HRI Reading Group

@ Instituto Superior Técnico

Spring 2019

Meeting #4 (8 Mar 2019)

Paper

D. Porfirio, A. Sauppé, A. Albarghouthi, B. Multu **Authoring and verifying human-robot interactions.** *The 31st Annual ACM Symposium on User Interface Software and Technology*, pp. 75-86. ACM, 2018

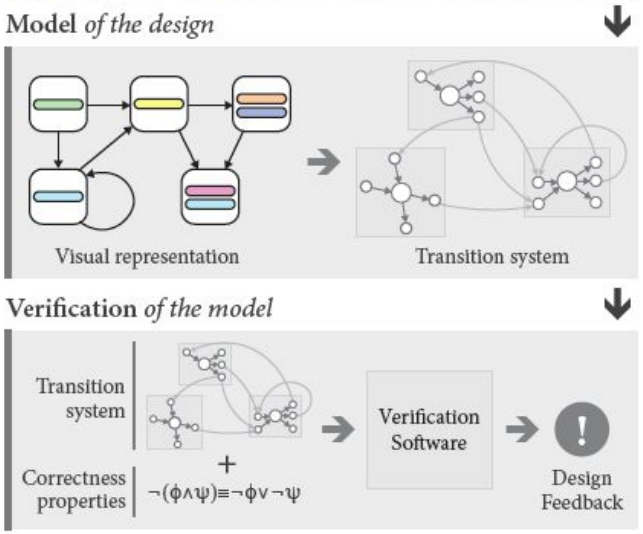


Figure 1. RoVer provides users with a visual environment to design interactions, represents these designs as transition systems, and verifies these systems to determine whether the interactions violate social norms.

Figure: Representation of Rover.

How can we summarize this work as an elevator pitch?

- Authoring tool to develop behaviors for a robot taking into account social norms and task specifications.
- Tool that enables testing before deployment.

Extra questions:

- Is this tool tool for design or implementation?

What is the novel contributions of this work compared to previous works?

- Specifications of social norms
- Verification tool for the designs
- Rule-based constraints that enable more adaptive robot behaviors
- Informative/useful task states that inform social norms
- Inclusion of aspects related with the user/environment
- Reu-usage of microinteractions

What are the tools available for robot authoring?

Existing robot authoring tools:

- SERA
- Choreographe
- FAtIMA
- RoboFlow (task-based and not social behaviors)
- Scratch
- Robot studio
- Interaction blocks
- Interaction composer

Technical part

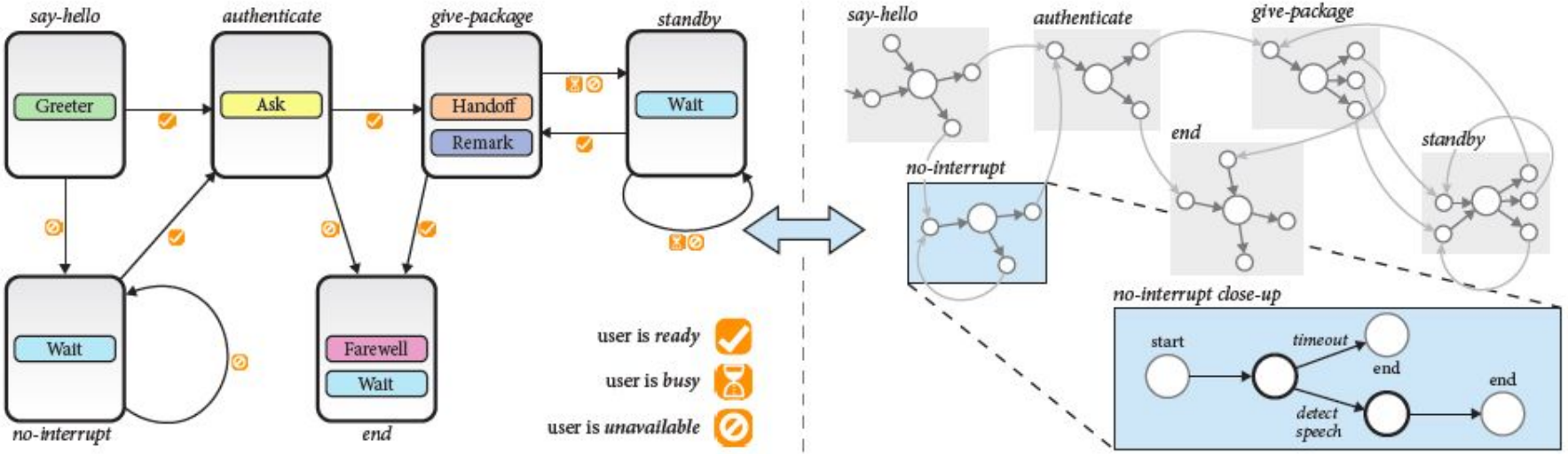


Figure 2. Left: The design of a delivery interaction as implemented in RoVer. Right: A state-space representation of the delivery interaction shown on the left. The gray boxes represent microinteractions one of which is highlighted in blue and expanded to show labels on transitions and states.

