

CoGnition

Consciousness

MySpace

NeuroDigital

NeuroRehab

NeuroScape

@NeuroTech

Department of Clinical Neuroscience

NeuroTech Symphony - 29 August 2025

08h30-09h00 Arrival and registration

09h00-09h15 Brief introduction of the day

09h15-09h45 Keynote speaker: "Real-time monitoring of epileptiform patterns with a neuromorphic device"

09h45-10h15 Teaser presentation NeuroDigital@NeuroTech

10h15-10h45 Teaser presentation Consciousness@NeuroTech

10h45-11h15 Coffee break

11h15-11h45 Keynote speaker: "Technodelics for psychiatry and dementia research in neurodegenerative disease"

11h45-12h15 Teaser presentation CoGnition@NeuroTech

12h15-14h00 Lunch break with poster

14h00-14h30 Keynote speaker: "Brain mechanisms of pain and temperature perception from representation to modulation"

14h30-15h00 Teaser presentation MySpace@NeuroTech - NeuroRehab@NeuroTech

15h00-15h30 Teaser presentation NeuroScape@NeuroTech

15h30-16h30 Coffee break with poster

16h30-17h00 Keynote speaker: "Minds in Motion: From Kinematic Coding to the Social Transmission of Information"

17h00-17h30 Keynote speaker: "Mixed Reality for cognitive rehabilitation: theoretical design-validation-to feasible tools for clinical implementation"

17h30-17h45 Closing remarks and poster prize

17h45-18h45 Aperitif and discussion

Prof. Johannes Sarnthein, University Hospital Zurich, Switzerland,
Prof. Philippe Ryvlin

Dre Marzia De Lucia

Prof. Olaf Blanke, EPFL, Lausanne, Switzerland

Prof. Gilles Allali

Prof. Francesca Fardo, Aarhus University, Denmark

Prof. Andrea Serino

Prof. Arseny Sokolov

Prof. Cristina Becchio, University Medical Center Hamburg-Eppendorf, Germany

PhD MD Helena Fordell, Umeå University, Sweden



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Auditorium Auguste-Tissot
Rue du Bugnon 46 - 1011 Lausanne



Information
Registration

SSN 8 credits



NeuroScape@NeuroTech – Advancing Cognitive Neurorehabilitation with Neurotechnology

In this session, we will present our latest research on developing innovative approaches for assessing and rehabilitating both cognitive deficits in patients with stroke, traumatic brain injury, multiple sclerosis, Neuro-HIV and mild cognitive impairment. By leveraging real-time adaptive serious video games and virtual reality, we create engaging tools that enhance recovery and improve patient outcomes. A key aspect of our work involves multimodal analyses of brain connectivity, allowing us to better understand the neural mechanisms underlying cognitive and social impairments. Through this integrative approach, we aim to push the boundaries of digital therapeutics, offering new perspectives for personalized neurorehabilitation

CoGnition@NeuroTech – Exploring Biomarkers and Imaging in Dementia

In this session, we will explore recent advances in characterizing major neurodegenerative disorders, including vascular dementia, Alzheimer's disease, frontotemporal dementia, Lewy body dementia, and normal pressure hydrocephalus.

Through an integrative approach, we will highlight the role of imaging modalities (MRI, PET) and biological analyses, including hiPSCs, microvesicles, and blood biomarkers, in improving diagnosis and deepening our understanding of underlying pathophysiological mechanisms.

We will also discuss our research on Motoric-Cognitive Risk (MCR), a key early marker linking gait disturbances and cognitive decline, offering new perspectives for early detection and intervention.

MySpaceLab@NeuroTech, we explore the neural basis of body representation in space for action, perception and consciousness. Main areas of research focus on unimodal and multimodal body representation, on the representation of the space around the body (i.e., peripersonal space (PPS)) and their links with consciousness, cognitive functions and other bodily systems, like the immune response, aiming to clarify how brain-body communication supports adaptive behavior.

NeuroRehab@NeuroTech has the mission of translating basic science to develop novel technology-based solutions for the care of neurological disease. Main lines of work focus on alterations of body representations impacting functional recovery in neurological populations, on developing novel strategies and tools based on virtual reality and robotics for cognitive and physical rehabilitation, and on systemic strategies to inject innovation into clinical practice in neurorehabilitation.

Consciousness@NeuroTech – The interaction between interoceptive and external sensory processing is increasingly acknowledged as a core mechanism underlying perception and cognition in both health and disease. In this session we will provide an overview of our research on the impact of cardiac signals on auditory regularity processing across different states of vigilance in healthy participants, and in comatose patients without conscious access to sensory stimuli. Our findings indicate that the integration of interoceptive and exteroceptive signals remains active even in unconscious states, potentially serving as a crucial and efficient system for detecting environmental threats.

NeuroDigital@NeuroTech – Transforming Neurological Care Through Digital Health Innovation

We're pioneering the future of neurological care by harnessing the power of wearable technology and advanced data analytics. Our research focuses on two critical neurological conditions – migraine and epilepsy – where we're developing innovative approaches through non-invasive, continuous monitoring solutions. Using smart wearables like watches, we investigate and validate novel biomarkers that help predict, detect and manage paroxysmal neurological events. With the EPISAVE project, we aim to provide a novel low-cost solution for detecting generalized convulsive seizures (GCS) using off-the-shelf smartwatches. The EPISAVE app will be made available for free to low-and-middle income countries, with the view to expand GCS detection worldwide and advance the prevention of sudden unexpected death in epilepsy. In parallel, we develop and run the Human Intracerebral EEG (iEEG) Platform (HIP), a cloud-based trusted research environment that enables large-scale iEEG data sharing and progress in the understanding of physiological and pathological brain dynamics. Join us as we bridge the gap between wearable technology and neurological care, creating a future where patients receive personalized, continuous care beyond hospital walls.

