Abstract:

This paper presents a methodology to identify meaningful cognitive functions for existing products and thus turn existing product concepts into cognitive product concepts. The approach also works well to develop companion robots, e.g. for elderly care. One challenge when applying the methodology is to identify and integrate the right cognitive functions into the new cognitive product. The goal is to create an easy and comprehensible mental model that makes human-robot interaction worthwhile and relieve the users from repetitive, dangerous and difficult tasks by using cognitive functions without creating paternalism. Designers that use the mentioned methodology must be aware that the integration of every cognitive function can change the human-robot interaction dramatically. The decision about which cognitive functions are integrated is crucial for the acceptance of the resulting product. This is particularly true for the development of companion robots that closely interact with humans. Amongst others, the approach has been applied to develop two companion robots that increase the freedom of...
movement of elderly people without stigmatizing them and adapting to the user specific
cognitive and physical abilities. This paper describes briefly the methodology to integrate
cognitive functions into cognitive product concepts before presenting an application example,
two prototypes and discussing the need to consider synchronized and reciprocal human-robot
interaction already during the conceptual design phase of a companion robot.

Stichworte: Cognitive Functions; Companion Robots; Reciprocity; Walking Aid

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