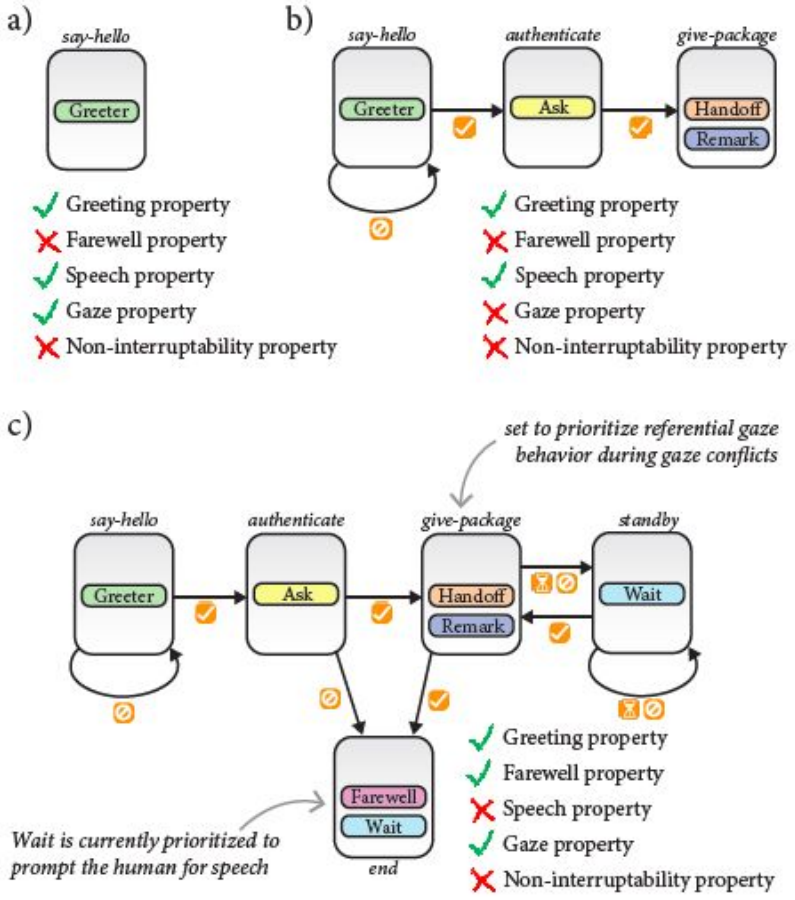


Figure 3. A walk-through of the construction of the delivery interaction. Satisfied and violated properties are shown at each step. The complete interaction is shown in Figure 2.

