

Dialogues with Socially Aware Robot Agents - Knowledge and Reasoning Using Natural Language

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Several humanoid robot agents have appeared in recent years enabling potentially useful applications for every-day tasks in healthcare assistance, home services, nursing, care-giving, education, etc. In these tasks, the robot should provide useful information, chat about interesting topics, and instruct the human users in natural language. Dialogue capability is an important part of the robot's functionality, and the robots appear as social agents which act and interact in the physical world. Their appearance, behavior, and interaction capabilities affect the users' views and acceptance of the applications. However, many practical challenges remain to be solved before robots become fluently conversing companions. In this talk I will discuss technology for building interactive social robots and focus on dialogue modeling to enable spoken interaction between users and social robots. In particular, I will discuss dialogue design that takes into account structured data on human activities so as to expand the system's reasoning and interaction capabilities with the help of goal-directed ontologies. I will survey some of the important issues when aiming to expand the robot's interaction capabilities, and exemplify them with a robot application for care-giving tasks. I will conclude the talk with technological and conversational challenges brought forward by the robot's dual character as an elaborated computer on one hand and an autonomous agent on the other hand.