Discussion 1
Social science and robotics

Evaluation by a long term experiment

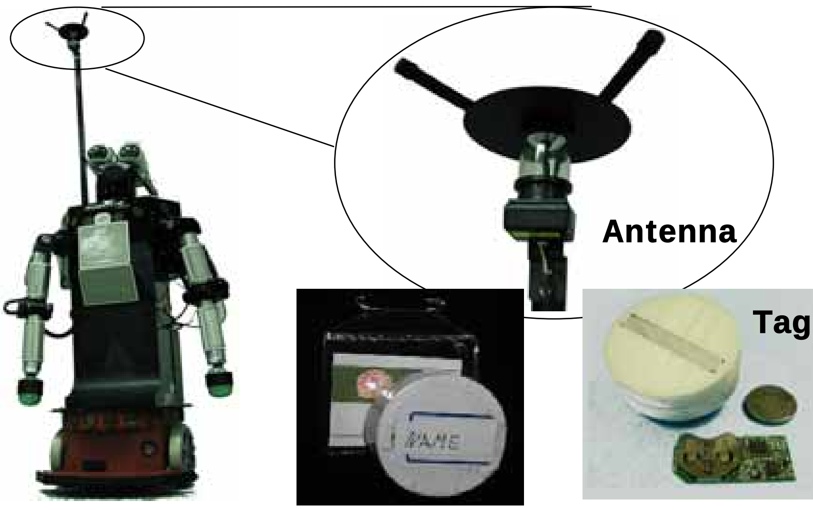
Difficulty in a real world

Although we have developed an interactive humanoid robot, …

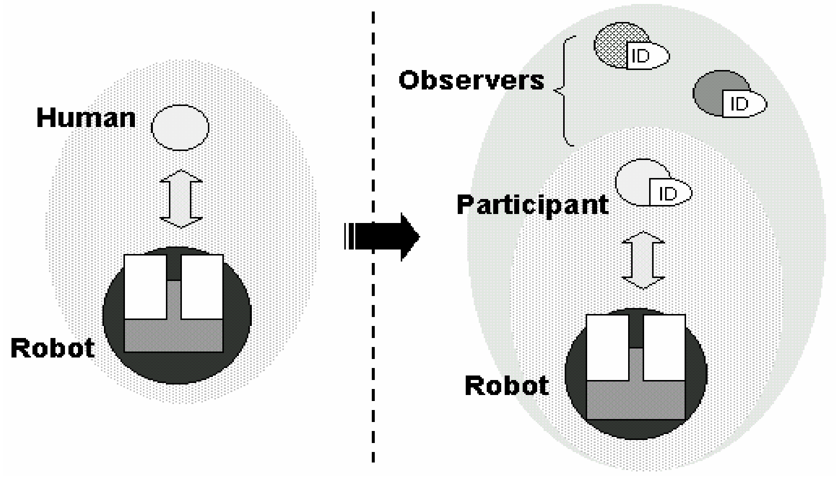
Robots need to identify multiple person to interact

→ **Wireless tags (RFID)**

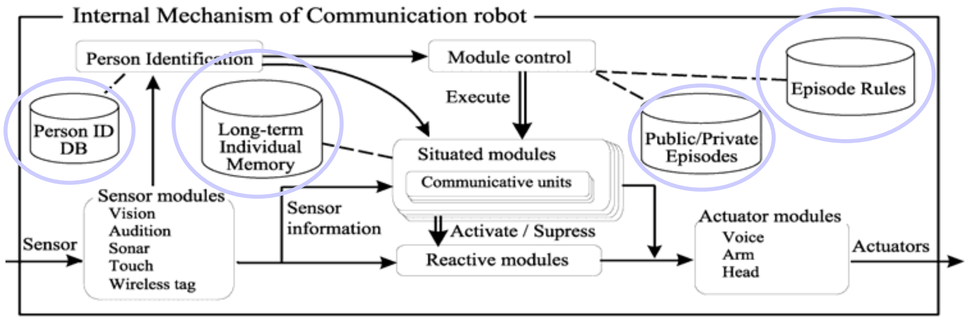
Person identification with wireless tags



