Category: Development and Implementation of Technology, Human Centered Design

Workshop Title: Bridging clinics, research, and industry: how to design user-centered rehabilitation technologies?

Workshop Organizer(s): Andrea Marinelli, Marco Puliti, Anna Bucchieri, Giulia Bodo

In person Speaker(s):

- De Michieli, Lorenzo, Head of the Rehab Technologies Lab at Istituto Italiano di Tecnologia - Technology Transfer Directorate at Istituto Italiano di Tecnologia;
- Laffranchi, Matteo, Coordinator of Robotics of the Rehab Technologies Lab at Istituto Italiano di Tecnologia;
- Gruppioni, Emanuele, Technical Director Research and Development Area at Centro Protesi Inail
- Molteni, Franco, Director of Complex Operative Unit Functional Recovery and Rehabilitation of Villa Beretta Rehabilitation Center;
- Dosen, Strahinja, Professor of Department of Health Science and Technology at Aalborg University;
- Castellini, Claudio, Professor of Assistive Intelligent Robotics Lab and Artificial Intelligence in Biomedical Engineering at Friedrich-Alexander-Universität;
- Tai, Zhi Kang, Business Development Director at Fourier Intelligence, Singapore;
- Gonzalez, Jose, Head of Research Germany, Ottobock SE & Co. KGaA

Workshop Time: 13:45 - 15:15

Attendee Engagement:

During the workshop, speakers from different fields (clinic, research and industry) will provide interesting insights on what are the fundamental user's needs and how to account for them in the context of robotic rehabilitation. Clinicians will offer their perspective in understanding how user's needs can be transformed in design requirements whereas researchers will provide applicative examples of the challenges and possible solutions in prosthesis and exoskeletons design. Additionally, industry experts will discuss about how to effectively transform research innovations intoindustrial products.

Attendees will have the opportunity to engage in both virtual and on-site demonstrations during which the Rehab Technologies INAIL-IIT Laboratory (https://rehab.iit.it/) rehabilitative devices, upper and lower limb prostheses and exoskeletons, will be presented.

The session will be concluded with a round table to include the participation of the audience in a constructive discussion around the topics presented.

The workshop was organized in collaboration with the PhDs of Rehab Technologies Lab Dario Di Domenico, Andrea Berettoni, Florencia Garro, and Indya Ceroni.

Abstract:

Collaborative design involves all stakeholders during the creation process, from planning to feedback and improvements. A good planned collaborative design process ensures that the outcome is both functional and meets expectations. Currently, research in rehabilitation technologies is going over the edges; however, the application to real-life scenarios is still challenging.

How can we facilitate the technological transfer between applied research and clinical needs?

How can we apply collaborative design strategies in the field of rehabilitation technology to bridge the gap between research and clinics?

During the workshop, speakers from three different fields will try to address these inquiries. Representatives from research, clinic and industry will offer their point of view on how to set up an effective technology transfer model for rehabilitative devices from research to the industrial world. These three worlds will meet to discuss and propose how the research solutions can become real applications for the end-users.

Different design paradigms will be proposed. The session will start with a presentation of the Rehab Technologies IIT-INAIL Lab design approach, presenting the rehabilitation devices developed within the lab (with remotely and in presence demos) and explaining the user-centered design strategy that drove the design of such devices. Furthermore, invited speakers will present selected case studies to promote their approach on research and devices development. Finally, an objective discussion between the involved speakers will focus on rehabilitation technologies and the proposed different collaborative design paradigms. Moreover, attendees will have the opportunity to actively participate in the discussion and engage in the subsequent brainstorming session.