Home-based Rehabilitation for Children with Cerebral Palsy using Wearable Technologies

Momotaz Begum and Yi-Ning Wu, University of Massachusetts Lowell

The Problem: The existing clinic-based therapy model makes the expected motor improvements difficult to achieve for children with cerebral palsy (CP). Designing low-cost solution to extend therapeutic services outside of the clinic is considered as a critical need.

Solution: We are proposing an intelligent home-based rehabilitation framework using two commercially available wearable devices: a Myo armband and a pair of R-7 augmented reality (AR) eye glasses (Fig. 1)

Fig. 1 (left) Myo (right) R-7 AR eyeglasses

Project: The project will develop a prototype framework to coach a child with CP to perform neuromotor rehabilitation exercises at home and community settings. Individually tailored augmented reality games will be designed where a child with CP will be able to manipulate a virtual object only through therapist-prescribed movements of the impaired arm (Fig. 2). The see-thru displays of the AR glasses will provide simple text-prompts to guide a patient.

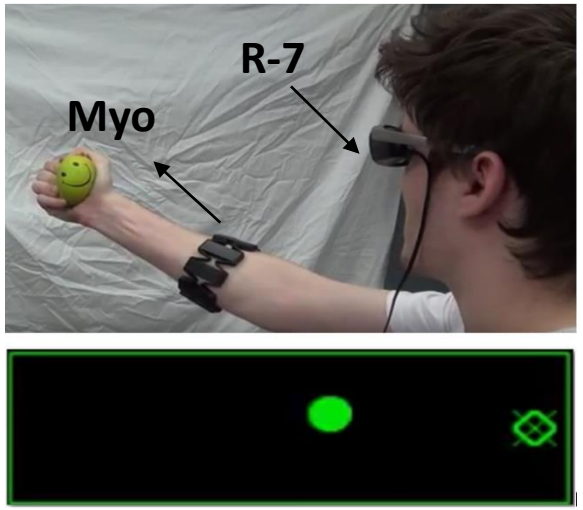

Fig. 2 An example of an AR game where a virtual object is manipulated through a real object.