Robots and their relevance to society
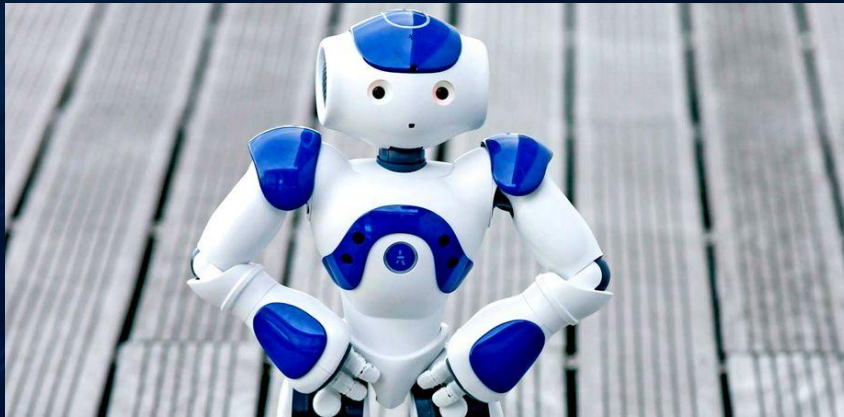
ARNO SCHULZ

14.01.2013

Content

- Questions for discussion

I. Fields of application:

Medical context

- Da Vinci Robot   (short clip 1:40 min)
- RIBA II Robot   (short clip 2:30 min)

static

Everyday life context

- iRobot Roomba
- 3 famous humanoids of today
- KSERA – Nao   (short clip 0:20 min)

autonomous

3

Medical context – Da Vinci Robot

Medical context – Da Vinci Robot

- Pros:

- Very precisely

- Increased range of motion

- Small incisions (1-2cm)→ faster healing process

- Tens of thousands successful procedures for Da Vinci

- Telesurgery could be possible in future

- Cons:

- mainly designed for minimally inversive surgery (laparoscopic)

- may limit visualization, impeded access to operative field

RIBA – Robot For Interactive Body Assistance
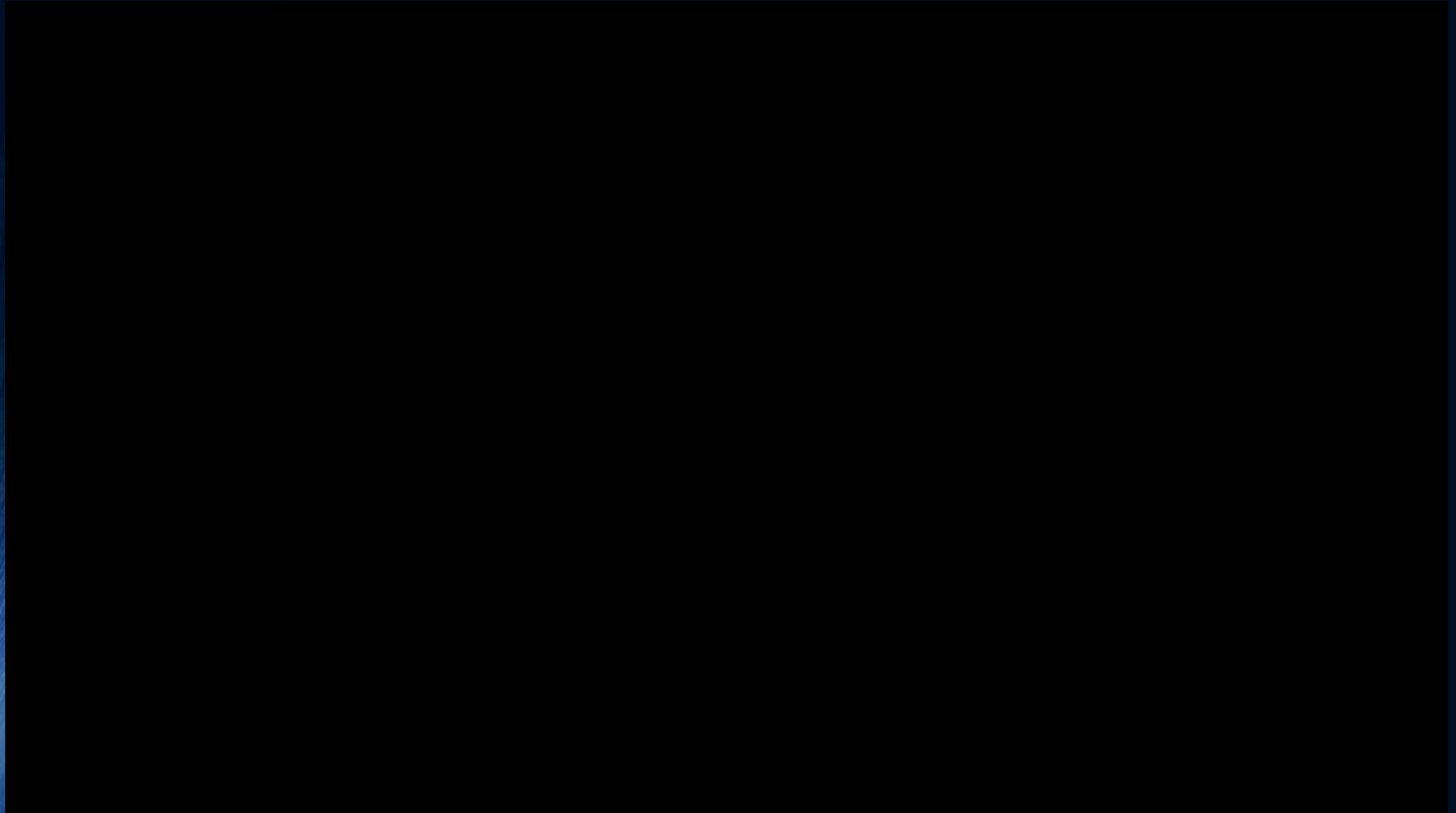
RIBA – Robot For Interactive Body Assistance

