Category: Research

Workshop Title: Data Driven Therapy: Using Exoskeleton Data To Measure Therapy Progress For Neuro-Muscular Rehabilitation

Organizer(s): Nicolaus Klinger

Speaker(s): Klinger, Nicolaus, Technical Lead tech2people

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Workshop Time: 16:00 - 17:30

Attendee Engagement: Working groups with hands-on time, brainstorming sessions and discussion rounds

Abstract: Introduction:

The integration of robotics in rehabilitation therapy, particularly for patients with neuro-muscular conditions, has shown significant promise in enhancing recovery and improving quality of life. Exoskeletons, as advanced robotic devices, are designed not only to assist in mobility but also to collect valuable data on patient performance during therapy sessions. This workshop aims to showcase methodologies for extracting meaningful features from exoskeleton data to develop a reliable therapy score, reflecting patients' progress in rehabilitation. The participants will be given real-life data from a therapy session with an exoskeleton. This workshop is a hands-on place to learn what you can do with this data and how you can extract valuable information that reflects the progress of a patient.

Objectives of the Workshop:

Understanding Exoskeleton Data: Familiarize participants with the types of data collected by exoskeletons, including kinematic, kinetic, and biomechanical metrics.

Feature Extraction Techniques: Demonstrate techniques for extracting relevant features that can indicate patient progress and performance.

Developing a Therapy Score: Discuss methodologies for creating a composite therapy score using extracted features.

Data Analysis Framework: Present frameworks for analyzing and visualizing therapy data to enhance decision-making and patient feedback.

Clinical Implications: Explore how the developed therapy score can inform treatment plans and patient engagement.

Background:

The use of exoskeletons in therapy is revolutionizing the rehabilitation landscape. These devices not only assist patients in performing movements but also capture a wealth of data during

therapy sessions. The challenge lies in interpreting this data to derive actionable insights. By analyzing the data effectively, we can create a comprehensive therapy score that reflects a patient's progress, potentially guiding personalized therapy plans.