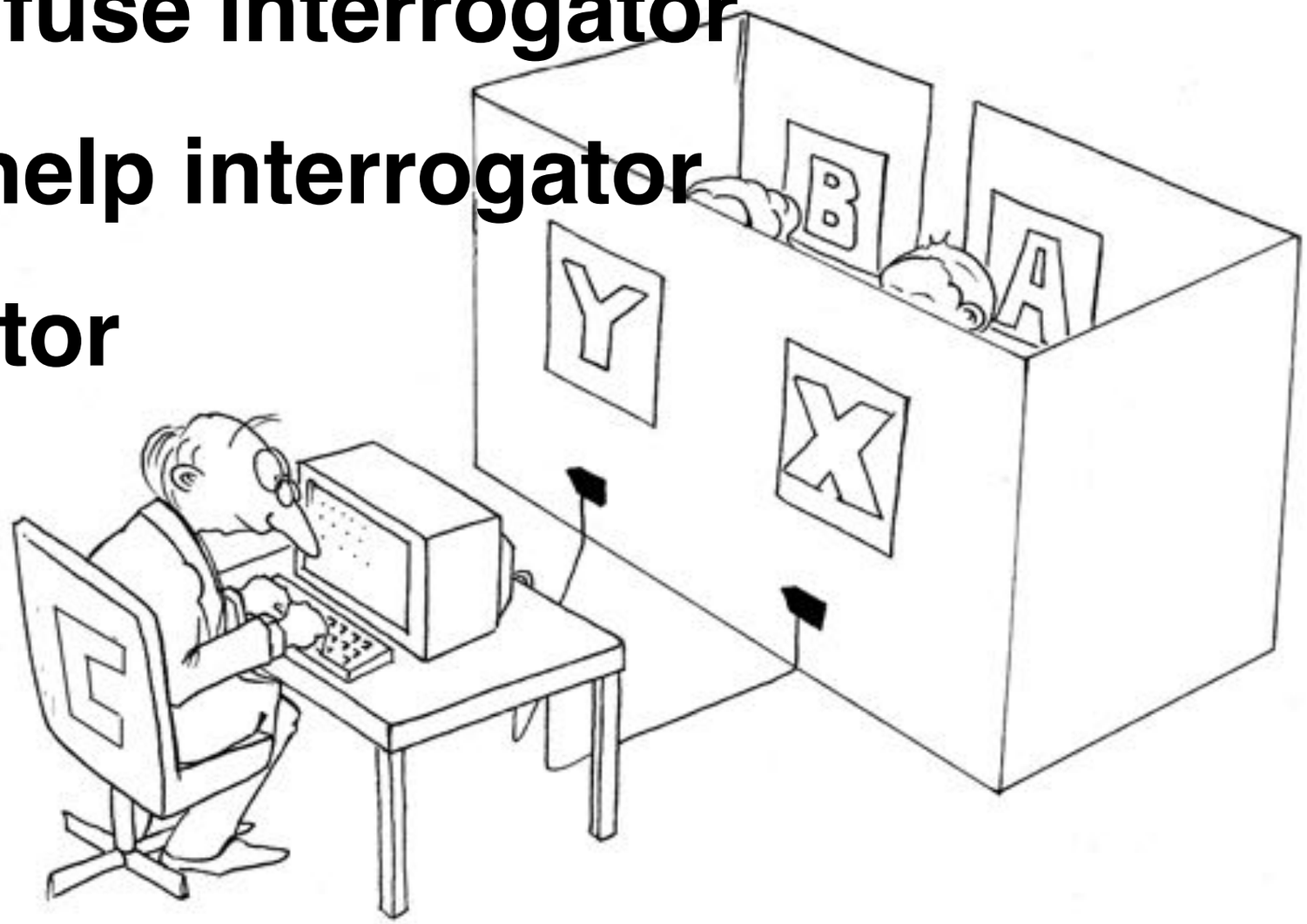


The Turing Test

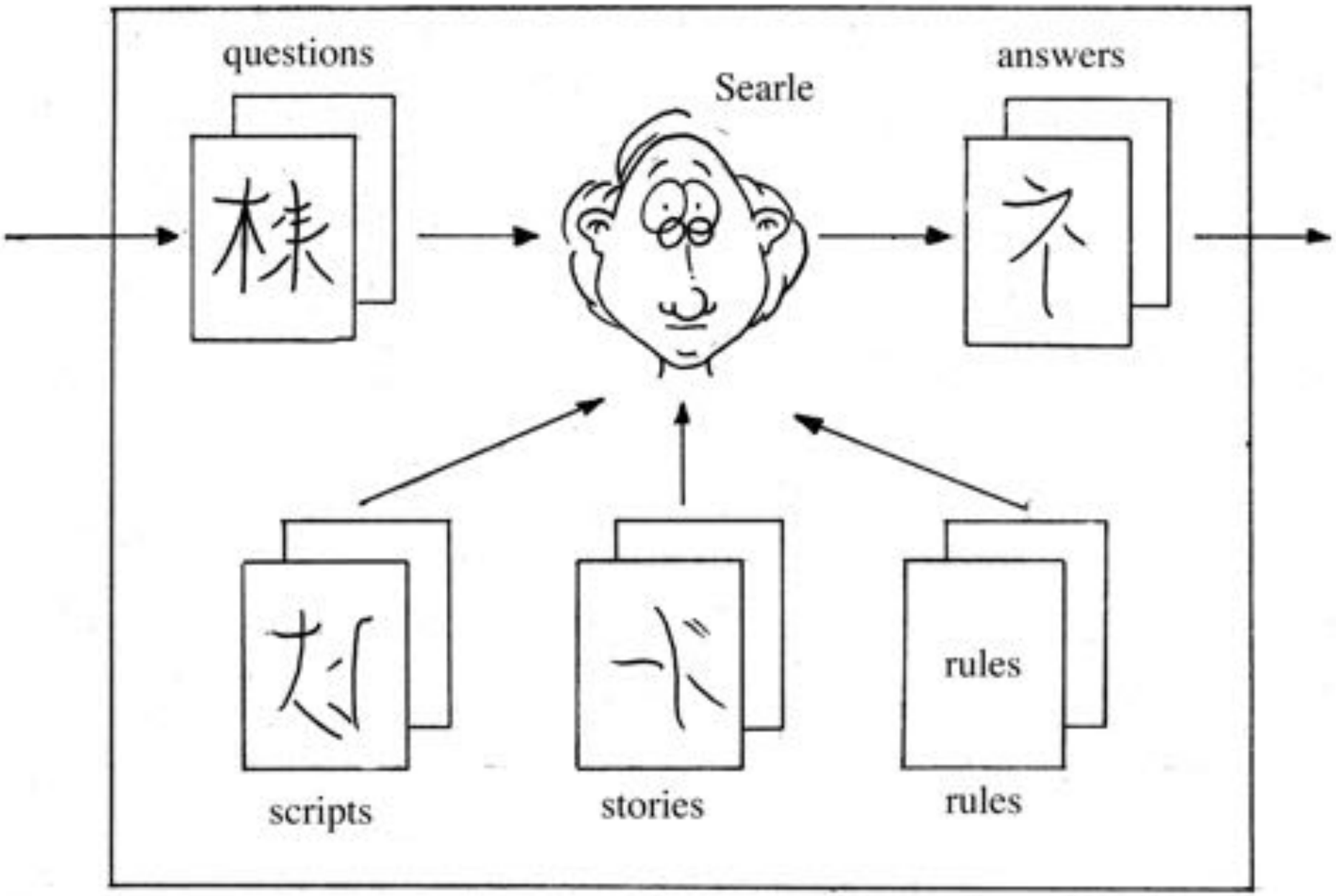
A: man, confuse interrogator

B: woman, help interrogator

C: interrogator



Searle's "Chinese Room" thought experiment



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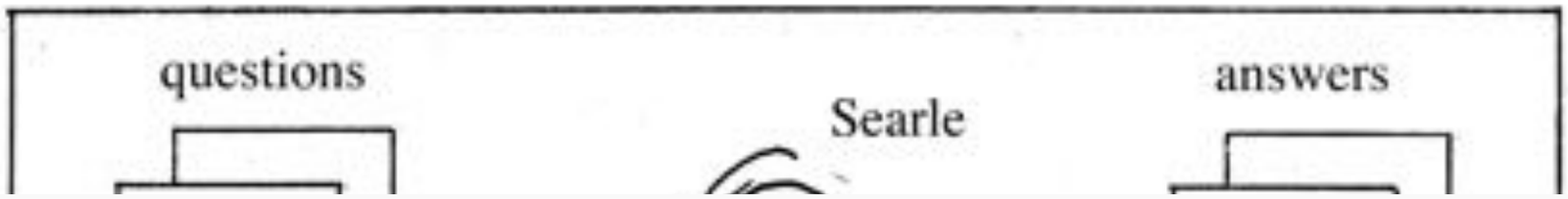


homework:
think about pros and cons
student presentation
next week

Variations on the Turing Test

- **Historical: ELIZA (Doctor), Josef Weizenbaum, 1966**
- **Movie “Blade Runner”, 1982, based on novel by Philip K. Dick (“replicants” look like humans, programmed to die after 4 years —> video clip)**
- **The Loebner Prize Competition (every year)**
- **Chatterbots (text-based conversational**