Pros:

- Nursing-care assistant
- Mainly designed for lifting up a human
  - eg. Floor → wheelchair → bed , bed→ wheelchair, …
- Reduces the physical strain on the care worker
- In many cases only one instead of two workers are needed

Cons:

- Can only lift up to 80kg
- The Robot is heavy and slow
- Costs need to be reduced until 2015

Everyday life context: Irobot Roomba - Vacuum cleaner

- first on market: 22.09.2002

- different models : 279€ - 900€

- recommended for 15m² - 80m²

- drives to his charging station

- many sensors for orientation

- *Virtual Wall Lighthouses* for

guiding and restricting areas

Three famous humanoids of today

- Every life-form or machine with the appearance of a human is called humanoid. (wikipedia)
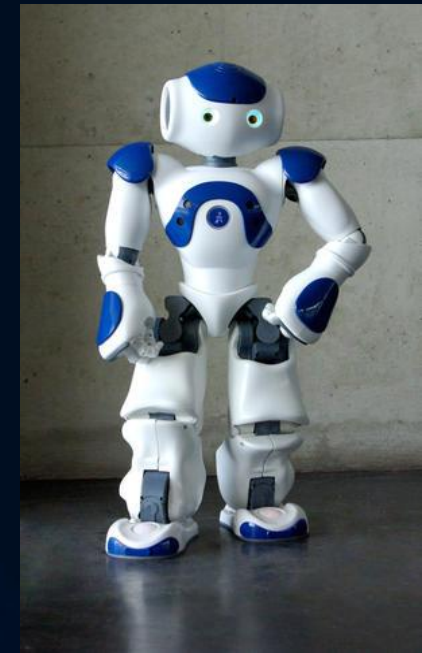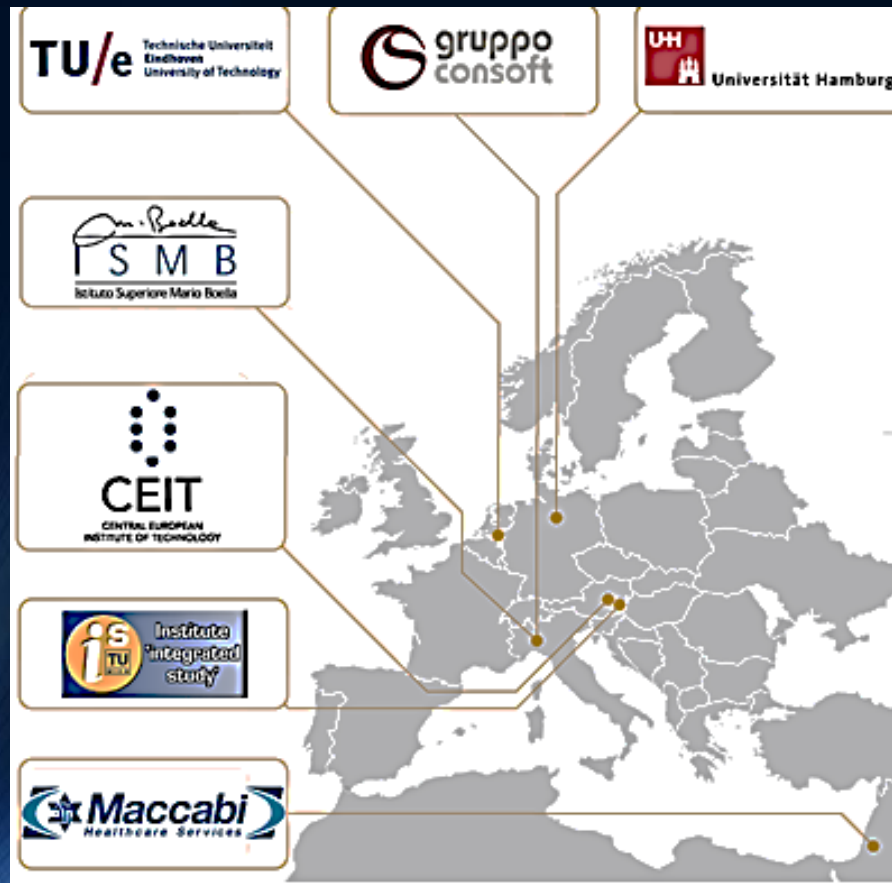
Asimo   **hrp-c/ hrp-c4**   **Nao**

