Robots For Us: Organizational and Community Perspectives on the Collaborative Design of Ubiquitous Robots

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ABSTRACT

Robots are expected to become ubiquitous in the near future, working with people in various environments, including homes, schools, hospitals, and offices. As physically and socially interactive technologies, robots present new opportunities for embodied interaction and active as well as passive sensing in these contexts. They have also been shown to psychologically impact individuals, affect group and organizational dynamics, and modify our concepts and experiences of work, care, and social relationships.

Designing robots for increasingly ubiquitous everyday use requires understanding how robots are perceived, and can be adopted and supported in open-ended, natural social circumstances. This, in turn, calls for design and evaluation methodologies that go beyond the dyadic and small group interactions in laboratories that have largely been the focus of research in human-robot interaction. In this talk, I will present alternative perspectives on the design and evaluation of socially interactive robotic technologies in real-world contexts, focusing on several case studies of socially assistive robots in eldercare. I will first discuss how older adults make sense of robots for use in their homes, in relation to the broader social contexts in which they live, as part of collaborative design activities, and in the course of month-long implementations of robots in their homes. These in-home studies bring up various issues relating to the types of data older adults and the clinicians who work with them would like to collect, related privacy concerns, impacts on other people in the home, and how robot designs can support the relationships older adults hope to have with and through robots. Secondly, I will explore the institutional and community-based use and design of robots

in different eldercare facilities, including a nursing home, a retirement community, and an intergenerational daycare. These studies bring out how robots fit into and affect the institutional and group dynamics of interaction, and also allow us to explore how robots might be envisioned as technologies that can support not only individual, but community-level goals.

Through these case studies of robots, as emerging ubiquitous interactive technologies, I will bring out themes that can inform the design and study of pervasive systems more broadly, including collaborative design, the use of data collected during social interactions with and around technologies, related ethical concerns, and the need for incorporating the aims of groups, institutions, and communities in the design of intelligent interactive technologies.

CCS Concepts

- Embedded and Cyberphysical Systems → Robotics; Human-Centered Computing → Human-Computer Interaction → HCI Design and Evaluation Methods → Field Studies; Human-Centered Computing → Human-Computer Interaction → Interaction Design → Participatory Design; User characteristics → Age → Seniors

Author Keywords

Human-Robot Interaction; Socially Assistive Robotics; Eldercare; Collaborative Design; Community Robotics; Robots in Organizations; Domestic Robots

BIOGRAPHY

Selma Šabanović is an Associate Professor of Informatics and Cognitive Science at Indiana University, Bloomington, where she founded and directs the R-House Human-Robot Interaction Lab. Her research focuses on the design, use, and consequences of socially interactive and assistive robots in different social and cultural contexts, including healthcare institutions, user homes, and various countries. She draws on theories and approaches from the social sciences to design and implement intelligent interactive technologies in ways that provide measurable benefits to users and their communities. She also explores values and ethics in robotics for everyday use through collaborative

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design with diverse users, including older adults, clinicians, and children. Along with her position at IU, Šabanović has been a Visiting Professor at Bielefeld University's Cluster of Excellence in Cognitive Interaction Technology (CITEC), a lecturer in Stanford University's Program in Science, Technology and Society, and a visiting scholar at the Intelligent Systems Institute in AIST, Tsukuba, Japan and the Robotics Institute at Carnegie Mellon University in 2005. She was awarded IU's Outstanding Junior Faculty Award in 2013, and the Trustee's Teaching Award in 2016 and 2018. She currently serves as the Co-Editor in Chief of the ACM Transactions on Human-Robot Interaction and was the General Chair of the ACM/IEEE International Conference on Human-Robot Interaction (HRI 2018). She received her PhD in Science and Technology Studies from Rensselaer Polytechnic Institute in 2007, with a dissertation on the cross-cultural study of social robotics design in Japan and the US.