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Developing child-robot interaction scenarios with a humanoid robot to assist children with autism in developing visual perspective taking skills

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Abstract:

Children with autism often find it difficult to understand that other people might have perspectives, viewpoints, beliefs and knowledge that are different from their own. One fundamental aspect of this difficulty is Visual Perspective Taking (VPT). Visual perspective taking is the ability to see the world from another person's perspective, taking into account what they see and how they see it, drawing upon both spatial and social information. In this paper, we outline the child-robot interaction scenarios that we have developed as part of the European BabyRobot project to assist children with autism explore elements that are important in developing VPT skills. Further to this we describe the standard pre and post assessments that we will perform with the children in order to measure their progress. The games were implemented with the Kaspar robot. To our knowledge this is the first attempt to improve the VPT skills of children with autism through playing and interacting with a humanoid robot.

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I. Introduction

Autistic Spectrum Condition (ASC) is a developmental condition that appears in many different forms and varies in its degrees of severity ranging from severe low functioning autism, to high functioning and Asperger's syndrome. One of the most common manifestations of ASC is an impaired ability for social communication and interaction [1]. Many robots have previously been used to encourage social interaction and collaborative play amongst children with ASC [2]. However, to date robots have not been used to assist developing the Visual Perspective Taking (VPT) skills of children with ASC; In this paper, we outline an approach where we use the Kaspar robot to teach children about VPT and develop their skills in this area via a series of progressively more difficult tasks that are implemented as child-robot interaction games/scenarios¹

For the purpose of this article we use the terms 'games' and 'scenarios'; interchangeably.

. Further to this we provide a detailed outline of the pre and post testing procedures that will be

humanoid robot, autism, visual perspective taking skills, VPT skills, Kaspar robot, child-robot interaction scenarios, social information, spatial information, European BabyRobot project

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