KSERA – Knowledgeable Service Robots for Aging   -   Partners:

- Eindhoven University of Technology (TU/e)
- Istituto Superiore Mario Boella (ISMB)
- Maccabi Healthcare Services (Maccabi)
- CEIT RALTEC gemeinnuetzige GmbH (CEIT RALTEC)
- Vienna University of Technology (TUW)
- Consoft sistemi S.p.A. (Consoft)
- Universität Hamburg (UH)

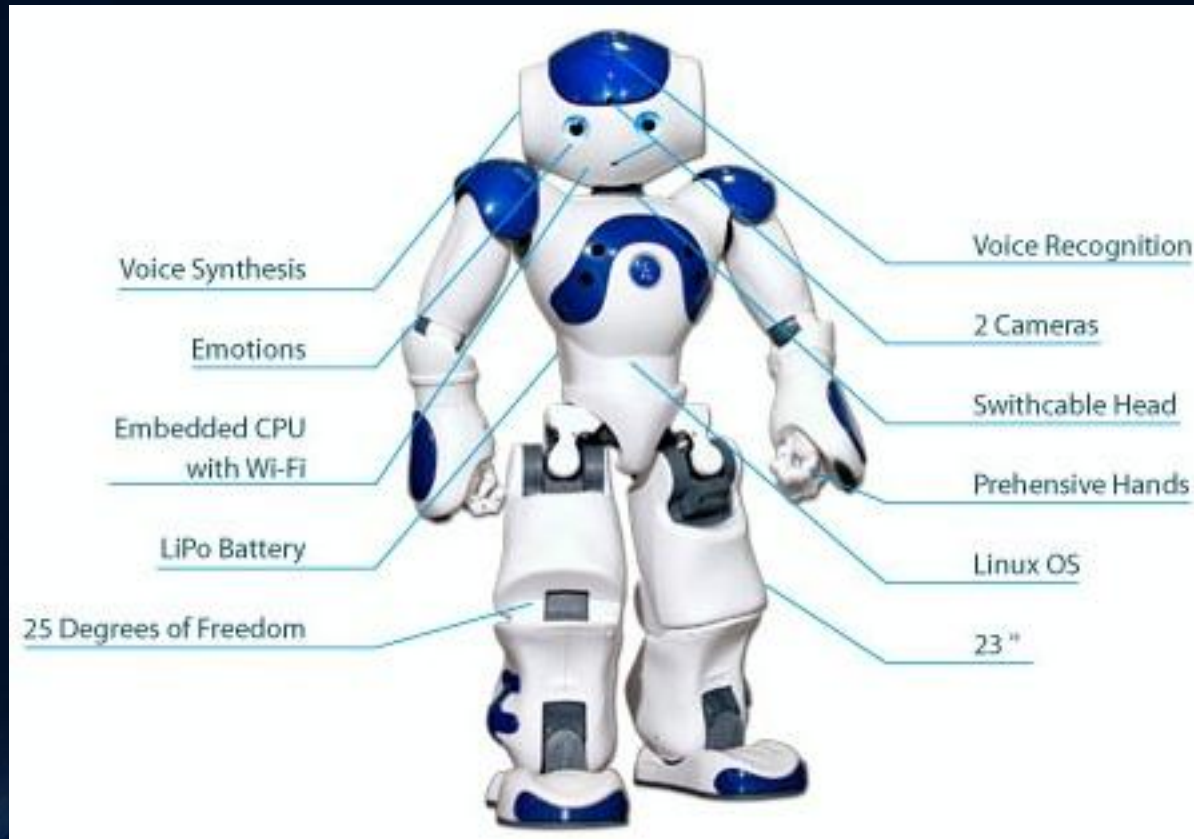# KSERA – Knowledgeable Service Robots for Aging

- Dipl .-Inf. Nils Meins, Department Informatik UHH

The Vision:

- Support elder people in their private home in everyday life to become more independent

KSERA – Knowledgeable Service Robots for Aging, Plattform *Nao*:

