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Modern technologies in diagnostic and cares in autism

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The number of studies focusing on the use of information and communication technology (ICT) and robotics for individuals with autism has been rising steeply over the last 15 years. In this lecture, I summarize the hopes but also the current challenges raised by these methods distinguishing the following domains: (1) the search for automatic tools to produce diagnostic measures; (2) the computation of serious games aiming at training specific skills (e.g. emotion recognition; social interaction; literacy); (3) interaction with robotic platforms. To illustrate these domains, we will detail some paradigmatic examples taken from projects in which my group worked as a partner (see references).

I conclude that the potential benefits of the use of ICT and robotics for individuals with autism is enormous given what has been achieved in less than 15 years. However, limitations are numerous and clinical validation is often lacking.

BOUCENNA S et al. Cognitive developmental robotics: How robots learn to recognize individuals from imitating children with autism and other agents. *Scientific Report* 2016; 6: e19908

COHEN D et al. Do motherese prosody and fathers' commitment facilitate social interaction in infants who will later develop autism? *PlosONE* 2013; 8(5): e61402

DELAHERCHE E et al. Assessment of communicative and coordination skills of children with pervasive developmental disorders and typically developing children using social signal processing. *Research in Autism Spectrum Disorders* 2013; 7: 741-756.

GROSSARD C et al. Serious games to teach social interactions and emotions to individuals with autism spectrum disorders (ASD). *Cognition and Education* 2017; 113: 195-211.