Multimodal Interaction with Intelligent (?) Agents

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Multimodal Interaction with Intelligent Agents

* What does this mean?

    * Multimodal: Several information channels.

    * Interaction: Encoding, sending, and decoding messages.

    * Intelligent: Good question.

    * Agents: People, Virtual Characters, Robots

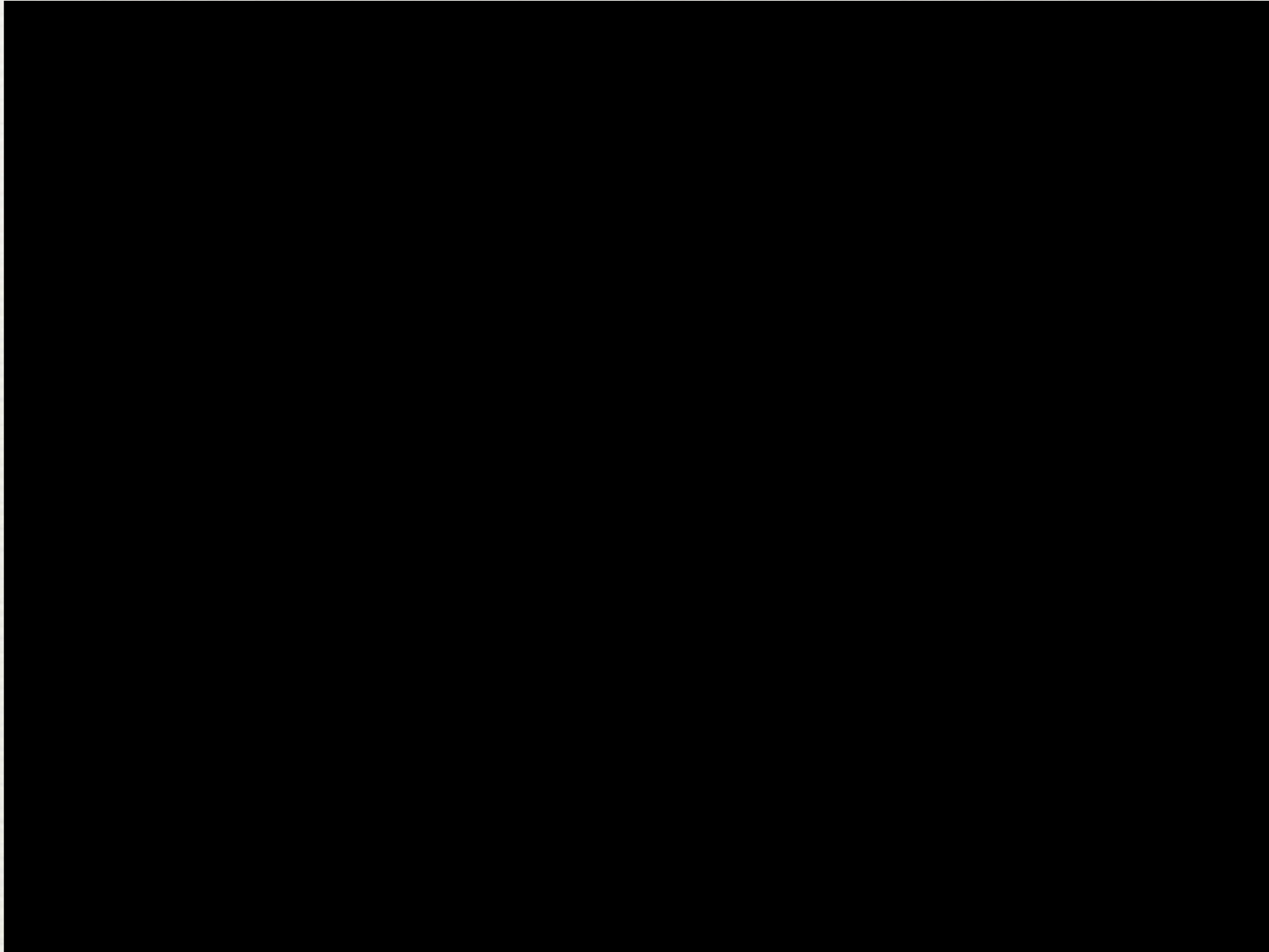# Multimodal Interaction with Intelligent Agents

- ✦ Why is this interesting?

