IROMEC (Interactive Robotic Social Mediators as Companions)

Type of Project

Intervention

Summary

IROMEC (Interactive Robotic Social Mediators as Companions) is a modular mobile robotic platform developed in a three year project which started in November 2006. It was cofunded by
the European Commission within the RTD activities of the Strategic Objective SO 2.6.1 “Advanced Robotics” of the 6th Framework Programme (2006-2009).
It was designed to become a social mediator for children with different levels of impairments such as cognitive disabilities, severe motor impairments and autism.

Low-tech, high-tech products, services and contexts for play

IROMEC is a mobile robotic platform designed to encourage disabled children to engage in social interaction via play scenarios. IROMEC is tailored towards children with autism, children with cognitive disabilities and children with motor impairments. The robot can engage in different play scenarios. The play scenarios were developed according to the needs of the target users group and according to the ICF-CY (International Classification of Functioning – version for Children and Youth) (Robins et al., 2010).
The main components of IROMEC are a mobile platform, an application module, a number of additional components that modify the appearance and behaviour of the robot (Marti et al., 2010). Each element of the visual interface was designed using only a few variations and basic geometric shapes according to the needs of the impaired children, which are its main target user group (Lehmann et al. 2011).
The robot is able to move in space autonomously and remotely controlled through a joy pad, or a button. IROMEC’s movements were designed not to be just functional in the interaction but also expressive in order to engage and sustain the children in the interaction. IROMEC is able to detect obstacles and persons in its surrounding through ultrasound and infrared sensors located on the mobile platform.

The context of use

It is possible to use IROMEC in different context such as education and rehabilitation centres.

Type of play in this play system

Cognitive

Practice
Symbolic
Constructive
Rule play (including videogames)

Social

Associative
Cooperative

Objectives related to play according to ICF-CY

Play for the sake of play: Major life areas - d880 enagement in play

d8802 parallel play
d8803 shared cooperative play
d8808 engagement in play, other specified
d8809 engagement in play, unspecified

Community social and civic life - d920 recreation and leisure time

d9200 play

Play-like activities: Therapeutic and educational objectives

b1 Mental functions
b2 Sensory functions and pain
d1 Learning and applying knowledge (learning through symbolic play, learning through pretend play)
d3 Communication
d4 Mobility
d7 Interpersonal interactions and relationships

Number of participants

10-20

Chronological Age

6-12 years

LUDI Categories of disabilities

Mental/intellectual impairments::
mild
moderate
Communication disorders (speech and language disorders):
Physical impairments:
Mild
Autism Spectrum Disorders:
Multiple disabilities:

Explanation on the use of low-tech, high-tech devices, services or contexts

Explanation

Verbal instruction, language and communication is adapted
Visual and/or verbal instruction with AAC (Aumentative and Alternative Communication)
Visual instruction with pictures or drawings
Prompting: therapist/researcher touches the participant as a key for further actions
Modeling by peer

Involvement

Adult: therapist/educator/researcher

Peer without disabilities

Role

Participatory observer
Providing instruction

Evaluation of objectives and outcome measures

Description of outcome measure(s)

Observation by professional/researcher providing the play experience
Video analysis
Feedback from client/parents/professionals
(validated and reliable) outcome measures like tests, self-reports of client/system, questionnaires

Information about availability of outcome measure: publisher, website, contact person

www.roboticsandlearning.org

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Summary of achieved effects

IROMEC robot seemed to have had a positive influence on the children's individual development.

IROMEC contributes to:
- help children to engange in play
- improve the social inclusion;
- facilitate the learning enviorment;
- facilitate the mediation child-human and child-child
- transfer some of the skills learned during the sessions with the robots

The use of IROMEC with children with ADHD and some traits of autism seems to be
advantageous due to its mobile characteristics, which facilitate the needs of children with this specific disorder more explicitly.

References to the intervention or research project

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Publication

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Keywords

IROMEC
Children
Autism
Cognitve Disabilities
Motor Disabilities
Play
Human-Robot Interaction