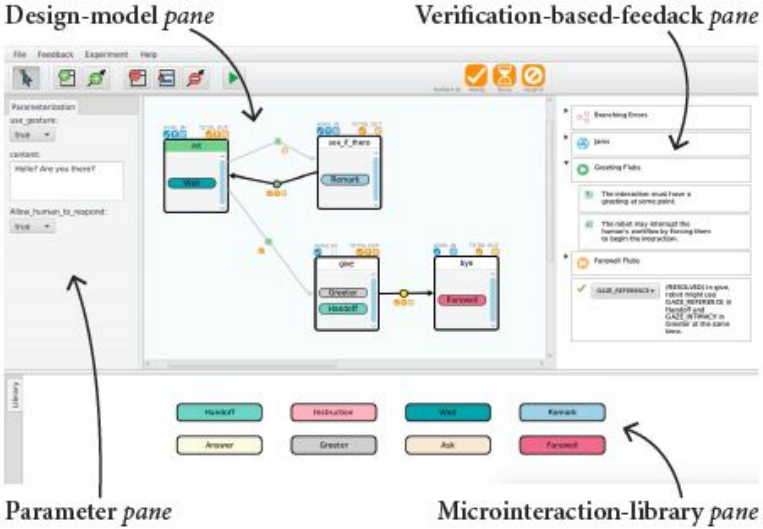


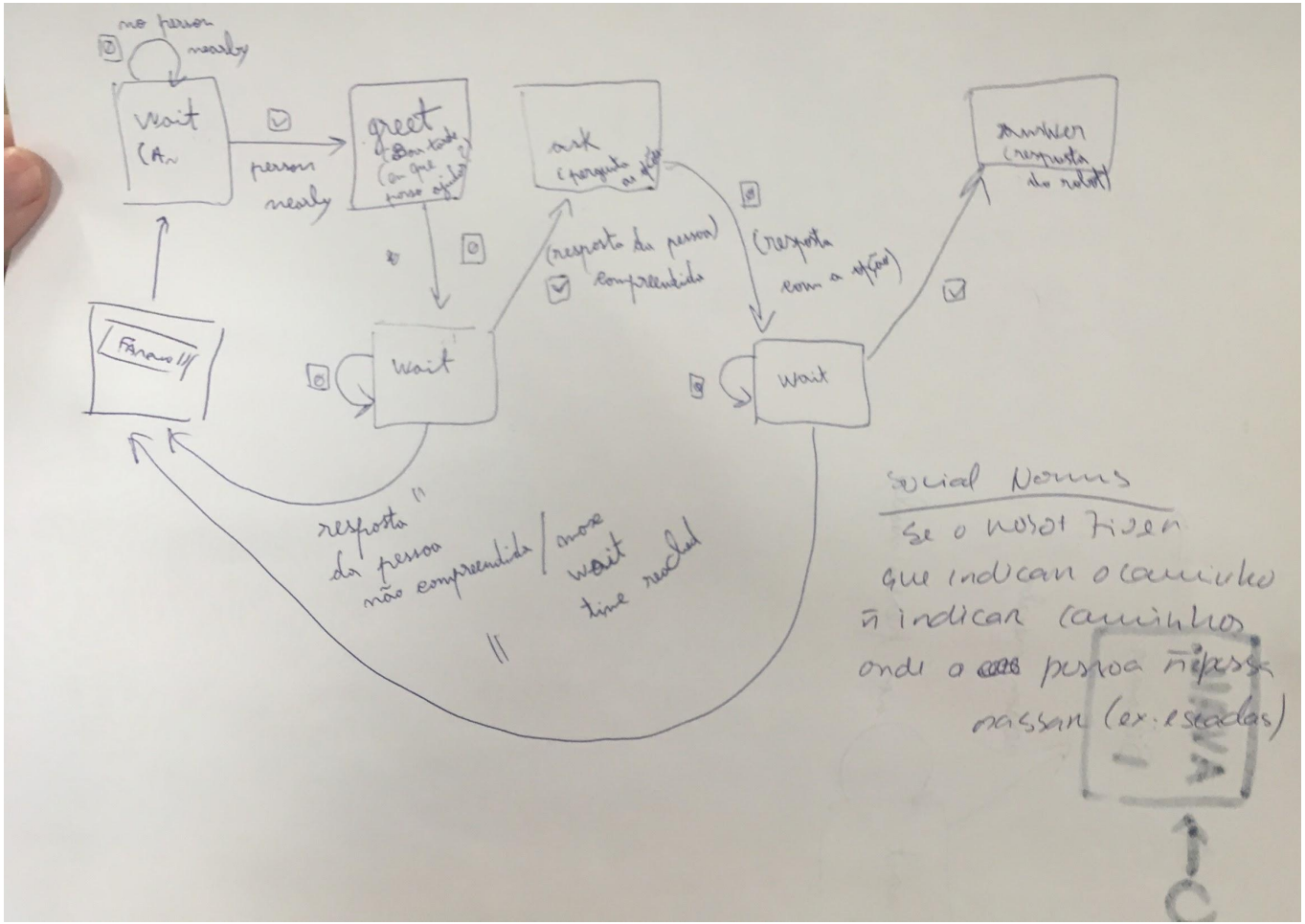
Figure 4. The user interface for RoVer, including a *design-model pane* that serves as the canvas for the designer to construct interactions, a *parameter pane* that provides contextual parameter options for behaviors and microinteractions, a *library pane* that provides a draggable library of available microinteractions, and a *feedback pane* that provides the designer with feedback based on verification analysis.