  - ✦ How are different pieces of information combined to convey (parts of) a message and facilitate understanding/production thereof?

  - ✦ Using agents may help to study this while also "improving" agents.
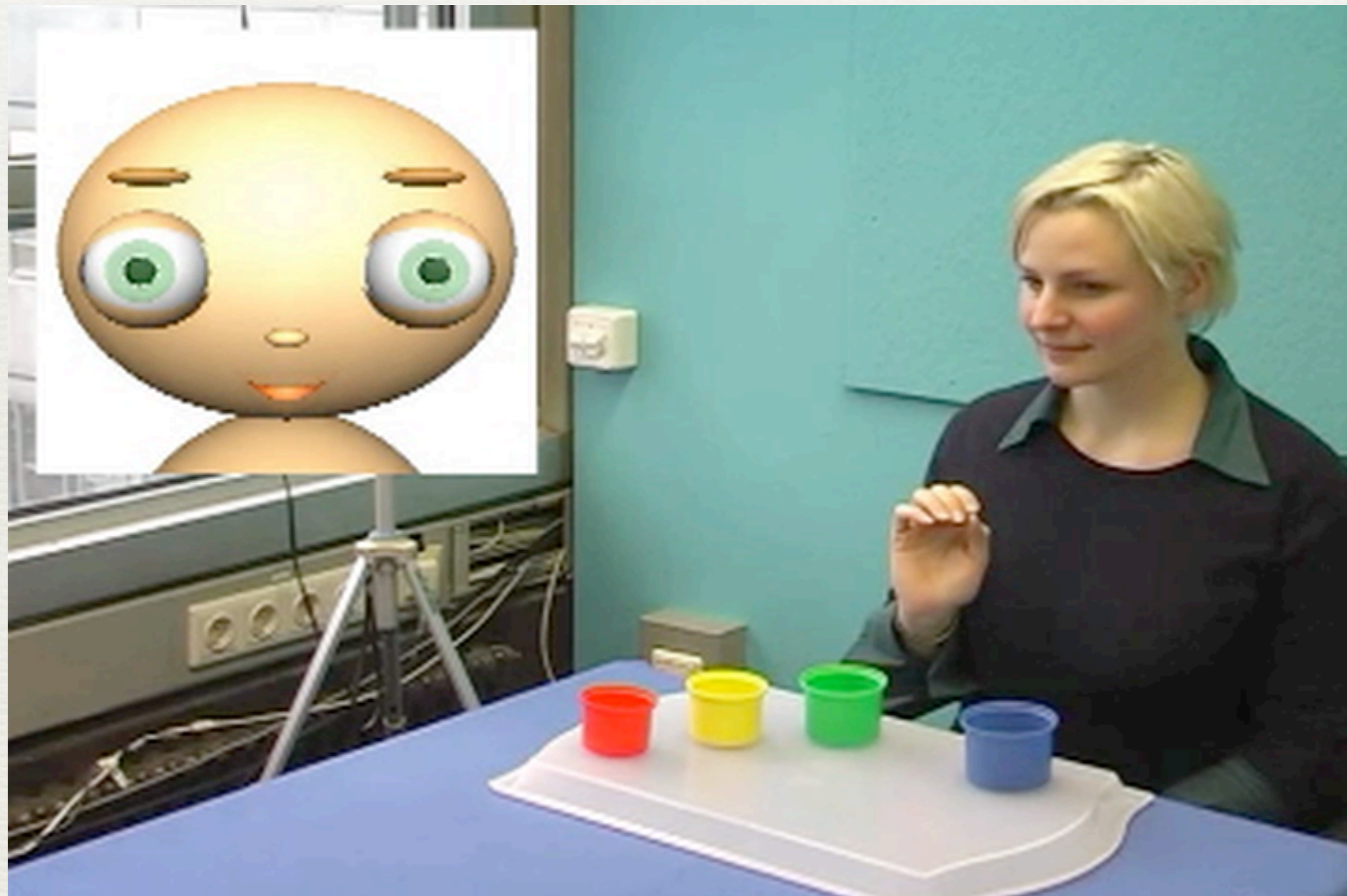
Gaze, posture, gestures...

