ABSTRACT
AFFECTIVE COMPUTING IN THE AREA OF AUTISM

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The prevalence rate of Autism Spectrum Disorders (ASD) is increasing at an alarming rate (1 in 68 children). With this comes the need of early diagnosis of ASD, timely intervention, and understanding the conditions that could be comorbid to ASD. Understanding anxiety and its interaction with emotion comprehension and production in ASD is a growing and multifaceted area of research. Recognizing and producing contingent emotional expressions is a complex task, which is even more difficult for individuals with ASD. Firstly, we investigate the arousal experienced by adolescents with ASD in a group therapy setting. In this study we identify the instances at which the physiological arousal is experienced by adolescents with ASD (“have-it”), see if the facial expressions of these adolescents indicate their arousal (“show-it”), and determine if the adolescents are self-aware of this arousal or not (“know-it”). In order to establish a relationship between these three components of emotion expression and recognition, multi-modal approach for data collection is utilized. Machine learning techniques are used to determine whether still video images of facial expressions could be used to predict EDA data. Implications for the understanding of emotion and social communication difficulties in ASD, as well as future targets for intervention, are discussed. Secondly, it is hypothesized that a well-designed intervention technique helps in the overall development of children with ASD and improves their level of functioning. We design and validate a mobile-based intervention designed with the aim of teaching social skills to children with ASD. In this research work, we evaluate the social skill intervention designed by us. Lastly, we present the research goals behind an mHealth-based screening tool for early diagnosis of ASD in toddlers. The design purpose of this tool is to extend a helping hand to the low-income population with limited access to resources without burdening the physicians, their staff, and the insurance companies.