Identification and classification

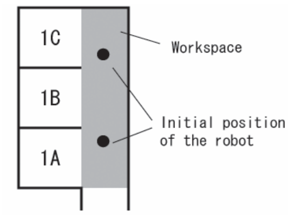


Software configuration

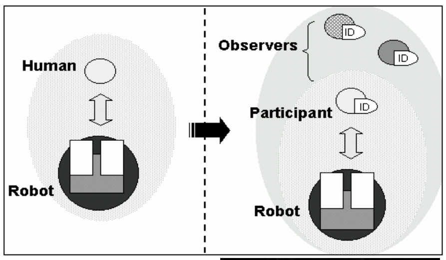


A field trial:
English education in an elementary school

- **Can robots support humans in communication tasks?**
  → **Try it…** First trial of applying interactive humanoid robots.
- **Settings**
  - **120 elementary school students, 2 weeks (1hrs. everyday)**
  - **Interacting time (by tags) / English listening test**



Implemented robot behavior



- **Interactive behaviors**
- **Person Identification**
  - **Nameplates with ID tags**
    - **Robovie can call children's names**
- **Communication in English**
  - **Recorded voice of English-native**
  - **Speech recognition (ViaVoice)**

◆ **Behaves like a foreign child who does not speak Japanese**

Scenes of the experiment

1st grader First day

First week

Second week

6th grader First day

First week

Second week

Videos

Two weeks experiments in an elementary school

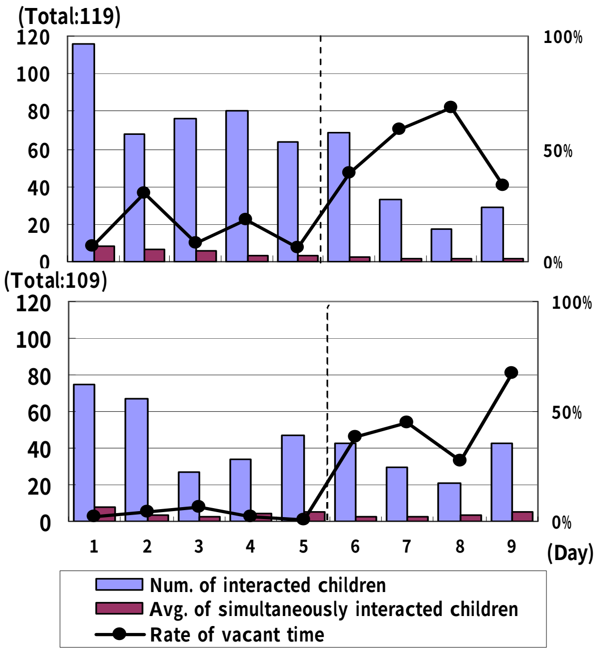
- **First graders in Wakayama**
- **Sixth graders in Wakayama**

Two months experiments

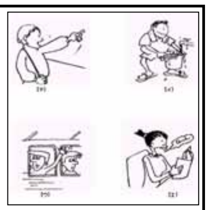
- **Fifth graders in Nara**

Transitions of interaction

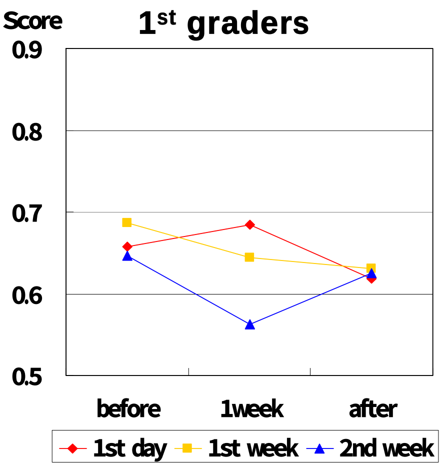
- First graders (upper)
- Sixth graders (below)
- In both experiments,
  - First day:
    big excitement
  - First week:
    stable interaction
  - Second week:
    satiation

