

Preface: Dialog with Robots

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Researchers in the human-robot interaction (HRI) community have addressed a spectrum of challenges at the intersection of robotics, cognitive science, human factors, and artificial intelligence. At the same time, concepts and methods for human-computer dialog have matured within the spoken dialog community with the development of fundamental theories, formalisms, and models.

Spoken dialog efforts to date have focused almost exclusively on applications within restricted communication contexts such as telephone- and PC-based information access. Several recent efforts at the intersection of spoken dialog and HRI have sought to broaden dialog to richer, more natural settings. These projects have identified numerous interesting challenges with the use of dialog as part of coordination among multiple actors, taking into consideration details of the tasks at hand and the surrounding environment.

We organized the AAAI Fall Symposium on Dialog with Robots to catalyze communication and innovation at the crossroads of spoken dialog and HRI. The meeting brings together researchers from the HRI, dialog systems, virtual agents, and other related areas to discuss the challenges at the intersection of these fields.

This report contains 43 contributed articles and extended abstracts, spanning a variety of research topics and areas. The common denominators for these contributions are the notions of dialog and robots, and more generally those of interaction, physical embodiment, and context. For instance, a number of papers discuss the challenges of modeling com-

municative mechanisms and devices that are fundamental to create, maintain, and organize interactions in physical space such as engagement, turn-taking, joint attention, and verbal and non-verbal communicative skills.

Other papers explore the challenges of leveraging physical context in various language understanding problems such as reference resolution or the challenges of coupling action and communication in the interaction planning and dialog management processes. Several others investigate developmental approaches for acquiring knowledge through interaction and focus on challenges such as learning new words, concepts, meanings, and intents and grounding this learning in the interaction with the physical world. Yet others focus on various interaction design challenges, describe existing or planned systems, research platforms, and toolkits, report experimental results, or present theoretical models for various aspects of dialog with robots. And the list goes on.

The diversity of questions raised and approaches taken, unified by the common themes of dialog with robots or interaction with physical context reflect activities and questions brewing within a nascent vibrant community.

We thank the authors and participants for their contributions and perspectives on these problems and we hope this symposium will help kick-start, catalyze, and amplify future research efforts in these areas. We also thank the program committee and AAAI for their help in organizing this meeting.