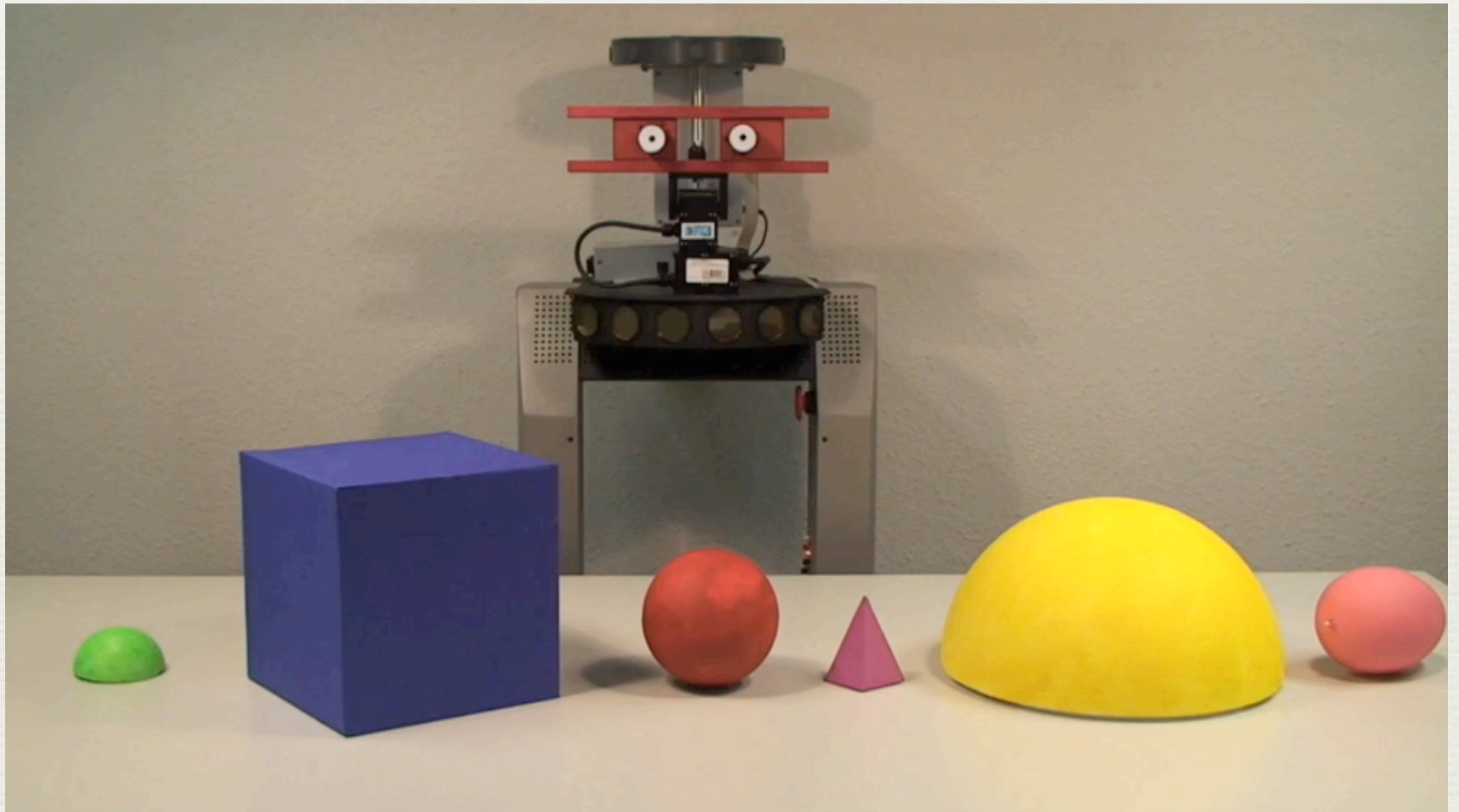- ✦ Body Language Grammar

Gaze, posture, gestures...

In case of failure...