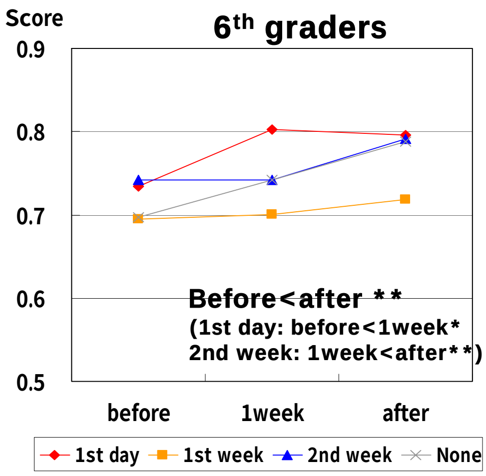


Effects on learning



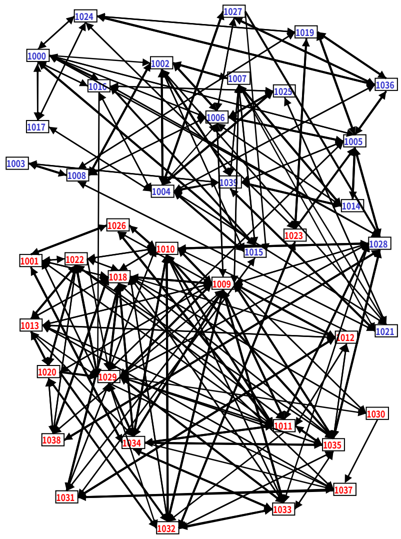
- Results for 6 items of a listening test (rate of correct answer)



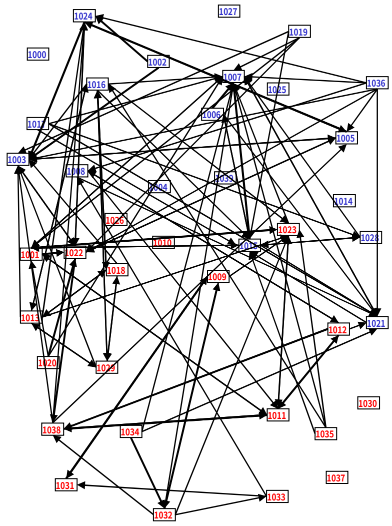


Sociograms

Questionnaire



Robot



Open problems

Robot behaves like a child

- it looks like a 3-4 year old child?

- **How to realize more consistent robot behaviors?**
- **How to put a meta control on episodes?**
- **How to realize more intelligent robot behaviors?**

Meta control ???

Episode rules (700)

Behaviors (100)

Elemental behaviors

Reactive modules

Two months experiment in a science museum



Two months experiment in a science museum


References

1. Takayuki Kanda, Takayuki Hirano, Daniel Eaton, Hiroshi Ishiguro, ``Interactive Robots as Social Partners and Peer Tutors for Children: A Field Trial," Journal of Human Computer Interaction (Special issues on human-robot interaction), Vol. 19, No. 1-2, pp. 61-84, 2004.
2. Takayuki Kanda, Takayuki Hirano, Daniel Eaton, Hiroshi Ishiguro, Interactive Robots as Social Partners and Peer Tutors for Children: A Field Trial, Journal of Human Computer Interaction (Special issues on human-robot interaction), Vol. 19, No. 1-2, pp. 61-84, 2004.
3. Takayuki Kanda, Takayuki Hirano, Daniel Eaton, and Hiroshi Ishiguro, A practical experiment with interactive humanoid robots in a human society, 3rd IEEE International Conference on Humanoid Robots (Humanoids), CD-ROM, ISBN 3-00-012047-5, 2003.