KSERA – Knowledgeable Service Robots for Aging

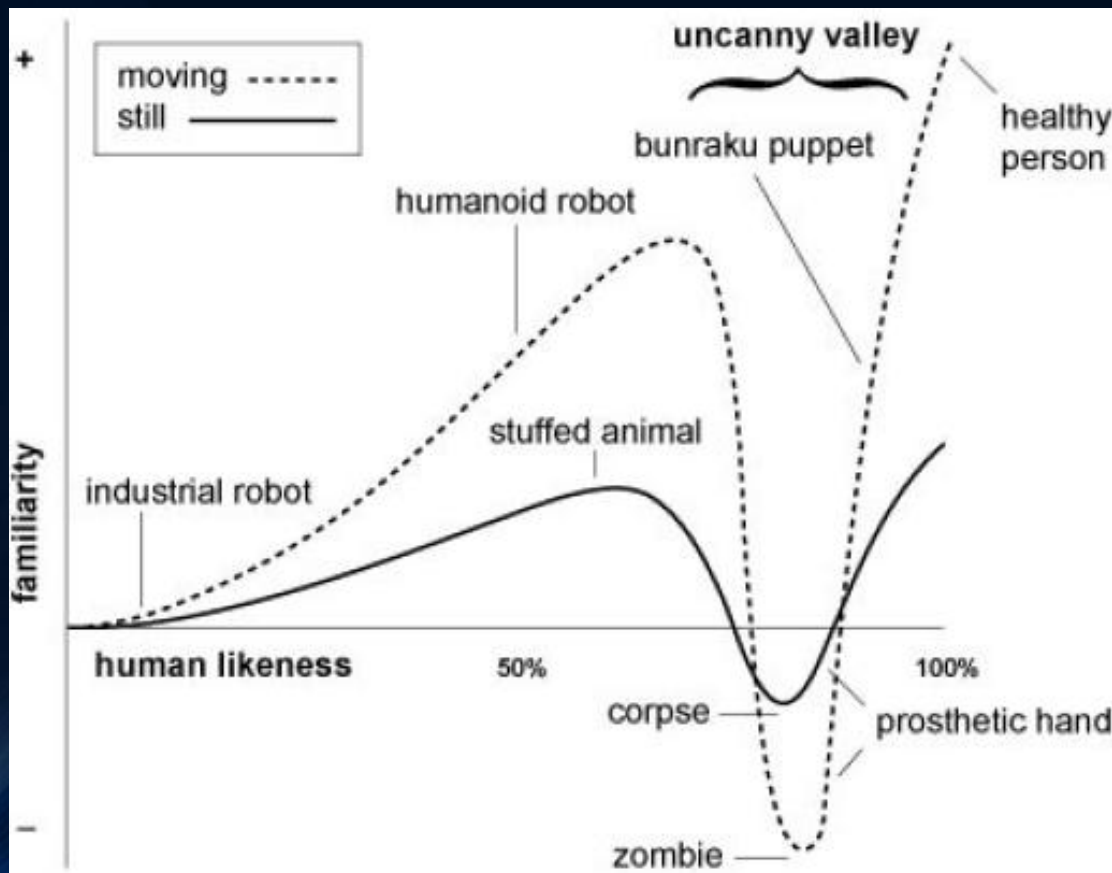- Problem in the future
  - Society grows old
  - → lack of care workers for eldery

- Demand for Nao in the future
  - Face recognition
  - Interpretation of emotion
  - To remind patient of taking medicine, measuring blood pressure
  - alert a doctor when a person collaps
  - Entertainment?, …

Nao - entertainment?...
For sure!

II. Acceptance & Perception

- Roboticist *Masahiro Mori* **1970**:

Acceptance & Perception

- Actually no empiric results for acceptance of robots in everyday life in germany.

- Hard to do studys about a technical system which application shall take place in the future

- VDE-study in 2011 – „Mein Freund der Roboter"

- → try to get an idea of influencing factors for the acceptance of robots

Acceptance & Perception „Mein Freund der Roboter"

- *supporting factors for acceptance:*
  - If it shows a real benefit
  - If it's secure, robust and provokes no fears
  - If it supports communication
- *Doubts of asked people:*
  - Supports isolation of old people
  - Afraid of losing control
  - Afraid of cheated emotions by the machine

Autonomic Robots – risks & key benefits

Risks:

- Handling the case of hurting humans

- Losing control as in a science-fiction movie

- Too much replacing → unemployment

- Acting in a reckless manner

Autonomic Robots – risks & key benefits

Benefits:

- Can supply a more comfortabel life

- Can be deployed in nearly every area of life

- Can do dangerous works → Protect humans,

- Progress of humans will be accelerated

Questions to discuss

Think of your own everyday life. How much responsibility do you want to give up to machines/robots in the next years?

Which status should robots have in society and who should be responsible for their behavior?