

Session: “Relationship between Robots and Lay Users from Cross-Cultural Perspectives II”
Title: “Socializing robots: Incorporating users and situated interaction in robot development”
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Abstract:

The emerging fields of service, assistive, social, and co-robotics envision humans and robots co-inhabiting everyday spaces, collaborating on shared tasks, and co-existing in symbiotic relationships. This new vision requires that we bring “the social” – the networks of human and non-human agents, their practices, aims, and values that provide the context for the development and implementation of robots in society – to the forefront of robotics research. Current robotics practice, however, has been critiqued for doing just the opposite: “erasing the social” by obscuring the situated labors of researchers, students, and users that support the successful functioning of robotic artifacts¹ and presenting robots as deterministic “technological fixes” for various social ills². My work addresses these concerns by exploring conceptual and practical approaches for explicitly including “the social” as the basis for developing and evaluating robots.

In my presentation, I will describe three recent projects in which we studied user perceptions and socially situated interactions with robots to inform robot development. All three studies took place outside the laboratory—in users’ homes, a local nursing institution, and an office. The first project, performed with users in South Korea and the United States, used generative methods to investigate how users conceptualize robots and their application with the aim of incorporating their views in future robot design. We found that users interpret robots within the context of culturally specific understandings of the home³ and of technology’s functions in relation to existing social hierarchies⁴. The second project studied the use of the socially assistive robot PARO in a local nursing home with therapists, residents, staff, and visiting family members. This research showed that the context of use, social mediation, and individually variable interpretations of users affect the initiation and success of human-robot interaction⁵. It also allowed us to document specific ways in which users adapted the robot’s use to their local needs. The final project involved the development of a robot for use in an office environment through iterative *in situ* user studies and prototype design. We constructed the robot’s functions based on situated studies of user needs and reactions to varying embodiments and interaction strategies, discovering important emergent factors that affected the human-robot interaction in the process.⁶ In conclusion, I will discuss how this work “socializes” robots by bringing users more substantively into the process of robot evaluation and design and by evaluating design alternatives through contextually situated human-robot interaction.

¹ Suchman, L. (2007). *Human-machine reconfigurations: Plans and situated actions*. Cambridge University Press.

² Šabanović S (2010). Robots in society, society in robots—Mutual shaping of society and technology as a framework for social robot design. *International Journal of Social Robotics* 2(4), 439-450.

³ Lee, H.R., Sung, J., Šabanović, S., and Han, J. (2012). Cultural design of domestic robots: A study of user expectations in Korea and the United States. *Proc. of ROMAN 2012*, 803-808.

⁴ Lee, H.R., Šabanović, S. (2013). Weiser's dream in the Korean home: Collaborative study of domestic roles, relationships, and ideal technologies. *Proc. of UbiComp 2013*, 637-646

⁵ Chang, W., Šabanović, S., Huber, L. (2013). Situated analysis of interactions between cognitively impaired older adults and the therapeutic robot PARO. *Proc. of ICSR 2013*, 371-381.

⁶ Šabanović, S., Reeder, S., Kechavarzi, B. (In Press). Designing robots in the wild: In situ prototype evaluation for a break management robot. *Journal of Human-Robot Interaction*.