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Human-Centered Behavioral Analysis for Human-Robot Cooperation

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(Workshop Presentation)

Abstract

Demands are increasing for robots that can cooperate with humans more naturally and comfortably. We have been conducting research on human-centered analysis focusing on observation of humans' reaction when doing cooperative tasks with a robot. We first analyzed factors causing discomfort, and experiments in a coworker scenario implied that perceived uncertainty in a robot's movement is a key determinant of how much humans are comfortable with them due to robot motion uncertainty. Through another task of handover, we have found that humans are combining feedforward and feedback control, whose parameter varies depending on personality and physical dimensions. Finally, we are conducting studies on active physical human-robot cooperation. In a physically cooperative task scenario, we obtained first results on factors alternating humans' behavior when the robot interacts actively with them. We will keep addressing design principle of behavior of future collaborative robots by reinforcing those experimental studies with increased involvement of robots.

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