

Remote Control Application for Therapeutic Use of a Social Robot

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Demo: A remote control that gives healthcare professionals the ability to influence the behavior of robots, such as Pleo, that will be used in Therapeutic environments.

Keywords: remote control, Pleo, social robot

CONCEPT

Robots like a Pleo can be used with hospitalized children for distraction, preparing for treatment and evaluation of treatment. A remote control, such as a smart phone or tablet, gives the healthcare professional an unnoticed way to influence the behavior of the robot [3]. The remote control also collects sensor data which, in combination with the feedback from the robot, can be used to analyze the interaction.



Figure 1. Pleo interacting with a patient

INTERACTION SCENARIO'S

Pleo is a robot whose behavior depends on the way you treat it. A patient feeling sad doesn't need a Pleo that gets angry when the patient pet the Pleo a bit too hard. A healthcare professional adjusts the behavior in a way that benefits the patient. The remote control is also used to force certain behaviors at moments when the child is about to lose interest in Pleo.

INTERFACE DESIGN

Based on needs of therapists [2,3], a user friendly interface is developed that is self-explanatory. The display contains facilities to configure the robot for an emotion (Emotions), mood (combined emotions), behavior, stage, profiles (type of child), and child identity (behavior, emotion and mood for a particular child). These emotions, moods, behaviors, stages, profiles and child identity are programmed in order to enhance engagement between patient and robot.

FIRMWARE

A Pleo is extended with a Bluetooth receiver so that it communicates with mobile devices, such as an Android phone or tablet, equipped with Bluetooth [4].

The commands from the control are sent to the robot by means of a RESTfull protocol [5]. The PLEO-rb Development Kit [6] makes it possible to creatively interact with PLEO-rb on the programming level to modify his behaviors and tweak an animation.



Figure 2. Interface design

FURTHER DEVELOPMENT

In the future the remote control will be able to support multiple mobile operating systems like the iPhone OS. Another target is the ability to work with other robots. The remote control will also be able to display the data collected, e.g. the amount of times Pleo is petted.

A cloud-based structure to enhance long-term engagement in a pet-robot companion treatment is also something being developed. This enables further personal adaptation of each emotion, mood, etc. for each child, thus enhancing effective interaction. Kids will be able to see small differences between PLEOs and can feel their robot is different from the rest [1].

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