



## Designing for experiences with socially interactive robots

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# Designing for experiences with socially interactive robots

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**Abstract**

Socially interactive technologies are emerging as one of the predominant technologies of the future. In this workshop, we aim to discuss the emerging field of Social Robotic technologies with a particular focus on interaction design methodologies used in the design process. The workshop will investigate how researchers have approached designing social robots and what we can learn from the interaction design field for future designs. The main activities of the workshop will encompass two interactive sessions and a discussion panel on approaches to inspire the design of socially interactive robots. In particular, we focus on experience-driven design methods involving rituals and memorable experiences with social robots.

**Author Keywords**

Social Robot; User Experience; Design; Socially Interactive Technologies.

**ACM Classification Keywords**

H.5.2 [User Interfaces]: User-centered design

**Overview**

It is evident that interactive technologies have evolved over the past years to accompany and support many of our daily life activities. More recently, advances are put towards the design and development of technologies that are not just

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acting as supporting devices but also have the capabilities to sense and act in a social way; thus, introducing an new advent in designing social interactive technologies [4].

One of the challenges when introducing social robots is how to design them in a way that allows for a seamless human-robot communication, while considering the role of the robot within an environment. Several attempts have been made to design social robots via Interaction Design (IxD) approaches, in particular using Human-Centred Design (HCD) methods, such as the work by Deneke et al. [3], Hoffman and Ju [5] and Lee et al. [7]. Here, we raise the question “is it enough to just apply HCD methods to gauge information that allows designers to design viable social robots?” or “is it that the stereotypical expectations of robots (e.g. science fiction) are the source of impact on how robots are designed?” as illustrated by Sandoval et al. [12].

An example of an attempt to design of social robots and inspire designers via a HCD approach is presented by Obaid et al. [11][10], where they introduced a toolkit that can help children illustrate their requirements for assistant classroom robots. Moreover, Jung et al. [1] expressed the importance of designing social robots with a positive User Experience (UX) in mind. From the UX design perspective, Tonkin et al. [13] have taken first steps by proposing an iterative design process that suggests how to design personality, identity principles and interaction behavior for a robot to achieve positive UX. Thus, there seems to be a clear need to discuss and understand how to infuse the HCD approaches with exciting and new inspirational methods that can allow designers to explore appropriate social robot designs.

## Objectives

In the this workshop, we pursue and explore possible design methods that can inspire designers’ vision when de-

signing social robots in different environments. This workshop will bring together Human-Computer Interaction (HCI) and Human-Robot Interaction (HRI) researchers, UX designers, artists, and engineers who are interested in designing socially interactive technologies. In particular, the objective is to engage in multidisciplinary discussions to unleash possible approaches and aspects that would support design inspiration for socially interactive robots. The following topics are open for discussion at the workshop: Socially Interactive Technologies, Social Robots, Contextual Design, Experience Driven Design, Lean UX, Design with Ritual Experiences, Iterative Design, Prototyping, Persuasive Design, Social Interactions, and UX Evaluation Methods.

## Structure

The workshop will be organized with an interactive and discussion based character that gives the opportunity for all the participants to communicate and discuss their ideas within relevant themes. The core parts of the workshop will derive on interdisciplinary interactive sessions that are designed to help reveal possible inspirational design methods that can be used to design experiences with social robots. Participants are expected to submit a position paper (max 2000 words) about their work and motivation behind the theme of the workshop. The organizing committee will conduct a peer-review for each submission to provide feedback and prepare participants for the workshop.

### *Fast Forward Introductions (60min)*

The organizers will kick start the workshop with a brief introduction to the objectives, activities and expected outcomes of the workshop. Thereafter, each participant will give a brief summary about their work and their motivation behind the theme of the workshop. The aim of the session is to allow everyone to become familiar with each others’ work and open up for all day discussions and activities.

#### *Keynote Speaker (30min)*

The keynote topic will introduce the importance of inspirational tools and approaches when designing interactive technologies. The keynote speaker will highlight tangible examples used within the interaction design process.

#### *Interactive Session I (120min)*

Whereas routines are valued by the quality of their result and often of their efficiency (for example, getting a coffee, or getting ready to go to work), daily rituals are valued by the experience of the process to reach this result (for example, preparing tea, or a writer's preparation before starting to write) [8]. Different research from HCI already showed the benefits of working on rituals as a way of integrating long-lasting relationships with interactive technologies [6]. The goal of this session is to explore and design for daily rituals at home with social robots. Participants will describe and draw different rituals using a toolkit provided by organizers. The toolkit includes inspiration cards and objects on three themes: subjects (people and robots personas experiencing the ritual), activities (for example, waking up in the morning, having breakfast, calling a friend, or walking a pet outside) and ritual attributes (temporal aspect, mind & body interaction, knowledge on the now-how of the ritual, procedures, engagement element and so on). The workshop will encompass scenario design and focus group discussions.

#### *Interactive Session II (120min)*

This session is a hands-on experience-driven design exercise that builds on the scenarios that were created in the previous session. The participants work together in groups via a step-by-step process to design interaction with robots to enrich various daily activities and rituals at home. The goal of this session is to collaboratively create early stage human-robot interaction designs using experience-driven design cards called PLEX cards [9] and a newly developed

robotic interaction design cards. The participants also get to experience what are the benefits of using theatrical robot methods [2] in the early phase of design process. The session will encompass rapid prototyping in small groups utilizing and reflecting on different inspirational design methods.

#### *Road Map Discussion (45min)*

The conclusive part of the workshop will be organized in a discussion format where participants will first split into focus groups and spend 20min to reflect on what they have learned throughout the day, and brainstorm bullet point summaries on what factors can impact the inspirations of a social robotics designer. The groups will then come together to discuss each list and generate more coherent ideas of the listed impact factors. The discussion will be moderated by the organizers throughout this session.

#### *Wrap-up (15min)*

At the end of the workshop, a summary of the Interactive Sessions results will be drawn in relation to the main discussion points. The workshop will wrap-up with possible future direction towards the theme of the workshop.

#### *Expected outcomes*

First, the participants will get hands-on experience with various inspirational design methods focused on socially interactive robots. Second, all accepted papers will be published on the workshop's website. Third, we expect to provide participants with the starting point to further post-workshop collaborations based on discussions and ideas. Moreover the discussion could create a bridge between the HCI and HRI researchers interested in design methods to create rich and long-lasting relationships with interactive technologies. Finally, an overarching outcome will be to extend this workshop further and pave the way for further events that are within the scope of the topics presented.

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