In case of failure...

"The sphere is smaller than the half-sphere that's green."
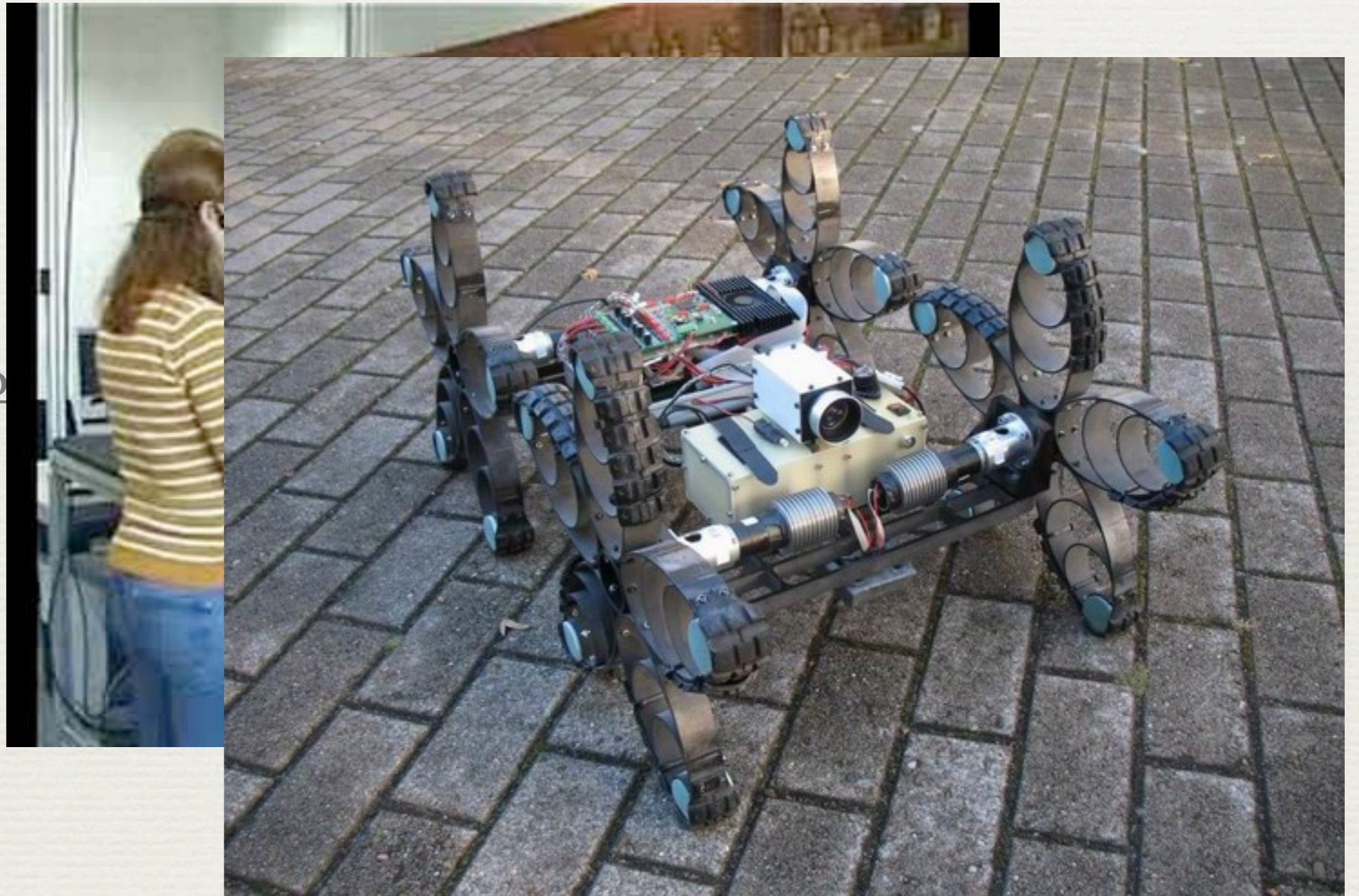
People & Agents

