

Electromyography Controlled Robotic Toys for Autistic Children

Authors : Uvais Qidwai, Mohamed Shakir

Abstract : This paper presents an initial study related to the use of robotic toys as teaching and therapeutic aid tools for teachers and care-givers as well as parents of children with various levels of autism spectrum disorder (ASD). Some of the most common features related to the behavior of a child with ASD are his/her social isolation, living in their own world, not being physically active, and not willing to learn new things. While the teachers, parents, and all other related care-givers do their best to improve the condition of these kids, it is usually quite an uphill task. However, one remarkable observation that has been reported by several teachers dealing with ASD children is the fact that the same children do get attracted to toys with lights and sounds. Hence, this project targets the development/modifications of such existing toys into appropriate behavior training tools which the care-givers can use as they would desire. Initially, the remote control is in hand of the trainer, but after some time, the child is entrusted with the control of the robotic toy to test for the level of interest. It has been found during the course of this study that children with quite low learning activity got extremely interested in the robot and even advanced to controlling the robot with the Electromyography (EMG). It has been observed that the children did show some hesitation in the beginning 5 minutes of the very first sessions of such interaction but were very comfortable afterwards which has been considered as a very strong indicator of the potential of this technique in teaching and rehabilitation of children with ASD or similar brain disorders.

Keywords : Autism Spectrum Disorder (ASD), robotic toys, IR control, electromyography, LabVIEW based remote control

Conference Title : ICBEE 2015 : International Conference on Biotechnology and Environment Engineering

Conference Location : London, United Kingdom

Conference Dates : January 19-20, 2015