Turing tests

Video: “Blade runner”

Video “real dog vs. Aibo”

Assignments for next week

- **Next lecture on 10 November 2016: “Embodied Intelligence”.**
- **Read chapters 6 to 7 of “How the body …”**
- **Additional reading materials (on web site)**

End of lecture 2

Thank you for your attention!

stay tuned for lecture 3

“Intelligent Systems: Properties and Principles”

Fabio Bonsignorio
Prof,the BioRobotics Institute, SSSA
CEO and Founder Heron Robots
Santander - UC3M Chair of Excellence 2010

Research interests

- embodied intelligence, cognition/AI and robotics

- experimental methods in Robotics and AI

- Advanced approaches to Industry 4.0

- synthetic modeling of life and cognition

- novel technologically enabled approaches to higher education and lifelong learning

The ShanghAI Lectures
2013-2016

Rolf Pfeifer
Prof,
Institute for Academic Initiatives, Osaka University, Japan
Dept. of Automation, Shanghai Jiao Tong University, China
Prof Em.,Former Director AI Lab, Univ. of Zurich

How the body shapes the way we think

MIT Press

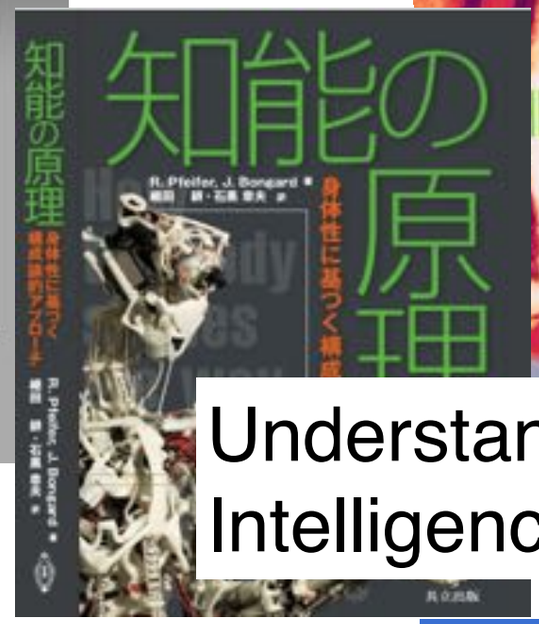
Research interests

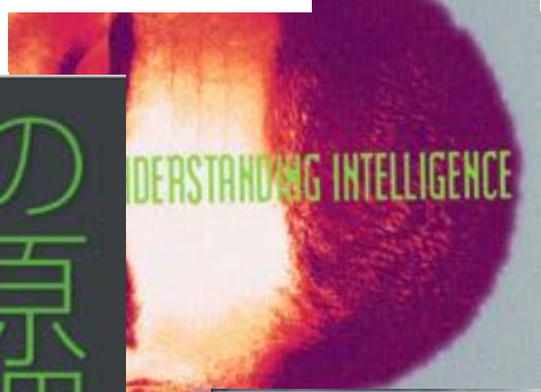
- embodied intelligence

- bio-inspired robotics

- self-organization and emergence

- educational technologies





Understanding Intelligence

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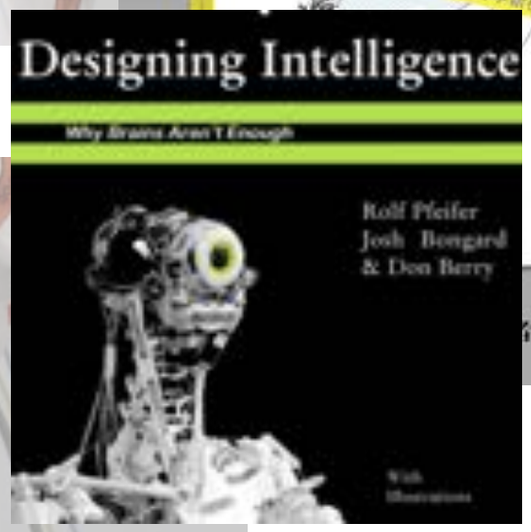

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