Scientific/Clinical Workshop

Workshop Title
Robot-Enhanced Therapy for Children with Neurodevelopmental Difficulties (NDDs))

Workshop Responsibles
Salvatore Anzalone (Laboratoire CHArt, Université Paris 8)

Thomas Gargot(Child and Adolescent Psychiatry department, University Hospital of Tours, Excellence for Autism Center - Tours and Neurodevelopmental Disorders)

Arzu Guneysu Ozgur (KTH, Division of Robotics, Perception and Learning, Digital Futures Sweden)

Speakers
Maura Casadio, Carlos Cifuentes, Silvia Orlandi

Attendee Engagement
The workshop will start with a speed networking activity as an icebreaker to foster connections. The participants will share their experiences, studies and contributions through video, demos and presentations which will be in the form of 30 sec pitch. Afterwards, there will be short talks from the experts from different fields. These input will feed the discussion in the form of brainstorming session to define scenarios and ideate/design meaningful interactions or investigate challenges in designing robot-enhanced technologies/activities for children with NDDs. Finally, time will be allocated to foster open discussions for plans to establish collaborations, create synergies and discuss possibilities for joint publications.A combination of digital tools (Padlet,Miro board, Slack channel) covering both synchronous and asynchronous communication will be used to support the implementation of the following activities:

- Speed-Networking Activity with Participant's Input -Show & Tell Pitches
- Invited speaker presentations
- Ideation session for alternative designs, alternative use-case scenarios for using robots for the target group
- Synopsis and general discussion on limitations and potentials
- Plans for collaborations, synergies, reports and publications
- A website will be specifically created for the workshop and will provide regularly updated relevant information.

Abstract
Neurodevelopmental disorders (NDDs) result in emotional, physical, social, academic and economic consequences for individuals, and in turn families, and society. Upon diagnosis, families report significant delays in treatment initiation and unsatisfactory levels of treatment monitoring and there is a need to establish effective easy-to-access strategies for assessing, treating and monitoring NDD. Rapid progress in the area of robotics offers excellent chances for innovation in treatment for children with NDDs thanks to robots allowing the execution of repetitive tasks which can be tailored according to the needs of the individuals. Robots thus offer the opportunity to deliver automated

interventions,enable therapy to be delivered over a distance, enable inclusive and collaborative environments to promote group activity and social inclusion and personalise treatment procedures. Combined with gamification, which improves the learning rate and ensures effective improvement in the pedagogical, social and behavioral sense, robot-enabled therapy becomes a highly promising avenue for research [1,2,3]. It is important to develop adaptive interventions tailored to the individual to

enhance the functional recovery of sensorimotor, social or cognitive functions in children with

NDDs and give children and youth with various disabilities the opportunity to participate more actively and to

contribute with their own skills to the activities at home, school and therapy. Previous studies with robots showed improvement in the learning performance, engagement, communication, and social interaction. However,

if the technology is not well designed, it can generate interaction barriers while using it autonomously or can

cause discomfort, therefore collaboration of multiple stakeholders are crucial. This workshop aims to bring experts from multi-disciplinary backgrounds together to share ideas and discuss on design of such robotic solutions for the targeted focus group.