Group exercises (30min)

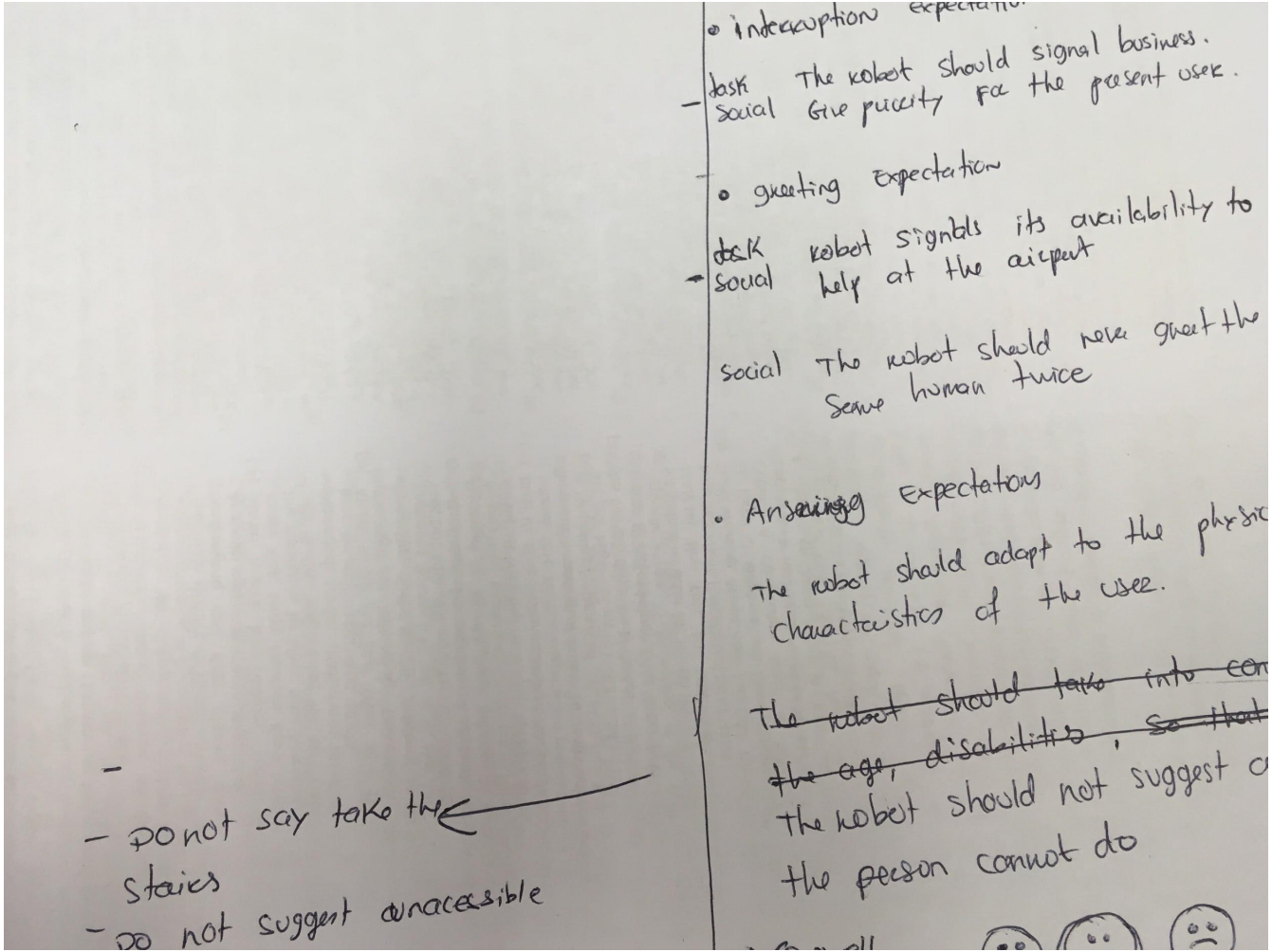
Imagine this scenario:

A person in a wheelchair is at the airport and needs to get to security. The person is lost and asks for orientation to the robot. Build the social and task norms for this interaction (as if you were using the RoVer tool)

Proposal 1


no person nearby
wait
greet
ask
answer
person nearby
(resposta da pessoa) compreendida
(resposta com a opção)
Parar
wait
wait
resposta da pessoa não compreendida
move wait time reached
Social Norms
Se o robot fizer
que indicam o caminho
ñ indicar caminho
onde a pessoa ñ pass
passar (ex: escadas)

Proposal 2


• interruption expectation
task The robot should signal business.
social Give priority for the present user.
• greeting Expectation
task robot signals its availability to
social help at the airport
social The robot should never greet the
same human twice
• Answering Expectations
The robot should adapt to the physic
characteristics of the user.
The robot should take into con
the age, disabilities, so that
The robot should not suggest a
the person cannot do
- do not say take the
stairs
- do not suggest unaccessible

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Meeting #5 (22 March 2019)