Category: Development of Technology

Workshop Title: Are usable rehabilitation robots a trade-off between complexity and intelligence?

Organizer(s): Lauren Chee

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Sommerhalder, Michael, University of Basel
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Workshop Time: 13:45 - 15:15

Attendee Engagement: We will engage attendees through panel discussions to controversial questions and answers.

Abstract: Robot-assisted therapy has been widely applied and accepted in rehabilitation that requires repetitive motions. However, there is little evidence that rehabilitation robots are more effective than conventional manual therapy. Despite all the good intention of relieving the therapist from manual work, the benefit for hospitals to invest in robotic rehabilitation devices seems to be driven by the desire to acquire the newest technology to innovate and motivate patients. Yet, these usually complex, expensive, and high energy-consuming devices only benefit a few people with severe motor impairments treated in high-tech clinics, limiting their accessibility, equity, and sustainability. Even if the costs were not a factor, highly complex hardware and software hampers usability, adoption, and adherence by therapists and patients. So, what has been forgotten?

Keeping it simple seems to be a key for usability since breaking it down seems like a viable training strategy in rehabilitation. This contrasts with the need for complexity in situations where people have severe impairments and therefore require complex support. Simple devices that are intuitive to use and even take home seem to be the way to go. So, is designing for usability the key for device adoption and for relevant functional improvements? Is usability only reachable for simple devices or can robotic intelligence that can mimic therapist decision making make the difference also in complex systems? Do we really need actuated devices?

This workshop aims to discuss the importance of designing for usability to achieve good patient outcomes and device adoption. We would like to foster controversial discussions between the panellists and the audience to develop a better understanding of how we can design increasingly intelligent robots, intentionally simple robots, and anything in between. Attendees of this workshop should leave equipped with the knowledge to better design and evaluate rehabilitation robots.