Action Sloping for Increasing Awareness of Robot's Function

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In the near future, users of multi-function robots will have to read thick owner's manuals to use them. If users can use these robots without reading difficult manuals, it will improve user efficiency. We propose *Action Sloping* as a way for users to naturally understand a robot's function. This concept programs robots with feedback behavior that gradually changes in intensity as the user carries out given actions. By changing its feedback behavior in response to user's actions, a robot encourages him or her to perform an action that will make the robot function. We conducted two experiments in which we programmed a robot dog with three patterns of feedback behavior based on the Action Sloping concept and two patterns not based on it as control conditions. The participants in the experiments tasked with identifying the robot's function, and the identification latency times were measured. The results showed that, as compared to the non-feedback conditions, only a chirping sound condition significantly assisted the participants in identifying the triggering action. These findings partially supported the effectiveness of the Action Sloping concept.

Keywords: human-robot interaction, feedback design, function awareness, action sloping