HRI Reading Group

@ Instituto Superior Técnico

Meeting #3 (16 Mar 2018)

Welcome!

Paper

Anticipatory robot control for efficient human-robot collaboration

Huang, C. M., & Mutlu, B.

(2016) The 11th ACM/IEEE International Conference on Human Robot Interaction.

Approach taken in the paper

Pros

- The two levels of confidence can show the uncertainty of the robot
- Gaze is indeed one the modalities that might convey intention
- Good control condition

Cons

- Eye tracking errors
- Gaze is not the only thing that conveys the intention, especially for more complex tasks
- Lack of social perception measures
- Glasses were intrusive
- The reduction of task time cannot overcome the error rate

Anticipatory actions in general

Pros

- Good on situations where the human has to focus on the task and less on the environment
- Well defined, repeated tasks like assembly
- On-demand intervention (catastrophe avoidance)
- Provide coordination in multi-agents systems
- It reveals theory of mind
- It can create more natural interactions

Cons

- Not suitable for tasks with low error tolerance
- Not suitable for fast pace, multi users environments
- It provides social pressure and might constraint the user decision
- Might not be suitable depending on cultural aspects, personal, task-related
- Intention prediction might break privacy issues
- Disruptive process

Other remarks

- Other non-verbal cues to convey intention:
  - Motion, ECG, skin conductance, reaching for objects, blinking rate, points
- Robots that have anticipatory actions convey transparency
- Intention prediction is complex and should use both task-related info and social cues

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Meeting #4 (23 Mar 2018)

Who is bringing the refreshment next week?