✦ Differences:

    ✦ Different body parts -> same functions?

    ✦ More errors

    ✦ Same mental states? (attention, intentions, emotions)

To be (human-like), or not to be ?!

✦ Ishiguro

Topics

✦ Gaze-Following and Inferring of Intentions

✦ Joint Attention

✦ Gaze and Turn-Taking, in HHI and HCI

✦ Speaker Gaze grounds Reference in Situated Communication

✦ Effects of Non-Verbal Behaviour in HCI and HRI

✦ Effects of Appearance

✦ Effects of Motion/Behaviour

✦ The Uncanny Valley

Gaze-Following and Inferring of Intentions

* Why do people follow gaze?

* When and how do children learn to follow gaze?

* What information/mental states do people infer from gaze (direction)?

Joint Attention

- ✦ What does it mean, when two individuals "jointly attend" to something?

- ✦ Which mechanisms are involved?

- ✦ Can people establish joint attention with animals or machines?

Gaze and Turn-Taking

✦ How does gaze influence who gets to speak?

✦ How is this related to *what* is being said?

✦ Can this be applied to HCI/HRI?

Gaze Grounds Reference

✦ Can people use speaker's gaze to anticipate what she is going to talk about?

✦ How does this visual information help process linguistic information?

✦ How flexible are people in combining and using such information?

Non-Verbal Behaviour in HCI/HRI

- ✦ Effects on the general impression the agent makes and the general engagement of the human partner in such a conversation

- ✦ Positive vs negative aspects

Effects of Appearance

- How does an agent's body shape/form influence what people expect from it?

- To what extent should an agent look like a human?

- Should appearance reflect actual competences, or suggest more capabilities and higher level of intelligence/autonomy than available?

Effects of Motion/Behaviour

+ To what extent does motion/behaviour suggest and reflect intentionality and intelligence?

+ Can this override what the appearance initially suggested?

Uncanny Valley

+ Why is "Geminoid", for instance, so creepy?

+ When and why is extremely natural or human-like appearance and motion not desirable?

More Topics...

✦ Can robot gaze also signal intentionality and be used for grounding robot speech?

✦ Gestures complement speech, sometimes even express conflicting information. What sort of information is rather conveyed via gestures and which through speech (and why?)

✦ When and why do people use a pointing gesture rather than gaze or speech?

Organisational Things

* Topic selection, Schedule

* Who are you? What is your background and interest?

* Meeting time

* Paper for next week

Date	Topic	Presenter
6 May	Introduction, Paper discussion	Maria
13 May	---	---
20 May		
27 May	Adapting System Output	Ivana
3 June	---	---
10 June		
17 June		
24 June		
1 July		
8 July		
15 July		

Reading

✦ Clifford Nass and Youngme Moon, 2000, "Machines and Mindlessness: Social Responses to Computers", Journal of Social Issues 56(1):81-103

  ✦ Main argument

  ✦ Studies and methods

  ✦ Questions raised