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A Robotic “Puppet Master” Application to ASD Therapeutic Support

Authors : Sophie Sakka, Rénald Gaboriau

Abstract : This paper describes a preliminary work aimed at setting a therapeutic support for autistic teenagers using three humanoid robots NAO shared by ASD (Autism Spectrum Disorder) subjects. The studied population had attended successfully a first year program, and were observed with a second year program using the robots. This paper focuses on the content and the effects of the second year program. The approach is based on a master puppet concept: the subjects program the robots, and use them as an extension for communication. Twenty sessions were organized, alternating ten preparatory sessions and ten robotics programming sessions. During the preparatory sessions, the subjects write a story to be played by the robots. During the robot programming sessions, the subjects program the motions to be realized to make the robot tell the story. The program was concluded by a public performance. The experiment involves five ASD teenagers aged 12-15, who had all attended the first year robotics training. As a result, a progress in voluntary and organized communication skills of the five subjects was observed, leading to improvements in social organization, focus, voluntary communication, programming, reading and writing abilities. The changes observed in the subjects general behavior took place in a short time, and could be observed from one robotics session to the next one. The approach allowed the subjects to draw the limits of their body with respect to the environment, and therefore helped them confronting the world with less anxiety.

Keywords : autism spectrum disorder, robot, therapeutic support, rob'autism
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