

Action Sloping for manual Free Robot

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In this paper, we deal with the problem that will arise in the near future from robots with a lot of functions. The problem is that the robot users will have to read thick operation manuals. We designed an interaction that allows users to easily notice a robot's function without reading the manuals. We define Function Awareness as "to notice the relationship between a user's action and a robot's action". We propose a guideline for designing robot's actions as, "Action Sloping", which allows a robot to gradually express its internal state and also allows the user to naturally notice the robot's function by observing its actions. We designed the concrete robot's actions for a sweeping robot, and the robot changes the velocity of its motion to indicate its internal state according to the distance between the robot and its user. We develop a robot that can perform Action Sloping using low-cost infrared sensors and simple rules for actions. Through experiments, we investigated the user's behavior and clarify the problems with the proposed method.