Technology-based aids for people affected by Autism Spectrum Disorder (ASD)

Davide Peron, Cristina Gava

October 31, 2017

Individuals affected by Autism Spectrum Disorder(ASD), especially the not-verbal ones, are often unable to communicate in an appropriate way, they show strong difficulties in social interactions and in manifesting their affective states or their necessities. The conventional techniques, used to improve the performances of these people in the everyday tasks, are observation-based and can require a lot of effort in terms of time and money, with limited results. Technology-assisted therapies can result more powerful and fast.

Our aim is to analyze the current technology-based solutions that can help the therapist and the family of an autistic subject to interact with him. These solutions exploit the joint use of human intelligence and artificial intelligence to improve the powerfulness of therapies and to allow a better integration of these individuals in the society. Examples of these type of aids are Virtual Assistants and Agents as therapeutic tools, wearable technologies or VR headset to help them in everyday communication and to improve their fundamental and social skills.

Interesting example fields that can be analyzed are:

- the use of robotic avatar instead of a therapist in order to improve the response and interaction time of the disabled user;

- a wearable IoT device to collect data about interaction among children with ASD in classroom settings;

- an autonomous computer system for training social orientation skills to young children with ASD.