robotics Swiss National Centre of Competence in Research

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How Children Tidy up Their Room with "Ranger" the Robotic Box

Sub-project 5.1: Robots for daily life – Interaction analysis

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Idea: Motivate children to tidy up their room

- Make tidying up more pleasant and playful
- Interactive robotic box "Ranger" developed at EPFL
- Evaluate first remote controlled prototype in families

Method: Wizard-of-Oz experiments

- 14 families (31 children (2-10 years), 17 parents)
- 2 different robot behaviors (conditions):
  - ***active*** (system-driven)
  - ***passive*** (learner-driven)
- Measurements: empirical, behavioral, subjective data

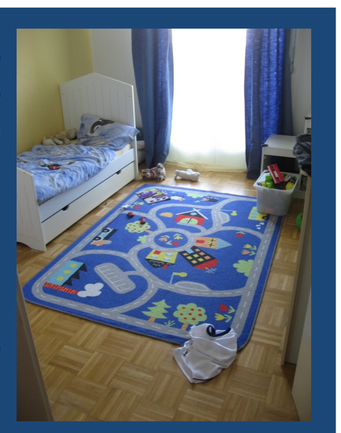
Girl showing toy to Ranger (left). Boy putting his fire truck into Ranger (right).

Evaluation: Family's feedback

- Both children and parents like Ranger
- Appealing design (simple wood, colors, sounds, eyes)
- Wish of having several boxes and probably speech

Room before (left) and after (right) tidying up with Ranger.

Photo below: Two boys with Ranger.

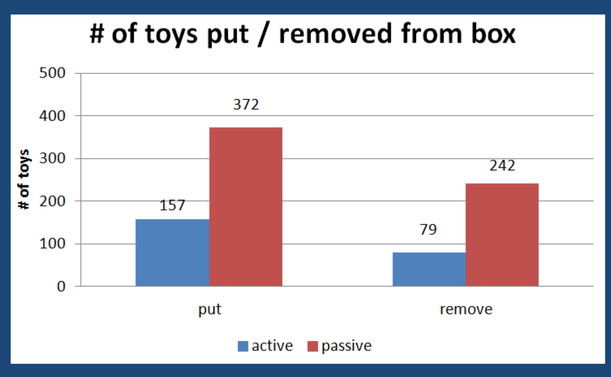


When toy is put / removed, Ranger shows colors and makes sounds. When putting several toys, Ranger dances and shows a lightshow.

In the "***active***" condition, the box moves around, looks for toys on the floor, whereas in the "***passive***" condition it hardly moves.

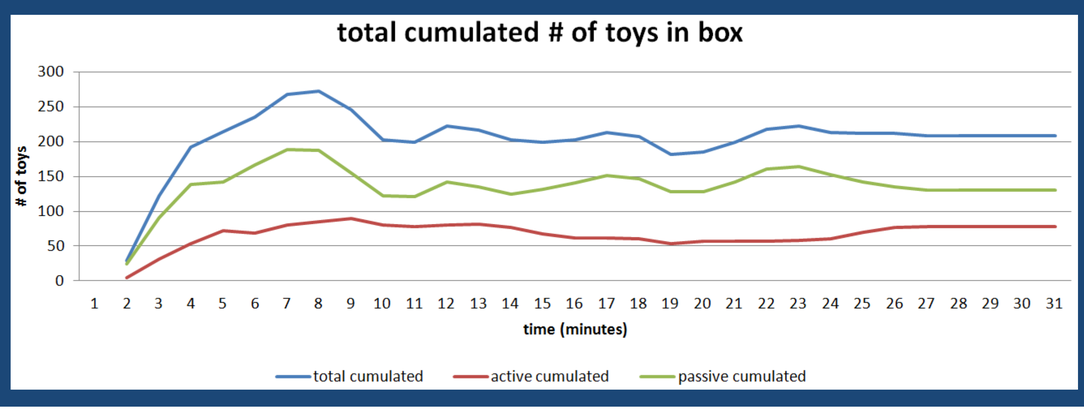
Results: Child-robot interaction

- 14 videos (~3 hours interaction)
  - Duration: 5-27 min, average 12 min
  - Delay first object: 23 sec - 23 min, average 2:22 min
- 1740 activities: 47 % of the time children explore the box



More toys put / removed when box is ***passive*** compared to ***active***.

- fascination of putting toys in the box during first 7 min
- after having put ~20 toys some start removing them



Conclusions

→ Robot's behavior impacts how children interact with it
- An **interactive robot** is engaging but also distracts
- A **passive robot** supports better a "task" like tidying

→ Robot's design should be personalized
- Qualitative **gender and age** differences in interaction
- Each child has **personal preferences**

→ Design needs to enable sustainable interaction
- Strong **novelty effects** ask for "evolving robot"
- Adapted to **family's needs**

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