

ASD-HR 2015

Intervention of Children with Autism Spectrum Disorders Using a Humanoid Robot (ASD-HR 2015)

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The First International Workshop on Intervention of Children with Autism Spectrum Disorders using a Humanoid Robot (ASD-HR 2015) associated with JSAI International Symposia on AI 2015 (IsAI-2015) was held in Yagami/Hiyoshi Campus, Keio University, Kanagawa, Japan on 17th and 18th November, 2015.

As appeared in the statistics in the recent reports, the necessity of treatment and education for children and adolescents with autism spectrum disorders (ASD) has been widely recognized. Researchers have recently considered using humanoid robots to treat ASD-associated deficits in social communication. In the workshop, presentation of the studies in the interdisciplinary field of research on this topic including both engineering and medical sides, namely, 16 oral presentations including five invited talk were given. To facilitate communication between researchers in engineering and psychological/medical fields, we asked five pioneering and/or representative researchers in many fields to give us talks on their activities; Dr. Hideki Kojima who is the pioneering researcher on robotic therapy of children with ASD, Dr. Nilanjan Sarkar and Dr. Zackary Warren who leads the group of Vanderbilt University in the engineering and psychological sides, respectively, which is the one of the world-leading group on the field of research of children with ASD and humanoid robot, Dr. Taro Muramatsu from the department of psychiatry in University of Keio as well as Dr. Masutomo Miyao from Donguri clinic for children with developmental disorder. On the same purpose, we also planned the session of “robot demonstration” where participants brought their robots that are used for the studies on this filed. We had five

exhibitions of robots; Keepon developed by Dr. Kozima from Miyagi University, an android robot Actroid-F from Advanced Institute of Science and Technology (AIST), table-top humanoid robot CommU from Osaka University, animal type robot Paro from Tokushima University and AIST, and huggable communication media Hugvie from ATR.

Three of five accepted papers in this workshop were given by researchers who have been mainly working in engineering field while the rest two were given by medical doctors in child psychiatry. Engineering papers describes how their robots were constructed and/or evaluated by individuals with ASD. Yoshikawa et al. reported how adolescents with ASD responded to an android robot, namely Actroid, by using their gaze. Jimenez et al. concerns the feasibility of collaborative learning between children with ASD and an educationally supportive robot, Ifbot. Sumioka et al. described their investigation of needs and interests for robots in a special school by demonstrating three different communicational media to the teachers: a telecommunication robot with minimal design of humanity, i.e., Telenoid, a huggable telecommunication device, i.e., Hugvie, and small mechanically-looking humanoid robots, i.e., M3-Synchy.

The rest two papers were given by medical doctors who were the experts of developmental disorders, which were also targeted by the engineering researchers who contributed to the workshop. Kumazaki et al. gave a case report of intervening to a child where the child had chances to communicate with others though an android robot by letting it speak as the child typed. Nakadoi reported cases of introducing an animal typed communication robot, Paro, into his psychiatric ward.

As discussed in the workshop, through the above interdisciplinary five papers, we could discuss not only about whether such robots give positive effect for children with ASD but also about the analysis on the necessary features of robots or tendency or types of children with ASD for such possible positive effects. Such a discussion with data including ones obtained in the real fields is expected to contribute on the future progress in this field.